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Jeffrey Heath

**A GRAMMAR OF
TAMASHEK (TUAREG
OF MALI)**

PART 1

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(Tuareg of Mali)



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A Grammar of Tamashek (Tuareg of Mali)

by

Jeffrey Heath

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Contents

Abbreviations.....	xvii
1 Introduction.....	1
1.1 Tuareg and Berber linguistics.....	1
1.2 Literature on non-Tamashek Tuareg.....	3
1.3 Historical background.....	4
1.4 Malian Tamashek.....	6
1.5 Neighboring languages.....	7
1.6 Fieldwork and other data.....	9
1.7 Acknowledgements.....	10
2 Overview.....	11
2.1 Recurrent morphosyntactic patterns.....	11
2.2 Nouns.....	13
2.3 Prefix Reduction.....	14
2.4 Noun phrases.....	14
2.5 Verbs.....	15
2.6 Simple main clauses.....	16
2.7 Clitics.....	18
2.8 Focalized clauses.....	18
2.9 Relative clauses.....	19
2.10 Accent.....	20
2.11 Representation of stems.....	21
2.12 Ablaut.....	21
3 Phonology.....	23
3.1 Segments.....	23
3.1.1 Consonants.....	23
3.1.1.1 Consonants of Arabic origin (š ɭ ħ ʕ).....	24
3.1.1.2 Marginal nasals (ŋ ñ).....	25
3.1.1.3 Uvulars (ʁ q).....	25
3.1.1.4 Pharyngealized alveolar stops (ɖ ʈ).....	26
3.1.1.5 Alternations of š and z and of š and zz.....	27
3.1.1.6 Alternation of š and ž.....	29
3.1.1.7 Alternation of w and gg.....	29
3.1.1.8 Alternation of ɖ and ʈ.....	30
3.1.1.9 Loss of stem-final semivowel.....	31
3.1.1.10 Loss of nonfinal semivowel.....	33
3.1.2 Vowels.....	34
3.1.2.1 Full and short vowels.....	34
3.1.2.2 Vowels before backing and lowering consonants (BLC's).....	35

3.1.2.3	Deletable final vowels (nouns, suffixes, clitics).....	36
3.1.2.4	Stem-Final <i>t/A</i> -Deletion (in verbs)	37
3.1.2.5	Phonological status of final [u] and [i].....	39
3.1.2.6	Phonological status of medial [u] and [i] before C.....	40
3.1.2.7	Medial ... <i>Cy</i> /... <i>Cəy</i> /... <i>Ciy</i> , ... <i>Cw</i> /... <i>Cəw</i> /... <i>Cuw</i> before V ...	41
3.2	Local assimilations and syllabification rules.....	42
3.2.1	CC-cluster rules	42
3.2.1.1	Stem-final C plus stop-initial suffix or clitic	42
3.2.1.2	Nasal assimilation and dissimilation	45
3.2.1.3	/ <i>d</i> / → <i>t</i> before voiceless obstruent.....	46
3.2.1.4	* <i>zd</i> → <i>zz</i> , * <i>zɹd</i> → <i>zɹz</i>	47
3.2.1.5	Prefixal <i>t</i> -Deletion.....	47
3.2.2	Longer-distance consonantal interactions.....	48
3.2.2.1	Consonantal metathesis	48
3.2.2.2	Long-distance sibilant assimilation (Sibilant Harmony).....	50
3.2.3	VV-Contraction.....	51
3.2.3.1	VV-Contraction with 3 <i>MaSg</i> subject prefix <i>i-</i>	51
3.2.3.2	VV-Contraction with C(ə)- subject prefixes.....	51
3.2.3.3	VV-Contraction at suffixal or clitic boundaries	52
3.2.3.4	Possible VV-Contraction with <i>Pl</i> prefix <i>i-</i>	59
3.2.3.5	Summary of VV-Contraction processes.....	59
3.2.4	Resyllabification (Final-CC Schwa-Insertion).....	61
3.2.5	Schwa-Epenthesis	66
3.2.6	Short-V Harmony	68
3.2.6.1	Asymmetrical version.....	68
3.2.6.2	Symmetrical version	71
3.2.7	Syncope and Leftward L-Spreading.....	73
3.2.7.1	Syncope	73
3.2.7.2	Leftward L-Spreading.....	79
3.3	Accent.....	81
3.3.1	Word accent (Default Accentuation)	81
3.3.1.1	Suffixes and clitics inducing penultimate accent.....	84
3.3.1.2	Accentual implications of Stem-Final <i>t/A</i> -Deletion.....	87
3.3.1.3	Accentual implications of VV-Contraction	88
3.3.2	Epenthetic-Vowel Accentuation and Stem-Final Gemination in Resyllabification	93
3.3.3	Phrasal accent.....	94
3.4	Ablaut.....	98
3.4.1	Stem shapes and templates	99
3.4.1.1	Nouns	99
3.4.1.2	Verbs (specific stem-shapes).....	99
3.4.1.3	Verb types based on full vowels	101
3.4.1.4	Light and heavy (middleweight and superheavy) verb stems.....	102

3.4.1.5	Stems, componential or templatic ablaut, pre-ablaut reconfiguration.....	104
3.4.2	Gemination and degemination in ablaut	107
3.4.2.1	T and Γ-c2 in long imperfectives	107
3.4.2.2	Plain/geminate alternations in nominal Sg/Pl.....	108
3.4.3	Melodies.....	110
3.4.3.1	Types of melodies.....	110
3.4.3.2	Melodic association	111
3.4.4	Local vocalic ablaut formatives ($\bar{\chi}$, $\acute{\chi}$, ϵ , α)	114
3.4.5	Ablaut formative association.....	115
3.4.5.1	Summary	116
3.4.5.2	First postconsonantal V (“pc1”).....	117
3.4.5.3	Final-Syllable V (“f”).....	118
3.4.5.4	“pc1” = “f” (ϵ -pc1f).....	119
3.4.5.5	Penultimate V.....	120
3.4.6	From <HL> to pure <L> melody (PerfP verbs)	121
3.4.7	V-Height Compromise	123
3.4.8	Verb-stem-initial rules (gemination, syncope, initial short V).....	125
3.4.8.1	Onsets of underived verbs	125
3.4.8.2	Onsets of causative and mediopassive verbs	130
3.4.8.3	Dialectal idiosyncracies in verb and VblN onsets	131
3.4.9	V-Shortening rules and u-Spreading	134
3.4.9.1	Presuffixal α -Shortening (Non-Augment Verbs).....	134
3.4.9.2	Pre-Augment V-Shortening	137
3.4.9.3	Medial V-Shortening and u-Spreading	140
3.4.9.4	V-Shortening processes confined to causative verbs.....	145
3.4.10	Vowel-semivowel dissimilation (iw for #uw, ew for #ow)...	147
3.5	Syntactically controlled phonological processes.....	147
3.5.1	Prefix Reduction of nouns (dependent state).....	148
3.5.2	Verbs after particles.....	151
3.5.2.1	Verbs after Future particles	151
3.5.2.2	Verbs after Negative particles	152
3.5.3	Verbs and participles in definite relative clauses and after Past <i>kældá</i>	153
3.5.3.1	Erasure of ablaut lengthening ($\bar{\chi}$ -pc1 Erasure).....	154
3.5.3.2	Rightward Accent Shift	155
3.5.3.3	Lexical Accent Erasure and $\acute{\chi}$ -Erasure.....	157
4	Nominal and pronominal morphology	161
4.1	Noun morphology.....	161
4.1.1	Gender and number categories	161
4.1.1.1	Gender categories	161
4.1.1.2	Number categories	161
4.1.2	Morphology of gender and number marking.....	162

4.1.2.1	Number (vocalic) and gender prefixes.....	163
4.1.2.2	MaPl suffix -æn, -tæn and FePl suffix -en, -ten	165
4.1.2.3	Feminine Singular suffix -t (-t-t).....	166
4.1.2.4	Extra stem-final semivowel or vowel before FeSg -t.....	167
4.1.2.5	Feminine suffix -æ̃t.....	169
4.1.2.6	Simple suffixal pluralization and stem extension (w)	170
4.1.2.7	C-final Sg with əw/iw extension before Pl suffix	176
4.1.2.8	Gemination in singular or suffixal plural.....	178
4.1.2.9	Stem-internal vowel alternations.....	181
4.1.2.10	First-stem-syllable Sg/Pl vocalic alternations (e/a, etc.).....	183
4.1.2.11	Stem-final vowel shifts before ...w- and Pl suffix	185
4.1.2.12	Stem-Final V-Lengthening in plural verbal nouns.....	188
4.1.2.13	MaPl -an due to clear VV-Contraction	190
4.1.2.14	Ablauted MaPl variant -an.....	200
4.1.2.15	Unsuffixal ablaut plurals.....	207
4.1.2.16	<H L> Pl ablaut melody (bisyllabic stems).....	209
4.1.2.17	Conditions for Plural «i a» instead of «u a».....	218
4.1.2.18	<H L> melody realized as «a» (monosyllabic stems) ..	219
4.1.2.19	<H L> melody expanded for heavy stems.....	221
4.1.2.20	Carryover of stem vowels from singular to plural	222
4.1.2.21	Sg «ə u» (or «æ u»), Pl «u a»	223
4.1.2.22	Syncope, Accent Reattachment, and apparent FePl accent shift in unsuffixal ablaut plurals	223
4.1.2.23	Ablaut Pl with medial gemination (t-i-CáPPaC, etc.) ..	227
4.1.2.24	Ablaut plurals with final accent (t-i-C(C)əCC, etc.).....	229
4.1.2.25	Suppletive plurals.....	234
4.1.2.26	Phonologically irregular plurals.....	235
4.1.2.27	Arabic plurals	236
4.1.2.28	Default Plural particle ədd	237
4.2	Independent personal pronouns	237
4.3	Demonstratives	238
4.3.1	Demonstrative pronouns.....	238
4.3.2	Spatial demonstrative adverbs.....	241
4.3.3	Demonstrative postnominal particles (í, dí, ənnín, én).....	241
5	Noun phrase structure.....	243
5.1	Nominal modifiers.....	243
5.1.1	Adjectives.....	243
5.1.1.1	Modifying “adjectives”.....	243
5.1.1.2	Comparatives	243
5.1.2	Numerals and other quantifiers	245
5.1.2.1	Basic numeral forms ‘1’ to ‘10’	245
5.1.2.2	Prenominal forms of numerals ‘1’ to ‘10’	247
5.1.2.3	‘One’ versus ‘other’	250

5.1.2.4	Numerals greater than '10'	251
5.1.2.5	Pronominalized numerals	252
5.1.2.6	Distributive numerals.....	253
5.1.2.7	Ordinals	254
5.1.2.8	Other quantifiers	254
5.1.2.9	Days of the week.....	256
5.1.2.10	Tent sizes	257
5.2	Possession and compounding.....	257
5.2.1	Ordinary nominal possessives	257
5.2.2	Pronominal possessor suffixes	259
5.2.3	Inalienable possessive suffixes with certain kin terms.....	260
5.2.4	Compounds	263
5.2.4.1	Analytic compounds with ən.....	263
5.2.4.2	Compounds involving kin terms or 'people'	264
5.2.4.3	Some 'gazelle' compounds.....	266
5.2.4.4	Compounds with èrk, t-èrk 'bad'	266
5.2.4.5	Compounds with -hæn- 'house'	267
5.2.4.6	Compounds with ànd- 'yester-'.....	268
5.2.4.7	Other frozen compounds.....	268
5.2.4.8	Phrasal compounds	269
6	Prepositions	272
6.1	Inventory of true prepositions	272
6.2	Pronominal suffixes with prepositions	274
6.3	Dative (or Purposive)	275
6.4	Instrumental and Comitative	276
6.4.1	Instrumental s (əs)	276
6.4.2	Comitative d (əd), dætén, or həkódd 'with, and'	278
6.5	Spatial prepositions	281
6.5.1	'in, at' (dær).....	281
6.5.2	'at the place of, chez' (ɣòr).....	283
6.5.3	'under' (dàw, dàgg).....	284
6.5.4	'above, over' (jənnəj).....	285
6.5.5	'on' (fæl, fəlla-).....	286
6.5.6	'in front of' (dàt).....	287
6.5.7	'behind' (ɖaræt, ɖàra-)	287
6.6	Compound prepositions.....	288
6.6.1	'beside' (dǎdes or d ʼǎ-des, dǎgman).....	288
6.6.2	'between/among' (jèr, jère-)	289
6.6.3	'toward' (ebré-)	290
6.7	Preposition-like particles.....	291
7	Verbal morphology	293
7.1	Augment verbs with -t-	294
7.1.1	Augmented and unaugmented V-final stems.....	294

7.1.2	Alternative segmentations of Augment -t.....	298
7.2	Stem categories.....	299
7.2.1	Mood-aspect-negation (MAN) categories	299
7.2.2	Perfective system	301
7.2.2.1	Perfective Positive stem (PerfP).....	302
7.2.2.2	Resultative stem (Reslt).....	305
7.2.2.3	Perfective Negative stem (PerfN)	309
7.2.3	Short imperfective system	311
7.2.3.1	Short Imperfective stem (ShImpf).....	311
7.2.3.2	Imperative positive stem (Imprt).....	318
7.2.3.3	Hortative of ShImpf with suffix (‘’)et.....	321
7.2.4	Alternative IPI hortative construction using Imprt stem.....	323
7.2.5	Long imperfective system	323
7.2.5.1	Long Imperfective Positive stem (LoImpfP)	330
7.2.5.2	Long Imperfective Negative stem (LoImpfN).....	334
7.2.5.3	Prohibitive stem (Prohib) and negative imperative constructions.....	336
7.2.5.4	Long imperative	339
7.2.5.5	Long hortative	340
7.2.5.6	Hortative negative.....	340
7.3	Verb classes and irregular verbs	341
7.3.1	Regular classes.....	341
7.3.1.1	Light short-V -vPQvC-, -vPPvC-, and -vCvC-.....	341
7.3.1.2	Heavy C-final short-V -Cv(C)CvC-, -CvCvCCvC-, etc...	345
7.3.1.3	Light non-augment V-final -v(C)Cu- (a/i subclass).....	348
7.3.1.4	Light non-augment V-final -v(C)Cu- (a/u and u/u subclasses)	361
7.3.1.5	Heavy non-augment V-final -CvCCv- and -CvCvCCv-...	364
7.3.1.6	Augmented -CvCvCCv- (+ -t-), etc.	367
7.3.1.7	C-final full-V-medial -Cu(C)CvC- and -CvCuCvC-.....	370
7.3.1.8	Full-V-initial C-final -vCvC- and -vCCvC-	376
7.3.1.9	Verbs with perfective -v(C)CuC- or -v(C)CiC-	381
7.3.1.10	Verbs (mostly adjectival) with Imprt i(C)CaC and PerfP -vCCuC-	385
7.3.1.11	Adjectival verbs with Imprt iPQaC and unprefixed C-initial PerfP	387
7.3.1.12	Adjectival verbs without i...a imperfective vocalism ...	392
7.3.1.13	Augmented verbs with ‘‘adjectival’’ perfective	394
7.3.1.14	Non-augment -Cu(C)Cu- and -CvCuCu- verbs	395
7.3.1.15	Full-V-initial V-final -vC(C)v- (a/i and a/u types).....	400
7.3.1.16	Augmented -CuCCv- , -CvCuCu- , etc.	405
7.3.2	Irregular and suppletive verbs	411
7.3.2.1	‘die’ (√mt, √m, √mtn)	411
7.3.2.2	‘be much, many’ (√j, √jt), ‘be long, tall’ (√sjr, √sjrt)	412
7.3.2.3	‘forget’ (√tw)	414

7.3.2.4	'be yellow' (\sqrt{wry} , \sqrt{ry})	415
7.3.2.5	'say' (\sqrt{n} , \sqrt{jn})	415
7.3.2.6	'go to' (\sqrt{k})	416
7.3.2.7	'go' (\sqrt{j} , \sqrt{ms})	417
7.3.2.8	'come', 'arrive' and 'be on the way' (\sqrt{yw} , \sqrt{s} , \sqrt{ml})	418
7.3.2.9	'sit' (\sqrt{ym} , \sqrt{rym})	419
7.3.2.10	'testify' (\sqrt{jyh} , \sqrt{jh})	420
7.3.2.11	Existential/locational 'be' (\sqrt{l})	421
7.3.2.12	'be in' (\sqrt{h})	424
7.3.2.13	'have' (\sqrt{l})	425
7.3.2.14	'do' (\sqrt{j})	426
7.3.2.15	'(day) break' (\sqrt{fw} , \sqrt{f})	427
7.3.2.16	'be lost' (\sqrt{b})	428
7.3.2.17	'be born' (\sqrt{w})	429
7.3.2.18	'be unripe' (\sqrt{rh})	429
7.3.2.19	'pick up' (\sqrt{dkl} , \sqrt{kl} , etc.)	429
7.3.2.20	'be enough' (\sqrt{jdh}) and 'be equal' (\sqrt{jdh})	430
7.3.2.21	'quick!' (\sqrt{ikk})	431
7.4	Pronominal subject paradigms	431
7.4.1	Non-imperative pronominal subject affixes	431
7.4.1.1	C- versus C \bar{e} - and \bar{e} C- forms of subject prefixes	432
7.4.1.2	Prefixal t-Deletion	434
7.4.1.3	Phonology of \bar{e} C subject suffixes	434
7.4.1.4	3MaSg i- versus \emptyset -	436
7.4.2	Omission of subject prefixes with perfective adjectival verbs	437
7.4.3	Second person subject affixes in imperatives	438
8	Verbal derivation	439
8.1	Causative (-s-, -š-, -š-, -z-, -ž-, -z-, -svw-)	439
8.1.1	Causative derivation	439
8.1.2	Sibilant Harmony in the Causative prefix	442
8.1.3	"Double" causatives	443
8.1.4	Causative stem shapes	444
8.1.5	Causative stem shapes (inputs with initial or medial full vowel)	449
8.1.6	Causative stem shapes (inputs with stem-final V)	454
8.1.7	Causative stem shapes (heavy C-final input stems)	459
8.1.8	Causative stem shapes (V-final augment verbs)	461
8.1.9	Causatives of prefixally derived verbs	462
8.1.10	Dialectal causative ShImpf forms without C ₁ -Gemination ...	466
8.2	Passive (-t-, -tt-, -tvw-)	466
8.3	Mediopassive (-m-, -n-, -nvy-)	471
8.4	Reciprocal -nvm-, -m-, -n-	476
8.5	Participles (subject relatives)	481

8.5.1	Affixes for participles built directly on verb stems	483
8.5.2	Forms of definite participles (PerfP, Reslt)	484
8.5.3	Forms of definite participles (LoImpfP)	486
8.5.4	Indefinite participles	490
8.5.5	Suffixal augment -t- in participles.....	492
8.5.6	Participles built on preverbal particles	493
8.5.6.1	Participles with Negative wær	493
8.5.6.2	Participles with Future mår (or è).....	497
8.5.6.3	Participles not used with Past kældá.....	502
8.5.7	Reslt Participles with “adjectival” sense.....	502
8.5.8	Participles of prefixally derived verbs	506
8.6	Verbal nouns.....	506
8.6.1	Ordinary verbal nouns	506
8.6.1.1	Verbal nouns of light V-final verbs.....	508
8.6.1.2	Verbal nouns of light C-final verbs.....	513
8.6.1.3	Verbal nouns of -v(C)CvC- and -v(C)CvC- verbs	519
8.6.1.4	Verbal nouns of non-augment heavy verbs	520
8.6.1.5	Verbal nouns of augmented verbs (with -t-).....	524
8.6.1.6	Verbal nouns of prefixally derived verbs.....	526
8.6.2	Verbal nouns of underived verbs with -m-/-n- prefix	528
8.6.3	Suppletive verbal nouns.....	529
8.6.4	Semantic extensions of verbal nouns	529
8.6.5	Abstractive nominals	529
8.7	Adjectival nouns without derivational prefix	536
8.8	Agentives	539
8.8.1	Deverbal agentives with -m-/-n- Prefix.....	539
8.8.2	Passive agentives with -m-ætt- and -m-	547
8.8.3	Reciprocal agentives with -n-æmm-.....	547
8.8.4	Causative agentives with -m-/-n- plus -s-	548
8.9	Nonagentive nominals with -m- or -n-.....	549
8.10	Denominal agentives (-mæs-, -næs-, etc.)	552
8.11	Instrumental (and related) nominals with -s- or -s-vg- prefix	554
8.12	Other nominals	561
8.12.1	Agent/instrument nominal with <L> melody	561
8.12.2	Other nominal derivations	563
9	Verb phrases and other predications	573
9.1	Voice (valency) types of verbs	573
9.1.1	Subject and object.....	573
9.1.2	Intransitive	574
9.1.3	Ambi-valent intransitive/transitive verbs.....	574
9.1.4	Transitive.....	575
9.1.5	Intransitives with dative complement	576
9.1.6	Underived ditransitive (object plus dative).....	577
9.1.7	Complex causatives	578

9.1.8	Double datives	580
9.2	Copular predications ('be', 'become').....	580
9.3	Locational and existential predications	582
9.4	Possessive predications	584
9.5	External negation and negative copular clauses.....	585
9.6	Preverbs	586
9.6.1	Past (kæló)	586
9.6.2	Negative (wær)	587
9.6.3	Future (àð, àr, màr, màð, è).....	589
9.6.4	Combinations of preverbs.....	591
9.7	Verbs borrowed from French.....	594
10	Clitics	595
10.1	Sentential clitics.....	595
10.2	Directional clitics.....	595
10.2.1	Centripetal -\áðð (-\áðð, -\dád, etc.).....	595
10.2.1.1	Forms	595
10.2.1.2	Meaning	598
10.2.2	Centrifugal -\ín (-\hín).....	6-00
10.2.2.1	Forms	600
10.2.2.2	Meaning	601
10.2.3	Further Centripetal/Centrifugal oppositions	602
10.3	Pronominal clitics.....	603
10.3.1	Object clitics	603
10.3.2	Dative clitics	607
10.4	Ordering of clitics.....	610
11	Dicourse-functional particles and topicalization	615
11.1	Topicalization	615
11.2	Emphatics	616
11.2.1	Clause- or phrase-final yá	616
11.2.2	'even' (kúd, wæló)	617
11.2.3	Confirmational (láb).....	617
11.3	Other discourse particles	617
11.3.1	'only' (xás, Negation plus àr).....	617
11.3.2	'other than' (sæl)	619
11.3.3	'also, too, again' (dár).....	619
11.3.4	'still' (har w-á).....	620
11.3.5	'not yet' (har w-á, sæddér, andí)	620
12	Extraction	623
12.1	Relativization	623
12.1.1	Subject relatives	626
12.1.2	Object relatives	628
12.1.3	'something to eat'	631

12.1.4	Relativization on prepositional complement NP	633
12.1.5	Possessor and long-distance relatives with -ls and resumptive pronoun	635
12.1.6	Generalized relatives (ère 'whoever', ì, à, èd)	637
12.1.6.1	Definite human (ère)	637
12.1.6.2	Indefinite human (ì, t-ì)	638
12.1.6.3	Nonhuman (à)	639
12.1.6.4	'whenever ...' (èd)	640
12.1.6.5	'until the time (when) ...' (har ìket ì)	641
12.2	Focalization	642
12.2.1	Subject focalization	643
12.2.2	Object focalization	645
12.2.3	Focalization of prepositional complement	646
12.2.4	Focalization of adverbial NP	647
12.2.5	Focalization of verb or VP	647
12.2.6	Focalization of other constituents	648
12.3	Interrogatives	649
12.3.1	Yes-no (=polar) interrogatives	649
12.3.2	'who?' (mí)	650
12.3.3	'what?' (má)	651
12.3.4	'to where?, whence?' (mí)	653
12.3.5	'where?' (əndék, əndəké, əndé)	653
12.3.6	'when?' (məndəjú, harəmmén, əmméd)	655
12.3.7	'why?' (mə-ʋfæl, má-ʋs)	655
12.3.8	'which?' (ənnær, əndék)	656
12.3.9	'how much/many?' (mə-ìket) and 'how?' (mə-əmmək) ..	658
12.3.10	Embedded WH-interrogatives	659
13	Clausal subordination	663
13.1	Adverbial clauses	663
13.1.1	Temporal adverbial clauses	663
13.1.1.1	Finite 'when ...' clauses (à-ʋs, d-i-há-ʋd, əjúd, èd)	663
13.1.1.2	Locative preposition plus VbIN for 'when ...'	665
13.1.1.3	'as long as ...' (with -vkkvs-)	665
13.1.1.4	'before ...' (əndí, t-əzzár, dát)	666
13.1.1.5	'until ...' (hàr, àr)	668
13.1.1.6	'after ...' (šəmə-ʋ)	669
13.1.1.7	'happen later ...' (i-lkám ...)	669
13.1.2	Spatial adverbial clauses ('where ...')	670
13.1.3	Manner adverbial clauses ('how ...')	670
13.2	Purposive and causal clauses	671
13.2.1	Purposives ('in order that ...') (y à-ʋd, à-ʋd, y)	671
13.2.2	Causal ('because') clauses (fæl, à-ʋs, èd)	673
13.3	Jussive and subjunctive clauses (à-ʋd)	674
13.3.1	'want' (-vrhu-)	676

13.3.2	'be able' (-dubu- + -t) and 'prefer' (-suf-)	676
13.3.3	Obligationals ('must', 'should', 'may not')	677
13.3.4	'warn' (-vngvñ-) and 'advise' (-s-vmvtvr-)	679
13.3.5	'try' (-vttvr-, -urvm-)	680
13.4	Add-on small clauses	680
13.5	Verbs with verbal noun complements	683
13.5.1	'prevent' (-vkkvs-)	684
13.5.2	'cease' (-vbðv-), 'leave' (-vyyv-) and 'begin' (-s-vntv-)	684
13.5.3	'go (in order) to' (-vkkv-)	685
13.5.4	'be ashamed to' (-kvrukvd-)	685
13.5.5	'do a lot' (-vknv-)	685
13.5.6	'do many times' (-s-vjvt-)	686
13.5.7	'do frequently' (-vršvj-)	686
13.5.8	'can' (-dubu- + -t)	686
13.6	Verbs and particles with finite complements	687
13.6.1	'find, encounter' (-ujvz-)	687
13.6.2	'repeat' (-vlvs-)	687
13.6.3	'end up (doing)' (-jurhv-)	687
13.6.4	'spend the day doing' (-hjuv-)	688
13.6.5	'nearly' ('on the verge of', 'about to') and 'barely'	688
13.6.6	'(have) just' (iket)	689
13.6.7	'no longer'	690
13.6.8	'maybe', 'it's possible that ...'	691
13.6.9	'soon' (i-šwár)	692
13.7	Factive 'that' complements (s, à-\s)	692
13.7.1	Simple factive complements	692
13.7.2	Embedded factives (preposition plus à-\s complement)	694
13.8	Reported speech and thought	695
13.9	Conditionals	696
13.9.1	Hypothetical conditionals (ajúd, kúnta, kúd, wælá, a-\fæl, fæl)	696
13.9.2	Counterfactual conditionals (ændær, enákk)	698
13.9.3	Antecedent reduced to NP	700
13.10	Possessive ðn plus 'that' complement	700
14	Coordination	702
14.1	NP coordination	702
14.1.1	'and'	702
14.1.2	'or' (méx) and 'nor' (wælá)	703
14.1.3	Gender and plural agreement	705
14.2	Clausal coordination	706
14.2.1	Clausal 'and'	706
14.2.2	Clausal 'or' and 'whether'	707

15	Anaphora	708
15.1	Reflexive	708
15.2	Reciprocal	709
16	Text	711
	Indices	727
	References	744

Abbreviations

a. frequently cited works (for full details see under "References")

DN86	DNAFLA, <i>Lexique tamasheq</i> .
DTF	Foucauld, <i>Dictionnaire touareg-français</i> .
EPPB	Kossmann, <i>Essai sur la phonologie du proto-berbère</i> .
LTF2	Prasse et al., <i>Lexique touareg-français</i> , 2nd ed.
MGT	Prasse, <i>Manuel de grammaire touaregue</i> (tāhāggart)
TNEBF	Sudlow, <i>The Tamasheq of north-east Burkina Faso</i> .

b. dialects (localities and tribal groups)

A	Ansongo area
A-grm	Ansongo area in Gourma (south of Niger R.)
Gao	[not abbreviated]
Gnd	Goundam area
Gos	Gosi area
Grm	Gourma (zone south of Niger R.)
Hm	Hombori (in Gourma)
Im	Immenas
K	Kidal (city in northern Mali)
K-d	Kidal area, Kal Idnan tribe
K-f	Kidal area, Ifoghas tribe
R	Rharous (=Gourma Rharous) area
T	Timbuktu area
T-ka	Timbuktu area, Kal Ansar
T-md	Timbuktu area, Imeddedeghan
Ts	Tessalit area (west of Kidal)
W	Iwellemeden dialect of Tamajak, in Mali (e.g. Menaka) and Rep. of Niger
Y	Tayert dialect of Tamajak, in Rep. of Niger

c. other languages

Ar	Arabic
Bam	Bambara
Fr	French
HassAr	Hassaniya Arabic (Timbuktu area, also Mauritania)
KCh	Koyra Chiini (Songhay of Timbuktu and Goundam)
KS	Koyraboro Senni (Songhay of Bamba, Gao, and Ansongo)

c. categories and morphemes

Abstr	Abstractive
Anaph	Anaphoric (demonstrative suffix)
Approx	Approximative
Aug	Augment (§7.1.1)
BLC	backing and lowering consonant (§3.1.2.2)
Caus	Causative
Centrif	Centrifugal
Centrip	Centripetal
Comit	Comitative ('with')
Dat	Dative
Dem	Demonstrative
Dist	Distant (demonstrative)
Fe	Feminine
Hort	Hortative
Impf	Imperfective
Imprt	Imperative
Instr	Instrumental
Lo (in LoImpf)	Long
Loc	Locative
Ma	Masculine
MAN	mood-aspect-negation
N (in PerfN, etc.)	Negative
NearDist	Near-Distant (demonstrative)
Neg	Negative
O	object
P (in PerfP, etc.)	Positive
Pass	Passive
Perf	Perfective
Pl	Plural
Poss	Possessor (possessive)
PP	Prepositional Phrase
Prep	Preposition
Prohib	Prohibitive
Pron	Pronoun
Prox	Proximal (demonstrative)
RecAnaph	Recent Anaphoric (demonstrative)
Reslt	Resultative (verb stem)
S	subject
Sg	Singular
Sh (in ShImpf)	Short
SVS	surface vocalic sequence (§3.4.3.1)
VblN	verbal noun

Chapter 1

Introduction

1.1 Tuareg and Berber linguistics

The Berber family is part of the Afro-Asiatic (or Hamito-Semitic) phylum (1).

(1) Afro-Asiatic Phylum

- a. Semitic
- b. Berber
- c. Egyptian
- d. Cushitic
- e. Omotic
- f. Chadic

A rough classification of Berber, based on but not identical to a 2004 on-line *Ethnologue* version, is (2).

(2) Berber Languages and Locations

a. Northern Berber

Tamazight	Morocco (Middle Atlas range)
Tachilhit	Morocco (southwest)
Tarifit	Morocco (Rif range in north)
Chenoua	Algeria (Cherchell area)
Kabyle	Algeria (northeast)
Shawiya (Chaouia)	Algeria (Aurès range)
Mzab-Ouargla	Algeria
Nafusi	Libya and Tunisia
Ghadames	Libya (Ghadames)

b. Eastern Berber

Siwi	Egypt (Siwa oasis in west)
------	----------------------------

c. Southern Berber

Tuareg (Touareg)	Algeria, Mali, Niger (Sahara)
------------------	-------------------------------

d. other

Zenaga	Mauritania
Guanche	Canary Islands (extinct)

2 1 Introduction

The term **Tuareg** (French *touareg* or *touarèg*) is a Hassaniya Arabic rather than Berber term. It is the plural *twa:rəg* of the Hassaniya noun *ta:rg-i*, which denotes a (freeborn) Tuareg warrior. The Tuareg refer to their own language as *t-æ-mù:šæq-q* (or variant, see below), a feminine noun based on a stem *-mú:šæɾ-* whose core sense is again ‘Tuareg warrior’. The northern Berber language name “Tamazight” is cognate.

Because Tuareg varieties are spoken by nomads and transhumants over a vast area in southern Algeria, northern Mali, the north of the Republic of Niger, and (more recently) in Burkina Faso, and because in a given local area there are many tribal and caste divisions that have linguistic ramifications, it is very difficult to decide whether we are dealing with a single “Tuareg” language (with many dialects), or two or more languages (each with some internal dialectal variation).

One popular division of Tuareg is given in (3).

(3) Tuareg (Popular Version)

- | | | |
|----|-------------------------------|------------------------|
| a. | Tamashek (Tamachek, Tamashaq) | Mali (except Menaka) |
| b. | Tamajak (Tamajek, Tamajeq) | Niger, Mali (Menaka) |
| c. | Tamahak (Tamahaq) | Algeria (Hoggar range) |

The division in (3) is based on the pronunciation of the name for the language itself, which consists of FeSg affix complex *t-a-...-t* (as in all language names) sandwiched around the noun stem *-mú:šæɾ-* (or variant). The difference is in the sibilant, which appears as *š* in Tamashek (see above), as *ž* in Tamajak (where “j” is pronounced as in French), and as *h* in Tamahak.

However, Tamajak itself is divided into two rather distinct groups that might be regarded as having autonomous status. The version in (4) is therefore arguably better than the popular version, though at present I have no well-researched view on the matter and reserve the right to change my mind in the future.

(4) Tuareg (Revised Version)

- | | | |
|----|----------------------------|-----------------------------|
| a. | Tamashek (Tamachek) | Mali (Kidal, Gao, Timbuktu) |
| b. | Tawellemmett (Tawallammat) | Niger (NW), Mali (Menaka) |
| c. | Tayert (Tayart) | Niger (north, Air range) |
| d. | Tamahak (Tamahaq) | Algeria (Hoggar) |

Tawellemmett is the language of the Iwellemmeden tribal confederation that occupies much of northwestern Niger and extends into the Menaka region in eastern Mali. Tayert is named after the Air mountains.

In the on-line *Ethnologue* (on the SIL webpage, viewed in 2004), population figures were given as 270,000 for Tamashek, 62,000 for Tamahak, 640,000 for Tawellemmett, and 250,000 for Tayert.

I will use the term Tamashek in this fashion, i.e. for the Malian varieties except for the Tawellemett of Menaka. However, the term is often used in Mali as a general term for all Tuareg varieties in the country, including the Tawellemett of Menaka. To distinguish the two major types of “Tamashek” in this official usage, the terms in (5) are in use.

(5) Malian Tuareg

- | | | |
|----|-------------------------------|----------------------------|
| a. | Taneslemt (t-ɑ-n-ɛ̃sləm-t) | Timbuktu (also Gao, Kidal) |
| b. | Tanastaramt (t-ɑ-næs-tæram-t) | Timbuktu |
| c. | Tadghaqq (t-ɑɣɾɑq-q) | Adrar (and Kidal) |
| d. | Tawellemett (t-ɑ-wəllɛmmət-t) | Menaka |

Taneslemt, which can be extended to cover the non-Tawellemett dialects of Mali, corresponds roughly to “Tamashek” as I use the latter term. “Taneslemt” is based on a root meaning ‘Muslim’, on the ground that in the old days the Iwellemmeden were not especially pious, whereas other Malian Tuaregs included some devout maraboutistic clans. Tanastaramt is based on a cpd noun ɑ-næs-tæram ‘westerner’, while Tadghaqq is based on ɑ-ɣɾɑɾ ‘rock; mountain’ (cf. “Adrar”).

There is a traditional Tuareg syllabary known as t-i-finɾ. It did not seem to be in active use in the areas where I did my fieldwork (e.g. Timbuktu, Gao). My impression is that it is chiefly used in parts of Algeria. Its existence, however, is well-known locally and it is a source of some ethnic pride.

1.2 Literature on non-Tamashek Tuareg

For **Tamahak** (Algeria), the major work is the great *Dictionnaire touareg-français* (abbreviation DTF) of the famous (and famously assassinated) French officer and later missionary Charles de Foucauld (lived 1858-1916). DTF was published posthumously in four volumes (1951-52). It is now somewhat difficult to use because of its rarity, its great physical size (the handwritten manuscript was published by photography), and its not very modern orthography (“ou” for w, “i” for y, “ɾ” for ɾ, etc.). Foucauld had a hard time hearing the distinction between the two short vowels, and did not understand the accent system. Nevertheless, his dictionary is monumental, and its entries contain rich semantic detail with abundant exemplification, and not a little ethnographic material. Foucauld also made a serious effort to identify natural species. It is one of the greatest of all missionary dictionaries of its era.

For **Tamajak** (Republic of Niger), the major work is the *Lexique touareg-français* of Prasse et al. (2nd ed., 1998), which carefully distinguishes Tawellemett (“W”) from Tayert (“Y”) items throughout. This dictionary is of a high standard, uses a modern phonemic orthography, and has the necessary morphological data for each stem. Two shortcomings that will hopefully be

rectified in future editions are the absence of scientific identifications of flora-fauna species, and the omission of accents on stems other than verbs (verbs generally have grammatically predictable accents).

For **Burkina Faso** we now have David Sudlow's handy work, *The Tamasheq of north-east Burkina Faso* (2001), which includes some lexical lists organized by domains as well as grammatical information. The migrations into Burkina began in earnest around 150 years ago and have been continuous, as desertification has pushed Tuaregs south. The dialects spoken in Burkina reflect the diverse origins of the migrants, but Tawellemett is well represented.

Prasse's three-volume work, *Manuel de grammaire touarègue* (1972-74), is an elaborate systematization of data from Foucauld from the Hoggar. In this work, Prasse analyses Tuareg phonology and morphology (the fourth volume on syntax did not appear), in historical linguistic terms. The *Manuel* is an important work for Berberists, but the author's perspective is somewhat idiosyncratic, since he connects attested modern Tuareg forms directly with Pre-Proto-Berber reconstructions. Much of his interest was in presenting a Pre-Proto-Berber reconstruction with three short vowels in addition to the less controversial long (full) vowels. Synchronically, Tuareg has two short vowels æ and ə, which are themselves partially merged in some dialects depending on following consonants, and the non-Tuareg Berber languages generally have just one short vowel phoneme. Unfortunately, the *Manuel* was written before the author's Niger-based *Lexique*, and was therefore based largely on Foucauld, whose transcriptions of short vowels for Tamahak were highly unreliable. In addition, the *Manuel* (like the *Lexique*) was written in the absence of good synchronic analysis of accent, which turns out to interact in significant ways with the ablaut system. In general, the *Manuel* is of greatest interest for its analysis of vocalic ablaut, and of a series of other, specific historical linguistic issues.

Another important recent work on Proto-Berber is Maarten Kossmann's *Essai sur la phonologie du proto-berbère* (1999). This is essentially a collection of topical studies, addressing a number of cruxes of Berber historical phonology.

1.3 Historical background

Historians and archeologists are in broad agreement that there has been a long-term southward shift of Saharan populations over at least 1500 years. Around the year 500 AD, significant portions of the Sahara were sufficiently moist and temperate to accommodate permanent human settlement, while the Middle Niger River area was swampy and too infested with disease-bearing flies to permit year-round habitation. Over the centuries, climatic changes have made some of the Sahara almost completely uninhabitable (and impassible), including a significant expanse west of Araouan (north of Timbuktu). Other areas could be used for grazing part of the year (assuming normal wet-season

rainfall) but could not support permanent settlements. During the most recent few centuries, the only Saharan zones relevant to the Tuareg that could support continuous settlement were those in the mountainous areas: the Hoggar in southern Algeria, the Adrar des Ifoghas in far northern Mali, and the Air of Niger. These hills provide water (mountain springs, rainwater ponds in rocky depressions, wells) and defensive positions. The three hilly zones have been the major demographic concentrations of Tuareg north of the Niger River.

An important factor in the southward movement was the arrival of Arabs in North Africa. This began with the first Arab invasions of the end of the 6th century, but (from the Tuareg perspective) the main blow was the arrival of Arab beduin (the Bani Hilal and related tribal groups) in the 11th century and their spread over the next two centuries through much of non-maritime Libya, Tunisia, Algeria, and Morocco and into Mauritania, the Western Sahara, and northwestern Mali. Although some Tuareg were already present in the Hoggar, the Air, the Adrar des Ifoghas, and points south (perhaps already including Timbuktu), demographic pressures from the 11th to 13th centuries, resulting from the Hilalian invasion, pushed more Tuareg south into something like their present range in Mali and the Republic of Niger.

The Central Sahara (including the three mountainous zones mentioned) has been a particularly difficult place to live in during the last millennium. Desertification has been continuous, but has accelerated since 1970 (a devastating drought in 1972, smaller droughts off and on from then until 1985, overgrazing of grasslands, deforestation due to excessive cutting of firewood). Those Tuareg who did not live near the Niger River lost most if not all of their animals, and thousands of them died of hunger and thirst.

For much of the last millennium, climatic changes have been exacerbated by the rise of a highly elaborated culture of raiding (*razzia*). The Tuareg warrior clans, like the Arab *reguibats* farther west (high desert around the Mauritanian-Malian border area), terrorized both settled villages and the trans-Saharan caravan trade. They have been a major cause of economic backwardness, and of the rarity of stable political structures, in the Tuareg dominated areas since the Hilalian invasion. The ferocity of Tuareg warriors constituted a major obstacle for French colonial penetration, though after considerable bloodshed the colonial forces did eventually gain a degree of control (especially in Algeria). In recent decades, Tuaregs were recruited in large numbers to fight on the Libyan side of the Chad wars of the 1980's, and against the Russians in Afghanistan. Some veterans of these foreign wars later participated in banditry, guerilla attacks, or larger-scale rebellions in northern Mali and Niger. The major event in Mali was the Arab-Tuareg rebellion of 1990-95, where the rebels operated out of bases deep in the Sahara, mounting guerilla attacks on Songhay villages, on government police, and on army outposts. There was one one full-scale rebel assault on each of the two major riverine provincial capitals, Timbuktu and Gao. The rebellion stalled, and the Songhay population organized a paramilitary defense force (*Ganda Koy*), supplementing the regular government army. Ethnic cleansing was carried out

in much of the zone (some reprisal killings, but mainly forcing Tuareg and Arab civilians into exile). In 1995 a generous peace was signed, many Arab and Tuareg combatants were integrated into the government army, and refugees began to come back under the auspices of the UNHCR and several NGOs. While some resettled Tuaregs went back to their traditional territories and lifestyle, many have shifted farther south (i.e. to the Gourma, the Gosi-Hombori area, or Burkian Faso). Others have been converted from desert pastoralists to agriculturalists, e.g. growing rice along the river.

1.4 Malian Tamashek

As noted above, the varieties covered in this volume are those of **Tamashek** in the narrow sense, excluding Tawellemett but including the other Malian varieties (Goundam, Timbuktu, Gao, Ansongo, Kidal, and the Gourma area south of the Niger River including Gosi and the outskirts of Hombori).

There is considerable dialectal diversity within Tamashek even in its narrow sense. Although the dialectal boundaries are rather fluid, one can roughly group the dialects into three divisions (6).

(6) Main Divisions of Malian Tamashek

- a. Kal Ansar dialects around Timbuktu (T-ka)
- b. mainstream Tamashek including Kidal, Tessalit, the Gao area, and the non-Kal Ansar (i.e. mostly Immededeghan) groups around Timbuktu; dialects of this general type are those abbreviated K (also K-d, K-f), T-md, I, R, Ts, Th.
- c. dialects with some “eastern” features, spoken by certain groups in the Gourma of Gao and Ansongo, represented here by A-grm (Ansongo-Gourma).

This grammar is focused on the rather distinctive Timbuktu-area Kal Ansar (T-ka) dialects, but it includes a fair amount of comparative material from the other types insofar as they differ structurally from T-ka. One recurrent difference is that T-ka shows much broader Short-V Harmony, by which original *æ (short a) has become ə when the following syllable has a high vowel {i ə u}. The Kal Ansar also have a larger number of Arabic borrowings, and retain Arabic pharyngeal consonants ħ and ʕ (instead of merging them into x and ɣ, respectively, like other Tuareg varieties). My grammatical and textual data are more thorough for T-ka than for the other groups, so my coverage of grammatical differences among the dialects is not exhaustive. My dictionary of Tamashek will include extensive material from

all dialects, and further detail on dialectal stem morphology can be gleaned from it.

The Tuareg were and in some cases still are nomadic or transhumant. Major tribal migrations have occurred over time, to which we may add extensive recent migrations due to rapid desertification (especially severe since 1970), and organized resettlement into new communities of returning refugees and combattants following the settlement of the Tuareg-Arab rebellion of 1990-95. Each local zone therefore has a complex settlement history. The resulting linguistic variation, and the range of ecological zones inhabited, are particularly challenging for the dictionary, but they also complicate grammatical analysis and the processing of texts.

The traditional social divisions (or **castes**) in Tuareg society were defined by (mostly male) occupational specialties: a) **warriors** (æ-múšæɾ, Pl i-múšæɾ), b) **vassals** (ɑ-méɾid, Pl í-mɾɑd), c) **marabouts** (Muslim holy men, often mendicant), d) **artisans** (blacksmith, Fr *forgerons*) working with metal, leather, and wood (Sg é-nhæɖ, Pl ǐ-nhæɖ-æn), and e) **slaves** (á-kli, Pl èkl-an). Orthodox Islam has now spread to all Tuareg castes, but in the past religious activity was mainly confined to the maraboutistic clans. In the southerly Tuareg areas, where black slaves were abundant, the category “vassal” was never as well-defined as it was farther north (Algeria). With the abolition of slavery, the decline (except in times of rebellion) of tribal warfare and raiding (*razzia*), and the resettlement of many Tuaregs in towns or agricultural villages, traditional lifestyles have in many cases been dramatically altered. Nevertheless, most people continue in some form of the traditional pastoral lifestyle, spending at least part of the year in isolated villages, tending what is left of their herds, relying on milk and cheese for a good part of their sustenance. The Tuareg are popular among tourists, creating some jobs as guides and providing new markets for the wares (jewelry, swords, boxes, leatherwork) of the metalsmiths.

A somewhat special case is the **Bella**, the (former) slave caste, whose traditional specialty in Tuareg economy was raising small livestock (sheep and goats). Many of them are now in the cities and large towns, working as herders, hard laborers, or domestic help for wealthier families. The Bella speak roughly the same Tamachek varieties as their (former) owners, but have some dialectal peculiarities, and in some cities there are signs of an incipient shift from Tamashek to a Songhay language among younger Bellas.

1.5 Neighboring languages

In the western part of their zone, i.e. around Timbuktu and from there west to Goundam and beyond, Tamashek is spoken chiefly in villages that are not too far from the Niger River. There are a number of Tamashek villages near Timbuktu and Goundam, but the high desert farther north (e.g. Araouan, Taoudenni) is basically Arab country. Moreover, in the sub-riverine area

where Tuareg-Bella groups are found, they are often in contact with Arab groups, and both Arab and Tuareg-Bella minorities are found in the larger towns and cities (Goundam proper, Timbuktu and its ports, Gourma Rharous). The local Arabic vernacular is a variety of **Hassaniya Arabic**, the beduin Arabic of Mali, Mauritania, and the Western Sahara. The local variety differs somewhat from the better described Mauritanian norm, for example in preserving short *ũ as a distinct phoneme. Comparison of Timbuktu-area Hassaniya with Timbuktu-area Tamashek indicates that although Hassaniya has many Berber loanwords, the latter are usually not from the (current) local Tamashek varieties. It appears that most of the Berber lexical stratum in Timbuktu Hassaniya derives either from non-local Berber languages (including Zenaga in Mauritania), or from former Berber languages of the Timbuktu area that are no longer extant locally. Tamashek likewise is deeply impregnated with Arabic vocabulary, but much of it seems to reflect more ancient Arab-Tuareg contacts, probably much farther north.

Along the Niger River itself, throughout the zone relevant to Tamashek, the dominant languages are **Koyra Chiini** (e.g. Goundam, Timbuktu) and **Koyraboro Senni** (from Gourma Rharous and Bamba through Gao to the border with the Republic of Niger). These are the two major Songhay languages of Mali. Koyra Chiini is of S-infl-V-O type with traces marking object extraction sites, while Koyraboro Senni is an S-infl-O-V-X language with resumptive pronouns in extraction contexts. Current government nomenclature lumps them together (along with other Songhay languages) as “soṅay,” only the Koyraboro Senni dialect of Gao being taught in literacy programs. In any event, the local Songhay variety is used in interethnic communication (e.g. in the markets) and is generally learned by Tuaregs and Bellas as a second language. As the Tuareg and Bella resettle into towns and cities where a Songhay language predominates, and partially adjust in lifestyle (e.g. shifting from milk and cheese to millet grain as a staple food), some relevant Songhay vocabulary is creeping into Tamashek speech.

In the major Tuareg concentration in the north around Kidal and the hills of the Adrar des Ifoghas, there are no major competing languages, though there are a few Arab villages and some Arab traders in the towns.

In the Gourma (the area south of the Niger River), there are broad expanses of flat, arid land away from the river that the Tuaregs and Bellas have largely to themselves. However, as they approach the river they encounter speakers of the Songhay languages mentioned above, and there are some Songhay in Gosi (the only real town). At the southern fringe of the Gourma, where the flat land is suddenly punctuated by the cliff faces of inselbergs, the few local Tuareg encounter speakers of another Songhay language, **Humburi Senni** of the Hombori area, along with ethnic Fula who speak either **Fulfulde** or a variety of Koyraboro Senni called **Foulan Kirya**. Since many of the Tuareg of the Gourma have migrated recently from the Timbuktu-Goundam area, the local Tamashek variety seems to have been little affected by these peripheral contacts.

As noted above, around Menaka we get Tamajak instead of Tamashek proper. In that zone, straddling the Mali-Niger border, there is also an important nomadic group of cultural Tuaregs known as Daoussahak who speak **Tadaksahak**. This language has a Songhay base (pronouns, inflectional particles, maybe 250 items of core vocabulary), but most of the lexicon (including some “core” items) is from Tuareg, and Tuareg influence in grammatical categories, syntax, and prosody is conspicuous. There are also some Fulfulde-speaking groups near the Niger River south of Menaka.

Of these non-Tuareg languages, Arabic has had by far the greatest influence on Tamashek, but the influence seems to be largely confined to lexical borrowing. Of course loanwords in areas related to Islam and sharia law (prayer, holy days, days of the week, lunar months, divorce) are very common, but there are also some loans in other domains, sometimes from vernacular rather than classical Arabic. Arabic loans may have spread within the Tuareg domain, from dialect to dialect, or they may have entered different Tuareg varieties independently. Many of the Arabic loans also occur in other regional languages (e.g. Songhay, Fulfulde), and in some cases there are phonological indications that an Arabic term passed first into Tuareg and from there into languages farther south.

1.6 **Fieldwork and other data**

I have worked in northern Mali since 1986, including annual visits since 1989. In 1986 and 1989 I worked chiefly on Hassaniya Arabic. From 1990 to 1998 I concentrated on Songhay languages, and am still finishing up this work. From 1999 to 2003, however, I focused on Tamashek. I am simultaneously completing a Tamashek-English-French dictionary which I expect to be published by Karthala, Paris. I have put great emphasis on lexicography in this project, and I have drawn heavily on lexical data in this grammar. I am considering the best way to make my textual data available, perhaps in an electronic format, in the next few years.

In the field, the first order of business was compiling a decent working lexicon. I undertook systematic lexical elicitation, primarily in Timbuktu in summer 1999 and autumn 2000, with emphasis on ecological vocabulary (natural species and related terminology). With a lexicon of about 2500 items I then undertook analysis of dialogue tapes that I had recorded over the years in Timbuktu (T-ka and others), Gao (speakers from the Kidal areas), and Hombori (speakers living in the Gourma, most of whom were ultimately of Timbuktu or Goundam origin). I also made some recordings of Tamajak (and Tadaksahak) speakers in Menaka. I commissioned preliminary transcriptions and French translations of several of the tapes from government applied linguists in Bamako, namely Rhali Ag Mohamed of DNAFLA (native of Kidal) and Mahmoud Ag Oyett of IPN (native of Menaka). I later took these

transcriptions and the tapes back into the field and prepared corrected versions of the transcriptions.

An outline of the grammar, focusing on the T-ka dialect, was developed into a more comprehensive draft with a native speaker present in Bamako in summer 2001. Modifications and additions were made thereafter based on closer analysis of texts, and follow-up elicitation in summer 2002. In that trip I also went over the Timbuktu-biased dictionary draft with a native of Ansongo-Gourma for several weeks. In summer 2003, I went through the by now rather large dictionary draft with a native of Kidal (Kal Unan tribe) then in Gao. Of course some grammatical material was also gathered from the Ansongo-Gourma and Kal Unan speakers. I was able to work for about a week with a speaker from the Gourma Rharous area, and few a few days each with speakers from Kidal (Ifoghas), Immenas, and Tessalitt. In 2003, Mahmoud Ag Oyett and I organized a three-day workshop for Tamashek applied linguists and teachers in Gao, and I was able to glean some interesting dialectal details from the participants.

The most urgent remaining task for the analysis of Tamashek is a fuller study of phrase- and clause-level prosody based on recorded texts.

1.7 Acknowledgements

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Chapter 2

Overview

A sketch of major highlights of Tamashek grammar here will provide an overall summary of the morphosyntactic type of the language. This should help non-Berberist readers to make sense of phrasal and clausal examples in the main chapters. Scanning the text in Chapter 16 in conjunction with this sketch is also recommended.

2.1 Recurrent morphosyntactic patterns

Abstracting from the complexities of the grammar, the central morphosyntactic construction in Tamashek can be represented as (7).

(7) [X Y' ...]

where X is a phrase- or clause-initial element (word or particle), Y' is an immediately following word, and Y' is a modification in the form of the corresponding independent form Y. "Immediately following" means that no word or fixed-order particle intervenes, though floating **clitics** that happen to attach to X are allowed. I refer to the relation between X and Y' as a **local dependency**. The relevant constructions are in (8), where "verb" refers to inflected (=finite) verbs, and "participle" (used in subject relatives) is a special form of a verb stem with subject number-gender agreement only.

(8) [X Y' ...] Local Dependencies (Requiring Adjacency)

	X	Y'	modification in Y'
a.	preposition	noun	Prefix Reduction
	verb	noun (subject)	Prefix Reduction
	compound initial	noun	Prefix Reduction
b.	Negative particle	verb	ablaut change
c.	definite demonstrative	verb	ablaut change
	definite demonstrative	participle	ablaut change

In (8.a), a morphophonological rule Prefix Reduction (e.g. -a- reduced to -æ-, or -i- reduced to -ə-) applies to nouns in combinations with specific preceding forms. Of special interest is the fact that reduction applies to the

verb-subject sequence, but not to a **verb-object** sequence. For more on the role this plays in “case marking,” see §2.3, below.

For verbs, the only true local dependency is that of an inflected verb on a preceding Negative (8.b). This applies in all combinations where no elements (other than floating clitics) intervene between the two, hence to perfective, (long) imperfective, and imperative (i.e. prohibitive) stems. Basically the modification converting Y to Y' adds phonetic content (where it is not vacuous) in the perfective, reduces phonetic content (erasing a V-length ablaut formative $\tilde{\chi}$ -pc1 and an accent ablaut formative $\check{\chi}$ -pc1) in the imperfective and prohibitive, and modifies the stem vocalism in all of these stems.

The cases in (8.c) are limited to **definite relative clauses**, which begin with a definite demonstrative (in apposition to the head NP, which if overtly expressed is external to the clause). The modification in ablaut form of the verb involves erasure of a V-length ablaut formative ($\tilde{\chi}$ -pc1), and (with specific exceptions) a shift in the location of the ablaut accent formative (in one combination, this formative is entirely erased). The formulation of the relevant rules requires an extraordinary interpenetration of “syntax” and “phonology,” and constitutes an important empirical argument against highly modularized theories of grammar.

It is possible to combine two [X Y'...] configurations, as in the combination [Negative verb noun(subject) ...]. In this combination, the relevant pairs involving local dependencies are [Negative verb] and [verb noun(subject)]. As a result, internal bracketing as in [Negative [verb noun(subject)] ...] or [[Negative verb] noun(subject) ...] is counterproductive (any such bracketing would appear to separate two forms that enter into a local dependency). The only points that matter are adjacency (disregarding clitics) and the grammatical relationship (e.g. Negative + verb, or verb + noun(subject)).

Superficially similar cases are those in (9)

(9) [X Y' ...] Dependencies Not Requiring Adjacency

X	Y'	modification in Y'
Future particle	verb	Short Imperfective
complementizer	verb	Short Imperfective

The cases in (9) involve either a Future particle or a particular type of complementizer, plus an inflected “Short Imperfective” form. The latter cannot be used clause-initially with its usual subject pronominal inflections. However, the short imperfective is related to the positive imperative (which has no morphological connection to the prohibitive). The positive imperative is clause-initial (hence is preceded by no “X” element), and it lacks the usual subject pronominals.

Importantly, while the [X Y' ...] dependencies in (8) require direct adjacency (except that they allow floating clitics to be hosted by X), the dependency of the Short Imperfective on the Future particle or on the complementizer in (9) can extend to a second short imperfective clause appended to the first one, with no repetition of the X element. Thus [Future ShImpf₁, ShImpf₂] is grammatical, where both verbs are under the scope of the Future morpheme (cf. English *he will come, and eat*). No confusion is likely, since the ShImpf cannot be used in the absence of a dependency. In other words, a ShImpf can be triggered by a **variable-distance dependency**; compare the concept of “*série enchaînée*” adapted from other Berberist literature to Tuareg by Leguil (1992:43). By contrast, we cannot get e.g. #[Neg Verb₁, Verb₂] where both verbs are under the scope of the negator; the correct expression is [Neg Verb₁, Neg Verb₂] with the negator repeated, since adjacency is required in local dependencies.

2.2 Nouns

Examples of singular nouns are in (10)

- | | | | |
|------|----|--------------|-------------------|
| (10) | a. | æ-bájən | ‘monitor lizard’ |
| | b. | t-æ-s-àṅən-t | ‘oxpecker (bird)’ |
| | c. | deké | ‘basket’ |

The masculine noun in (10.a) and the feminine noun in (10.b) have vocalic prefixes, here -æ- (other nouns have -a-, -e-, or -ə-). Since the prefix changes to -i- in the plural, I gloss it as “Sg” or “Pl” as the case may be. (10.c) is an example of a noun with no vocalic prefix (most such nouns have masculine agreement). The feminine noun (10.b) additionally has a Fe[minine] prefix t- and a Feminine Singular (FeSg) suffix -t, which could be summed up as a FeSg circumfix t-...-t. For feminine nouns of the same basic type that end in a vowel, an additional (inner) Fe suffix -t- is added, so the singular noun has an affix frame t-V-...-t-t. The inner -t- is retained in suffixal plurals (t-V-...-t-en), but the whole -t-t sequence is dropped in unsuffixed ablaut plurals. Some feminine nouns lack the suffixes even in the singular, showing only the Fe prefix t-.

While most noun stems are underived, some are derived (by some combination of ablaut and prefixation). This is the case with ‘oxpecker’ (10.b), which contains an -s- prefix, cf. prefixally derived causative verb (PerfP) -àss-onæn- ‘tame, break in (animal)’. The vocalic prefix precedes the derivational prefix.

Pluralization of nouns is by affixation, by ablaut, or by a combination of the two, depending on the noun (some nouns have alternative plurals, typically one affixal and one ablaut). In the purely affixal plural, the vocalic prefix (if present) becomes -i-. Masculines add suffix -æn or -tæn (the latter is common

after a vowel or after a stressed C-final syllable), and feminines add suffix *-en* or *-ten*, replacing FeSg *-t*. Examples of affixal plurals are *deké-tæn* ‘baskets’ and *t-i-s-ànan-en* ‘oxpeckers’.

Other nouns form the plural by stem-ablaut (in addition to the usual change of the vocalic prefix to Pl *-i-*). The final vowel of an ablauted plural stem appears as *a*, while other stem vowels are realized as high (normally *u* if full, *ə* if short). Examples of ablaut plurals for nouns in (10) are *i-bújan* ‘monitor lizards’ and *t-i-s-únan* ‘oxpeckers’ (the latter competes with affixal *t-i-s-ànan-en*).

There are also a number of plural patterns involving a mixture of ablaut (perhaps just a change of quality in a final vowel) and affixation.

2.3 Prefix Reduction

It was mentioned above that nouns express (local) dependency on a preceding element by undergoing Prefix Reduction. This applies to a subject (but not object) noun after a verb, to a noun functioning as complement of a preposition, and to a noun stem functioning as a compound final.

Most nouns have a vocalic prefix *-i-* in the plural. This Pl prefix is audibly reduced to *-ə-* or zero in the relevant syntactic positions. These same nouns have a vocalic prefix *-a-*, *-e-*, *-æ-*, or *-ə-* in the singular. Of these Sg prefixes, *-æ-* and *-ə-* are already short vowels and cannot be audibly reduced. However, *-a-* and *-e-* are reduced to a short vowel, either *-ə-* or *-æ-* depending on dialect and on the height of the vowel of the following syllable. Nouns that do not have a segmentable vocalic prefix are unaffected by Prefix Reduction.

The position of the accent is unaffected by Prefix Reduction. In particular, if the vocalic prefix happens to be accented, its reduced variant (other than zero) continues to bear accent. In cases where Pl vocalic prefix *-i-* is reduced to zero, the accent shifts to the preceding syllable (i.e. to the final syllable of the preceding word). Thus *t-ĩ-hatt-en* ‘sheep-Pl’ occurs in the locative PP *dæɾ ˈt-ə-hatt-en* ‘in the sheep’, with a dialectal variant (e.g. K-d) *dæɾ ˈt-Ø-hatt-en*.

Where Prefix Reduction has applied audibly, the symbol ˈ is given at the beginning of the word in question. Thus *é-hæn* ‘house’ has a reduced form *ˈæ-hæn*.

2.4 Noun phrases

Noun phrases (NP’s) begin with a head noun (the lexical head of the NP), which may be followed by a demonstrative, a possessor (with preposition *ən*), or a relative clause (subject or non-subject type). “Adjectives” are a special case of subject relative (see below). Numerals, however, normally precede the modified noun, except that ‘one’ may follow the noun when it functions as an

indefinite determiner rather than as a true numeral. In (11), the lexical heads are ‘man’ (11.a-b), ‘place’ (11.c), and ‘men’ (11.d).

- (11) a. æ-hólæs w-á
 Sg-man Ma-Dem.Sg
 ‘this man’ (demonstrative)
- b. æ-hólæs mæqqór-æn
 Sg-man be.big-Partpl.MaSg
 ‘a big man’ (relative clause)
- c. é-dægg [n æ-hólæs]
 Sg-place [of Sg-man]
 ‘the place of the man’ (possessor)
- d. æssín méddæn
 two.Ma man.Pl
 ‘two men’ (numeral)

There is no regular definiteness marking, so in isolated sentences we can frequently translate NPs as indefinite or definite.

2.5 Verbs

Tamashek verbs have a number of stems distinguished by ablaut. The basic set of inflectable stems, organized into **three subsystems** on morphological grounds, is given in (12).

(12) Verb Stems

a. perfective subsystem

PerfP [perfective positive]
 PerfN [perfective negative] (after Neg wàer)
 Reslt [resultative] (positive only)

b. short imperfective subsystem

ShImpf [short imperfective] (after Fut àd or complementizer)
 Imprt [imperative] (in positive only)

c. long imperfective subsystem

LoImpfP [long imperfective positive]
 LoImpfN [long imperfective negative] (after Neg wàèr)
 Prohib [prohibitive] (after Neg wàèr)

For example, ‘get’ has PerfP -əjræw-, ShImpf -əjrəw-, and LoImpfP -jǫrræw-. The perfective and short imperfective subsystems generally differ only in vocalism, while the long imperfective subsystem is characterized by consonantal (as well as vocalic) ablaut features.

Some of these stems can occur clause-initially, but others (PerfN, ShImpf, LoImpfN, Prohib) occur only after a preverbal particle (for the ShImpf the relevant particle need not be adjacent). The specifically negative stems occur after Negative preverb wàèr. The ShImpf stem is used after Future àd and in some other dependent positions.

The Reslt is very common, and in many cases can be translated as a present-tense stative verb in English (‘know’, ‘be sitting’). The LoImpfP denotes recurring or habitual events, as well as progressives (‘be dancing’).

For morphological purposes, it is necessary to distinguish numerous verb classes, based on their basic stem shape, e.g. -vPQvC- or -CuCCv- (+ -t). See §2.11, below, for the notation. Two important factors in verbal morphology are the heaviness of the stem (light, middleweight, or superheavy, the latter two subsumed under “heavy”); the presence of any full V’s initially, medially, or finally; and (for V-final) stems whether the verb takes Augment -t.

Participles, which agree in number and gender (but not person), are used in subject relatives. They can be formed from those non-imperative verb stems that occur clause-initially (PerfP, Reslt, LoImpfP). In combinations involving a preverbal particle, the Participial affix can be added to the particle, the details depending on dialect. Modifying adjectives are a special case of intransitive participle.

Essentially all verbs have a **Verbal Noun** (VbIN) formed by ablaut. A large number of verbs also have an Agentive. There are a number of less productive nominalization patterns confined to a few verbs.

Valency-changing derivations include causative, mediopassive, passive, and reciprocal. These categories are expressed by derivational prefixes with some associated ablaut changes. Causative and passive are especially productive, and layered derivations (e.g. passive of causative) are very common. Each such derived verb has its own full set of stems of type (12), as well as participles and a VbIN.

2.6 Simple main clauses

Simple main clauses have the shape [verb(-clitics) (subject) (object) ...]. Clitics may include object or dative pronominals, directionals, and/or PPs with

pronominal complement. A clitic boundary is represented as \ instead of just the hyphen -, and instead of = (not available in my phonetic font). When both subject and object are expressed by nouns, the subject noun precedes the object noun.

- (13) ənhæy-æn médd-æn élu
 see.PerfP-3MaPlS man-MaPl elephant
 ‘The/Some men saw the/an elephant.’

A subject or object noun (but not both) can form an accentual phrase with a preceding verb. Default and secondary accents are applied from right to left. Thus, in (13), [ənhæy-æn médd-æn] is an accentual phrase, with a lexical accent on the é of médd-æn and a secondary accent on the second syllable to its left. In isolation, the verb is ənhæy-æn with default accent on the antepenult. If the noun médd-æn is omitted in (13), we would get [ənhæy-æn élu], where the object noun now forms an accentual phrase with the verb. Two adjacent nouns are never grouped accentually, so as (13) stands élu has no accentual interaction with médd-æn.

If the clause is future or negative, there is a preverbal particle (Future àd or allomorph [including a-], or Negative wær), and any clitics attach to this particle, hence [preverb(-clitics) verb (subject) (object) ...]. In (14) I illustrate the [preverb(-clitics) verb] sequence, with a pronominal object (3MaSg) plus a directional (Centrifugal) in the clitic cluster.

- (14) a-\tt-\in ʔaw-ær
 Fut-\3MaSgO-\Centrif forget.ShImpf-1sgS
 ‘I will forget him.’

Other constituents (e.g. adverbials, including PPs with nominal complement) come at the end of the clause, though as noted above pronominal PPs are usually cliticized.

- (15) a. i-là-\fæll-ì ælhæqq
 3MaSgS-have.Reslt-\on-1Sg right
 ‘It (=animal) has a right on me.’ (=‘I have an obligation to it.’)
- b. i-tátt mæsæku dór
 3MaSgS-eat.LoImpfP sweet.potato too
 ‘He eats sweet potato too.’
- c. əwæt-ær-\dər-əs édi
 hit.PerfP-1SgS-\Instr-3Sg dog
 ‘I hit the dog with it.’

analyse as a (minimal) demonstrative in apposition to the focalized constituent. This *à* is treated as clause-initial, and is followed by any clitics that may be present. The *à* shows that the preceding element is a focalized constituent, as opposed to a pre-clausal topic NP. (17.a) illustrates non-subject focalization, (17.b) subject focalization. Brackets demarcate the core clause.

- (17) a. *àm-an* [*à* *t-əŕh́*]
 water-MaPl [Foc 3FeSgS-want.Reslt]
 ‘Water [focus] is what she wants.’
- b. *kàemm* [*à-łhi* *ì-nhæy-æn*]
 2FeSg [Foc-1SgO 3MaSg-see.PerfP-Partpl.MaSg]
 ‘It was you-FeSg [focus] who saw me.’

In subject focalization (17.b), the verb appears as a participle, and has 3MaSg agreement with *à*, regardless of the gender-number features of the focalized NP.

2.9 Relative clauses

Relative clauses must be subdivided in two ways. The first distinction is **subject** relatives versus **non-subject** relatives. The former are expressed with **participles** (specified as MaSg, FeSg, or Pl), the latter with regular inflected verbs (with occasional ablaut modifications).

The second distinction is between **indefinite** and **definite** relatives. In indefinite relatives, the **clause-internal head** is a simple noun, or a special indefinite demonstrative *ì*. In definite relatives, if there is a “head noun” it is outside the relative clause proper. The “head noun” is, however, followed by a definite demonstrative in apposition to it, e.g. MaSg *w-á* ‘this’, and this demonstrative functions as the clause-internal head. Any clitics are added to the clause-internal head.

Schematically, the four basic patterns can be illustrated as in (18).

- (18) Relative Clause Types
- a. indefinite subject relative
 [**man**(-clitics) 3MaSgS-eat.LoImpfP-**Partpl.MaSg** dogs]
 ‘a man who eats [long imperfective] dogs’
- b. indefinite non-subject relative
 [**man**(-clitics) see.PerfP-1SgS]
 ‘a man whom I saw [perfective]’

c. definite subject relative

man [**this-MaSg**(-\clitics) 3MaSgS-eat.LoImpfP-**Partpl.MaSg** dogs]
 ‘the man who eats dogs’

d. definite non-subject relative

man [**this-MaSg**(-\clitics) see.PerfP-1SgS]
 ‘the man whom I saw’

Here ‘man’ is external to the relative clause proper in the definite relatives (18.c-d), where the appositional demonstrative ‘this-MaSg’ is the clause-internal head. In the indefinite relatives (18.a-b), ‘man’ itself is the clause-internal head. In either case, the internal head is the host for any floating clitics within the relative clause.

Of particular interest is the fact that both participles (in subject relatives) and inflected verbs (in non-subject relatives) take special forms in definite relatives, due to a combination of special ablaut and accent rules. Specifically, a V-lengthening ablaut formative $\bar{\chi}$ -pcl that normally occurs in the Reslt and LoImpfP stems is erased in the participle or inflected verb of a definite (but not indefinite) relative. In definite relatives with a LoImpfP verb or participle, the syllable targeted by an accentual ablaut formative $\acute{\chi}$ -pcl is shifted one syllable to the right, or in one combination erased entirely, in definite (but not indefinite) relatives. These details show that accent and ablaut are sensitive to complex syntactic environments. This is the “interpenetration” of syntax and phonology referred to above.

2.10 Accent

As the preceding sections have hinted, accent is an important feature of Tamashek. However, its role is very different in verbs and nouns.

For inflected verbs and regularly formed participles, accent is not lexical. Except for the Reslt and LoImpfP stems, the accent is assigned by Default Accentuation, hence on the antepenult if there is one, otherwise on the leftmost syllable. Especially in the T-ka dialect, certain verbs have a non-default word-final accent in the short imperfective (including Sg imperative), but this is due to phonological rules triggered by Resyllabification of certain word-final CC clusters. In the Reslt and LoImpfP, however, all verbs undergo ablaut, which includes an accent formative $\acute{\chi}$ -pcl that assigns a marked accent to the first postconsonantal vowel (hence “pcl”). As noted at the end of the preceding section, the accent due to $\acute{\chi}$ -pcl may shift one syllable farther to the right, or may be erased entirely, in definite relative clauses.

For nouns (and other non-verb stems), accent is lexical. Some nouns have a lexical accent, others do not (and so undergo Default Accentuation). A lexical accent is only meaningful when the accent occurs, in the Sg and/or in the Pl, in a position where it would not be predictable from Default

Accentuation. In other words, to justify a lexical accent it is necessary to observe accent on the final or on the penult in a word, or in an accentual phrase (e.g. with preceding preposition), where Default Accentuation would have put the accent farther to the left.

Using *x* to represent a vowel, *á* indicates a marked (non-default) accent, either lexical (nouns), due to Resyllabification (verbs), or ablaut-induced (verbs). *â* and *ã* indicate default accents. *â* is an accent directly produced by Default Accentuation with no morphological complications, while *ã* is a special accent (on the penult, never the antepenult) whose position is affected by morphology, specifically by the presence of one of a specific set of suffixes and clitics. There is no phonetic difference between *á*, *â*, and *ã*.

2.11 Representation of stems

For nouns (and other non-verb stems), what you see is what you get. The Sg form of the noun is the citation form. Most Sg nouns (masculine or feminine) have a vocalic prefix, such as Sg *-a-* or *-æ-*, preceding the noun stem. A masculine example is *a-bæŋkor* ‘old well’. Feminine nouns also normally have a Fe prefix *t-*, and often FeSg suffix *-t*. An example is *t-a-bəŋgən-t* ‘burrgrass’. The *ã* accent indicates that penultimate accent is predictable from the presence of suffix *-t*, which does not permit the usual antepenultimate default accent.

For verbs, the true citation form makes use of “*v*” for short vowel, “*u*” for full vowel, and where appropriate more specific full vowels (usually *u* and *i*). If the verb takes Augment *-t-*, the formula “(+ *-t*)” is added. The PerfP or Imprt may be used as an informal citation form in some contexts (the PerfP is used as the headword in the dictionary). Examples of the true citation form are *-vwvt-* ‘hit’ (PerfP *-əwæt-*), *-uʂvl-* ‘run’ (PerfP *-òʂæl-*), and *-buffv-* (+ *-t*) ‘(grain) be abundant’ (PerfP *-əbbuffæ-t*).

Verb classes (as opposed to individual stems) are represented as e.g. *-vCvC-*, *-vPPvC-*, and *-vPQvC-*. *P* and *Q* represent consonants, with *PP* a geminate cluster and *PQ* a nongeminate cluster. In other words, *P* and *Q* are indexes of identity among *C*’s. The same class may be represented as e.g. *-vCvC-* or *-vPvC-* depending on context. For example, it may be stated that *-vPvC-* has a LoImpfP stem *-əPPáC-*, using *P* in *-vPvC-* in order to clarify the source of the geminate in *-əPPáC-*.

2.12 Ablaut

Ablaut (i.e. a procedure for audibly modifying stems) permeates Tamashek morpho-phonology and morpho-syntax. Perhaps the major ingredient in ablaut is a **vocalic melody** superimposed on the stem (whether the latter includes fully specified vowels, as with nouns, or mostly underspecified vowels, as with

verbs), consisting of L (low) and H (components). The melody is often combined with one or more **local ablaut formatives** that target and modify particular segments of the stem. Local formatives may geminate a C, may lengthen or accent a V, or may convert a specific V to a different V. The specifics of verbal ablaut are sensitive to the shape of the input stem.

Many nouns express Pl by stem-ablaut in combination with a change in vocalic prefix (and in some cases with a Pl suffix to boot).

Verbs use internal ablaut to generate the set of stems mentioned in §2.5, above. Some long imperfectives include a prefix -t- along with ablaut changes. Ablaut is also part of nominalizations (VblN, agentive).

As noted in §2.1 (form of verb in definite relative clauses) and §2.3 (Prefix Reduction of nouns in certain syntactic contexts), ablaut of a given word may be sensitive to its immediate syntactic environment (local dependency).

Normally, the **domain of ablaut** is the stem proper, excluding affixes. However, Prefix Reduction (which is as close as Tamashek comes to structural case-marking) is a kind of “ablaut” confined to vocalic prefixes on nouns. In addition, the ablaut domain of verbs with shapes like -v(C)Cv- is **extended up to the first C of a following subject suffix**. In the perfectives, this permits the verb stem plus (part of) the suffix to cobble together a v(C)CæC sequence of the sort required for audible expression of certain local ablaut formatives. I interpret this as a special rebracketing, bringing (part of) the suffix for this particular verb class (light V-final stems) into the domain of stem ablaut. For other verb stems, including light C-final stems, a suffix is never affected by ablaut, including stem-wide vocalic melodies.

Chapter 3

Phonology

3.1 Segments

3.1.1 Consonants

The positional series in the columns in (19) are listed in the key below the table. There are no pharyngealized η , k , m , h , etc., of the sort reported for Tamajak (Niger).

(19) Consonant Phonemes

1.	2	3	4	5	6	7	8
(p)	t	((t))	(č) = [tʃ]	k	((q))		
b	d	ḏ	j = [gʲ]	g			
f	s	(š)	š = [ʃ]		x	(h)	
	z	ẓ	ž = [ʒ]		ʁ	(ʕ)	
m	n		(ñ) = [ɲ]	ŋ			
	l	(l)					
	r						
w			y = [j]				
							h
							(ʔ)

key: 1. labial (bilabial stops, labiodental fricatives); 2. alveolar; 3. pharyngealized alveolar; 4. palatoalveolar; 5. velar; 6. uvular; 7. pharyngeal; 8. laryngeal

The singly parenthesized C's in (19) are marginal, confined largely to loanwords. The doubly parenthesized C's occur chiefly (though not exclusively) as geminated versions of other C's. Both types of C's are discussed in the following sections. The pharyngealized alveolars, along with the uvulars and pharyngeals, function as backing and lowering consonants (BLC's), see §3.1.2.2.

In the Kidal area, š can also be pronounced h^y, i.e., as a palatalized aspiration. The K-f (i.e. Ifoghas) speakers I encountered who had this pronunciation alternated it with š, especially in elicitation sessions (where there awareness of the mainstream Tamashek š came into play). In any event, the h^y remains distinct from the regular h phoneme. The Algerian counterpart is usually transcribed “h” in the literature, suggesting that true merger with

original *h has occurred north of the border. If so, the K-f pronunciation h^y may represent a transition between *š and (Algerian) h.

Of comparative interest is the fact that original *h is alive and well in all normal C positions within stems. At stem-suffix (including stem-clitic) boundaries, h often functions as a kind of epenthetic C breaking up V sequences, though in a morphologically restricted manner suggesting that the h is part of suffixal allomorphs (§3.2.3.3, §7.4.3, §10.3.1-2). By contrast, in Tamajak (Niger) many cases of *h in stems have been zeroed, especially in final position, resulting in considerable morphological reshaping. See EPPB 61-135 for a historical analysis.

A major issue in Tuareg dialectology is variation between j (affricate [dʒ]) and g. The T-ka dialect, which is focal in this grammar, probably has the most extreme preference for j of any Tuareg variety, though g also exists as a phoneme. T-md is generally like T-ka in this matter. At the other extremity is A-grm, which has no j as all; it has g in all cases where T-ka has j. The remaining dialects covered here, including Im and R and the Kidal-area varieties, agree with T-ka most of the time but have g in a number of lexical items corresponding to j in T-ka. Example 1 (A-grm isolated): ‘waterbag’ = æ-jɑ (Im K-d R T-ka T-md) or æ-gɑ (A-grm). Example 2 (Timbutku dialects isolated): ‘go’ = PerfP -əjla- (T-kd T-md) or -əgla- (A-grm Im K-d K-f R). For historical background see EPPB 137-73.

3.1.1.1 Consonants of Arabic origin (ʃ | ħ ʕ)

The segments ʃ, |, ħ, ʕ, and ʔ (glottal stop) occur in Arabic loans. In my T-ka data, ħ and ʕ in loanwords are clearly distinct from x and ɣ, respectively. A minimal pair in T-ka is α-m-æ|ʕon ‘accursed one’ versus α-m-æ|ɣon ‘worthless person’. However, in most other Tamashek dialects including T-md, R, A-grm, and K, Arabic ħ and ʕ in ordinary loanwords are merged with x and ɣ, respectively. Thus T-ka æ|ħádd versus other dialects’ æ|xádd ‘Sunday’.

Glottal stop, which is already largely absent in local vernacular Arabic dialects, occurs only in carefully pronounced, unassimilated Islamic vocabulary and can be largely disregarded here. ʃ and | are retained in Tamashek in a modest number of words. | is mostly found in expressions containing the word for God (Allah), but also occurs dialectally in e.g. æ||æróra ‘harm’ where it represents Arabic *ḍ (Hassaniya Arabic, especially in Mauritania, has a lateral fricative for Classical Arabic *ḍ and *ḍ̥).

3.1.1.2 Marginal nasals (η \tilde{n})

The nasals \tilde{n} and η occur in a handful of stems. A clear \tilde{n} was recorded in $\tilde{n}\text{æm}\text{æ}ku$ ‘frog sp.’ for a Goundam-area speaker, and in $kum\text{æ}\tilde{n}\text{æ}g\alpha$ ‘buprestid beetle’. These are probable Songhay borrowings.

η occurs in $\text{æ}\eta\eta\alpha$ ‘brother’, $-\text{v}\eta\eta\upsilon-$ ‘become ripe’, and $t\text{-}\tilde{u}\eta\eta\alpha\text{-}t$ ‘(type of) tree bark’. These three terms occur in Algeria and (with the possible exception of ‘tree bark’) in Niger, and so are unlikely to be borrowings, so prevocalic $*\eta$ can be assumed in a few words for proto-Tuareg. For ‘brother’ and ‘become ripe’ I have also recorded variants with \tilde{n} instead of η in K: $\text{æ}\tilde{n}\tilde{n}\alpha$ ‘brother’, $-\text{v}\tilde{n}\tilde{n}\upsilon-$ ‘become ripe’.

There are many cases of homorganic clusters ηg , ηk , and ηx , but these can be taken as assimilations from $/n g/$, etc., since there are no oppositions between e.g. ηg and ng .

3.1.1.3 Uvulars (ɣ q)

q is common as a phonetic entity but has marginal phonemic status. Most cases of phonetic $[q]$ are in the geminated form qq , word-medially or -finally, and these can be interpreted as the phonetic realization of geminated $/x x/$. The conversion of $/x x/$ to qq is productive, and applies not only word-internally but also over word boundaries (§3.2.1.1).

Within words, we have cases of morphological gemination such as $/i\text{-}\text{æ}x\text{x}ub\text{b}\text{-}\text{æ}t/ > i\text{-}qqub\text{b}\text{-}\text{æ}t$ ‘he gulped’, cf. verbal noun $\text{à}\text{-}x\text{æ}bbu$ ‘gulping’. At a nonprefixed morpheme boundary (with a suffix or clitic), qq often represents $/x t/$ or $/x k/$, as when a morpheme otherwise ending in x is followed by a morpheme otherwise consisting of or beginning in t or k (e.g. FeSg $-\text{t}$, 3MaPl object clitic $-\text{t}$, or any of the pronominal clitics beginning in k). An example is the name of the language, $/t\text{-}\text{æ}\text{-}m\acute{\alpha}:\text{š}\text{æ}x\text{-}t/ > t\text{-}\text{æ}\text{-}m\grave{\alpha}:\text{š}\text{æ}q\text{-}q$ ‘Tamashek’; see §3.2.1.1 for more detail. In these cases, the effect is a bidirectional feature assimilation whereby the t or k adopts the uvular position of the x while the latter adopts a voiceless stop articulation.

At word boundaries, we have such examples as preposition $d\text{æ}x$ ‘in’ plus any noun beginning in x , e.g. $d\text{æ}x$ $x\acute{u}\text{š}\text{š}\text{æ}t$ ‘in August’, often pronounced $[d\text{æ}q\text{:}u\text{š}:\text{æ}t]$. Another recurring combination is a verb ending in 1SgS $-\text{æ}x$ followed by particle $x\acute{\alpha}s$ ‘only’.

While $/x x/$ is regularly realized as qq , there are hints that ungeminated q may be on the way to becoming a phoneme distinct from x . This is because q as well as x can occur in ungeminated position. While x is much more common, there are some cases of q in Arabic borrowings, as in PerfP $-\text{æ}qb\text{æ}l\text{-}$ ‘consent’ (imperative $\text{æ}qb\text{æ}l$, LoImpfP $-\text{q}\acute{\alpha}bb\text{æ}l\text{-}$, cf. noun $\text{æ}lqab\acute{\alpha}la$, all from Arabic qbl ‘accept’). Contrast this with a native stem like $-\text{æ}x\text{b}\text{æ}r\text{-}$ ‘kick with heel’ (Imprt $\text{æ}x\text{b}\text{æ}r$, LoImpfP $-\text{x}\acute{\alpha}bb\text{æ}r\text{-}$). There are also dialectally sporadic cases of ungeminated q in non-borrowed vocabulary, especially where back-

formation from geminated qq may be involved. An example of internal back-formation is the verb ‘sit’ (§7.3.2.9), which often appears in the perfective or resultative stem, which involve gemination to qq (PerfP -æqqima-, etc.). For some speakers we also (by back-formation) get ungeminated q rather than ɣ in forms like Imprt qàɣəm (variant qəm) alongside ɣàɣm, where I interpret the variants with q as influenced by the qq of the perfectives.

In the combination ɣɣ, often representing alveolar n plus ɣ, the ɣ approaches the stop articulation [q], or an affricated articulation that sounds like phonetic [q̣]. The most common case is the verb ‘kill’, PerfP -əɣɣa- [-əɣq̣ɣa-], but e.g. VblN t-è-næɣe with intervening vowel. I do not use “q” here in phonemic transcriptions, since I am not convinced that the segment in question is completely voiceless in this position; an instrumental phonetic study would be useful. No similar affrication occurs in mɣ, e.g. í-mɣad ‘vassals’ (Pl of a-məɣid).

While there is incipient phonemic splitting of q and ɣ, the alternation of ungeminated ɣ and geminated qq remains quite fundamental. For purposes of alphabetizing dictionary entries, I treat q as though ɣ (i.e. immediately following g).

3.1.1.4 Pharyngealized alveolar stops (ɖ t)

The situation is somewhat similar with ɖ and ɗ. Here there are two types of alternation. First, there is a low-level and largely automatic devoicing of /ɖ/ before a voiceless obstruent. We can see this most clearly in cases like PerfP -əɖfa- ‘be poured’ (for /-əɖfa-/) but LoImpfP -ɖáff-. However, I have recorded a few stems with ɗ instead of ɖ, e.g. PerfP -əɖkæɖ- ‘describe’. The situation is particularly messy with the verb ‘pick up’ (§7.3.2.19), where we get variation between ɖk, tk, ɖk, and even kk, and some of this variation extends to the LoImpfP and VblN where a vowel intervenes between the alveolar stop and the k. Based on limited evidence, I suspect that the devoicing before voiceless obstruent is systematic when the obstruent is a fricative {f s ʃ} and unreliable when the obstruent is a stop (k). There are no relevant cases where the obstruent is t (the clusters #ɖt and #tt do not occur stem-medially), there is no full-fledged p phoneme in the language, and I know of no example of ɖ clustered with following x.

Secondly, there are numerous alternations within a word family of phonetic geminated [ɖ:], and ungeminated [ɖ], which suggest a single phoneme ɖ and a rule devoicing /ɖ/ to phonetic [ɖ:]. An example is ‘seize’, with PerfP -əɖtæf- ‘seize, hold’ but VblN úɖaf. However, on closer inspection, there turn out to be a fair number of cases where the geminated version of ɖ is [ɖ:] rather than [ɖ:]. The basic pattern is that we get [ɖ:] when a stem-initial ɖ is geminated, and a mix of [ɖ:] and [ɖ:] in stem-medial position. See §3.1.1.8, below for details.

Because of the variation between [d:] and [t:] as geminated counterpart of $\underset{d}{\text{d}}$, we must accept that $\underset{d}{\text{d}}$ and $\underset{t}{\text{t}}$ are partially independent of each other as phonemes. Moreover, there are a number of borrowings with ungeminated $\underset{t}{\text{t}}$, e.g. VblN $\alpha\text{-}\underset{t}{\text{t}}\text{áll}\text{ə}\text{ʃ}$ ‘making a profit’ (<Arabic). I will therefore transcribe with $\underset{d}{\text{d}}$ or $\underset{t}{\text{t}}$ based on pronunciation. In extracting consonantal “roots” for dictionary alphabetization purposes, I use the conventions summarized in (20).

(20) “Root” Consonant Extraction Conventions for $\underset{d}{\text{d}}$ and $\underset{t}{\text{t}}$

- $\underset{d}{\text{d}}$
- a) for word-families that have at least one form with phonetic [d̥]. Example: $\sqrt{\text{d̥f}}$ ‘seize, hold’ because of VblN $\underset{d}{\text{d}}\text{d}\text{əf}$.
 - b) for word-families where the relevant consonant occurs only in [tX] clusters (where X is a voiceless obstruent), so at least arguably the [t] is a /d/ devoiced by a CC-cluster voicing assimilation rule.
- $\underset{t}{\text{t}}$
- c) for word-families with [t] in at least one form where it is ungeminated, and either prevocalic or before a voiced consonant. Example: $\underset{t}{\text{t}}\text{d}\text{b}\text{ə}\text{l}$ ‘table’.
 - d) for word-families with invariant geminated [t:] with no direct evidence for /d/. Example: $\text{t-}\underset{t}{\text{t}}\text{æ}\underset{t}{\text{t}}\text{ə}\text{l}$ ‘roasted meat’.

3.1.1.5 Alternations of $\underset{s}{\text{s}}$ and z and of $\underset{s}{\text{s}}$ and zz

The popular subdivisions of Tuareg (Tamashek, Tamajak, Tamahak) are named after the predominant reflex of * $\underset{z}{\text{z}}$. Within the Tamashek dialects studied, there are some interesting synchronic variations of $\underset{s}{\text{s}}$ with z (this section), and others of $\underset{s}{\text{s}}$ with $\underset{z}{\text{z}}$ (§3.1.1.6, below). As noted in §3.1, $\underset{s}{\text{s}}$ is pronounced h^{y} in some Kidal-area dialects.

In (21), I list the stems known to me that vary subdialectally (sometimes with more or less free variation within a subdialect) between forms with $\underset{s}{\text{s}}$ and forms with z , across most or all stems in the word-family.

(21) Dialectal $\underset{s}{\text{s}}$ / z Alternations

- a. $\sqrt{\underset{s}{\text{s}}\text{hr}}$ and $\sqrt{\text{zhr}}$ ‘be massive, well-fed’
- b. $\sqrt{\underset{s}{\text{s}}\text{sj}}$ and $\sqrt{\text{zj}}$ ‘chase away’
- c. $\sqrt{\underset{s}{\text{s}}\text{jr}}$ and $\sqrt{\text{zjr}}$ ‘long, tall’ (also $\sqrt{\text{sjr}}$)

For ‘be massive’ we get e.g. MaSg participle (“adjective”) $\underset{s}{\text{s}}\text{uh}\text{æ}\text{r-}\text{æn}$ or $\text{zuh}\text{æ}\text{r-}\text{æn}$. For ‘chase away’ we get e.g. PerfP $\text{-}\underset{s}{\text{s}}\text{æ}\text{j-}$ varying with $\text{-}\text{z}\text{æ}\text{j-}$. For ‘long, tall’ we get e.g. MaSg participle $\underset{s}{\text{s}}\text{æ}\text{j}\text{r}\text{é-n}$ varying with $\text{z}\text{æ}\text{j}\text{r}\text{é-n}$. In these word-families, the $\underset{s}{\text{s}}$ variant is the more common overall. For ‘long, tall’ I have

also recorded $\sqrt{\text{sjr}}$ (in variation with $\sqrt{\text{šjr}}$), perhaps a sporadic recent dissimilation of *š to the following affricatej [dʒ].

In the word-families to which we now turn, we get geminated zz corresponding to ungeminated š for at least some dialects (or speakers). This alternation is not “regular” phonologically, and all speakers have some other word-families with consistent š and šš, and some with consistent z and zz. Where zz does alternate with š, relatively stable zz typically occurs in forms whose relationship to š forms is of below average morphophonological transparency. The stable zz forms can be in short VblN’s like áPPaC, áPP, and e-CáPP, in long imperfectives of type -CáPP-, and in unsuffixed ablaut plurals of type t-i-CáPP (for Sg t-è-CæPe or t-è-CæPPE). There are also a few other idiosyncratic cases.

The alternations known to me, some confined to certain dialects (or speakers), are given in (22). Variant forms with šš instead of zz are given in parentheses.

(22) Alternations of š and Geminated zz

	gloss	š form(s)	zz form(s)
a.	‘be sold’	PerfP -ənša-	VblN e-næzz LoImpfP -názz- (-nášš-)
b.	‘pardon’	PerfP -ənša- VblN t-è-næšše	LoImpfP -názz- (-nášš-) Pl VblN t-i-nózz (t-i-nóšš)
c.	‘fly (insect)’	Pl èš-an (T-ka) [Pl also èzz-an, èšš-an]	Sg èzz (éšš)
d.	‘age-mate’	àši	verb zùyə-t ‘coincide’ (Imprt)
e.	‘butcher’	PerfP -òša-	VblN ázz (ášš)
f.	‘run’	PerfP -òšæ -	VblN ázzal
g.	‘niece’	Sg t-è-jæše	Pl t-i-gázz

For ‘sell’ (22.a) and its homonym ‘pardon’ (22.b), we get š when clustered with preceding n. When the sibilant is geminated (LoImpfP), we get zz varying with šš. The VblN e-næzz seems to have consistent zz. The VblN t-è-næšše ‘pardon(ing)’ has šš in spite of gemination, but zz varies with šš in the ablaut Pl.

For ‘fly’ (22.c) the sibilant is always geminated in the Sg (unaccented èzz, èšš, Ansongo Gourma accented éšš). The Pl, if formed by simple suffixation, retains this geminate (èšš-æn, èzz-æn). However, I also recorded a sibilant

alternation for Kal Ansar, i.e. Sg èzz but Pl èš-an with ungeminated š (and full a suggesting contraction from /eši-æn/, cf. feminine t-èzzi-t-t or t-èšši-t-t).

The relationship between the noun ‘age-mate’ and the verb ‘coincide (in time)’ in (22.d) is probably opaque synchronically. The noun itself was not recognized by some speakers and appears to be confined to certain dialects. The verb is cited in the Sg Imprt form zùyyə-t, but as with most C-initial stems it often appears in initially geminated stem shapes like PerfP -èzzuuyə-t.

In (22.e-f), the sibilant is geminated in the VblN but not in any inflectable stem. The VblN of ‘(skin and) butcher’ (e) varies between šš and zz, while that of ‘run’ (f) consistently shows zz.

For ‘niece’ (22.g), gemination occurs in the ablaut Pl, which has zz versus š in the Sg.

Fuller dialectal data on these stems are presented in the relevant dictionary entries.

3.1.1.6 *Alternation of š and ž*

The alternations covered here are lexically idiosyncratic.

For ‘red, brown’, I recorded forms with š throughout the word-family, e.g. Imprt išwəɾ ‘become red!’, MaSg participle šæggæɾ-æn or šæggæɾ-æn ‘red’, and abstractive noun t-ə-šure ‘redness’. However, I did record a relative adjectival noun as á-žwəɾ ‘red one’ with ž.

For ‘be wondrous’, I recorded forms with consonantal sequences √ššb and √žžb, e.g. PerfP -æšošæb- varying with -æžožæb-. These forms are borrowed from Arabic √šžb.

3.1.1.7 *Alternation of w and gg*

There is an alternation of single w with geminated gg. It is not fully productive, and except when solidly lexicalized (e.g. verbal nouns) the tendency is to level it out, the usual result being w and geminated ww.

In verbal inflection, I observed no cases of gg due to gemination of stem-initial w in the PerfP or ShImpfP stems: Imprt wællæf ‘invent’ and PerfP -əwwəlæf- (not #-əggəlæf). Likewise, the PerfP type -æwwæC-, e.g. -æwwæɾ- ‘keep back’, has ww instead of gg. One could argue for -əwæC- as the basic PerfP stem for such verbs, since in all imperfective stems they are treated like verbs with PerfP -əPæC- (with P other than w).

However, in the LoImpf of -vwvC- verbs, gg (probably the original treatment) is attested in variation with leveled-out ww, hence əwət ‘hit’ (Imprt), LoImpfP -(t-)əggát- alongside -(t-)əwwát-. The same is true of -vCwvC- verbs: PerfP -əšwæɾ- ‘precede’, but LoImpfP (with medial gemination) -šáwwæɾ- or -šággæɾ-.

The most systematic retention of gg as geminated version of w is in verbal nouns. The -ðwæC- verbs just mentioned with PerfP -æwwæC- have a VbIN pattern ággaC (ággal, ággaḍ, ággar), never #áwwaC.

The verb for 'become red, brown' has PerfP šàggar- (and its participles), Imprt išwar, and LoImpfP -t-išwar-. Related nouns are á-šwar (or á-žwar) 'red one' and t-ə-šure 'redness' (perhaps <*t-ə-šəwre).

In nominal Sg/Pl alternations, I can cite a word for 'tail or mane hair' (also 'grey heron'): Sg æ-šaw or æ-šaww, Pl i-šagg-æn or i-šaww-æn. There are also some archaic w/gg alternations in the following terms for affines: a-ḍæggal 'father- or son-in-law', Pl i-ḍawl-an; a-léggəs 'brother-in-law', Pl i-ləws-an.

For historical discussion of this problem in Berber, see EPPB 42-4.

3.1.1.8 Alternation of ḍ and ṭṭ

Geminated /ḍḍ/ is sometimes devoiced to ṭṭ (phonetic [t:], resulting in alternations of ḍ with ṭṭ.

In verbal inflection, we observe the alternation between inflectable stems of type -vCCvC- and their nominal derivatives. Example: 'hold' has inflectable stems -əṭṭæf- (PerfP), -əṭṭæf- (ShImpfP), and -t-úṭṭæf- (LoImpfP), but VbIN úḍəf and Agentive ə-n-úḍəf. The nominal derivatives (VbIN, Agentive) are somewhat lexicalized, but the alternations do point to a correspondence between ungeminated ḍ and geminated ṭṭ. Taking /ḍ/ as underlying, we could argue that geminated /ḍḍ/ in the inflectable verb forms has been devoiced to ṭṭ.

In the case of 'hold', the division is between the inflectable verb stems as a class (with ṭṭ) and the associated nominals (with ḍ). However, when the simple/geminated alternation occurs within the set of inflectable verb stems, i.e. when the gemination is confined to the long imperfective, we get ḍḍ instead of ṭṭ. An example is 'graze', with PerfP -əḍḍæn- and LoImpfP -t-əḍḍán-.

Let us now consider cases where the inflectable verb stem has ungeminated ḍ and a nominal derivative has a geminated counterpart. In these cases, we get ḍḍ rather than ṭṭ. Thus -əḍḍæn- 'be missing', VbIN iḍḍun. Comparison of e.g. -t-úṭṭæf-, -t-əḍḍán-, and iḍḍun shows that both ṭṭ and ḍḍ can occur stem-medially. I conclude that the choice requires reference to morphology and does not constitute a pure phonological process.

The other relevant alternation involves stem-initial ḍ in verb classes where a stem-initial C is geminated in certain stems including the PerfP (but not the Imprt or the long imperfectives). An example is 'become angry', with PerfP -əḍḍukræ-t alongside LoImpfP -t-iḍḍkru-t. Note that the geminated form is ḍḍ rather than ṭṭ.

The data can be summarized in (23).

(23) Geminated Counterpart of ɖ

- ɖɖ a) inflectable verb stems have medial ɖ and ɖɖ.
 b) inflectable verb stems have initial ɖ and ɖɖ
 c) inflectable verb stems have medial ɖ, nominals have ɖɖ.
- ʈʈ d) inflectable verb stems have ʈʈ, nominals have ɖ

I infer from these data that the cases of ʈʈ alternating with ɖ are the odd man out. It is reasonable to think that devoicing of /ɖɖ/ to ʈʈ was productive at an earlier stage of the language, that the currently productive rule is that ɖ is geminated to ɖɖ, and that devoicing remains operative as a morphologically specialized process in alternations where ʈʈ is well-established. Assuming that the directionality of derivation is verb (input) to nominal (output), the cases of ʈʈ (verbs) corresponding to ɖ (nominals) have not been “updated” to conform to the currently productive rule because the nominals have only weak influence on the associated verbs. By contrast, where the verb has ɖ, the nominals have been updated. Likewise, any alternations of medial ɖ and *ʈʈ among the different inflectable stems of a verb have been leveled out by updating *ʈʈ to ɖɖ.

3.1.1.9 Loss of stem-final semivowel

There are numerous, but mostly rather lexicalized, alternations between final w or y and zero, suggesting that original stem-final semivowels have been lost in some forms. For some stems, this can be seen in **masculine/feminine alternations**, where the stem has a final semivowel before FeSg -t but not in the unsuffixed masculine, as in æ-jola ‘step-son’ versus t-æ-jòlay-t ‘step-daughter’, and ò-jæya ‘great-grandson’ t-a-jæyaw-t ‘great-granddaughter’. Another pattern where the unsuffixed masculine is missing a V in addition to the missing final semivowel is é-bæŋr ‘floodplain’, feminine (=diminutive) t-e-bæŋræw-t. Fuller lists of these types are given in §4.1.2.4.

Two noun stems whose Sg ends in oy are attested at least dialectally with ablaut plurals irregularly lacking the y (24).

(24) Ablaut Plural without Stem-Final y

	gloss	Sg	Pl
a.	‘carrion’	t-a-mæsrɔy-t [similarly in Niger Tamajak, LTF2 124]	t-ĩ-məsɾa
b.	‘(little) penis’	t-a-zæmboy-t	t-ĩ-zamba [Pl also t-i-zámboy]

There are some (sub-)dialectal variants such as *é-kew* and *é-ke* for 'root', and *áfrew* versus *áfærr* 'wing', where one variant shows final *w*. In *à-læššo* and variant *à-læššæw* 'black turban cloth', *æw* varies with *o*. Likewise *ággu* 'griot' (regional word) varies dialectally with *ággiw*.

Among verbs, note such pairings as *-ðlæh-*'resemble' and related noun *m-ìlhaw* 'resemblance', and the intraparadigmatic variation seen in PerfP *-æffo-* (dialectally *-æffew-*) and Imprt *ìfaw* for '(day) break'. For more detail on '(day) break' see §7.3.2.15.

The largest set of alternations of final zero with semivowel are **nominal plurals** that involve both a suffix (MaPl *-æn* or *-an*, FePl *-en*) and a stem change. One pattern typical of certain types of VbIN, especially Sg type *úCəC*, and some other nouns, is exemplified by *úðəf* 'holding', Pl *ùðfaw-æn* (see §4.1.2.10). Here one could argue that the *w* serves to separate the *ə* of the stem from the suffix-initial *V*. However, the productive device for avoiding a vowel cluster in this position is to use a postvocalic allomorph of the Pl suffix, e.g. MaPl *-tæn* instead of *-æn*. The addition of *w* just before a Pl suffix like MaPl *-æn* is often accompanied by other idiosyncratic stem changes, such as the extra *ə* in *ùðfaw-æn* (compare Sg *úðəf*), or the broader ablaut seem in e.g. *è-bæje* 'horse', Pl *ì-bəjw-an*. I therefore take the *w* in *ùðfaw-æn* (and *ì-bəjw-an*) to be part of the stem rather than part of the suffix or an epenthetic linker. As a result, I recognize more cases here of stem-final *w* confined to the plural.

There are many nouns that end in phonetic [i] or [u] in the unsuffixed masculine singular. [i] can represent phonemic /əy/ or /i/, and [u] can represent /əw/ or /u/. The following tests for distinguishing diphthongal from monophthongal representations are available: a) adding a 1Sg possessive suffix, which is *-in* after *C* but *-nin* after *V*; b) adding a *V*-initial suffix like MaPl suffix *-æn*, which is normally extended to *-tæn* after *V* but not after *C*; and c) if there is an unsuffixed ablaut plural, /i/ and /u/ should be replaced by *ə*, /əy/ by *əy*, and /əw/ by *əw*. As it happens, the data from these tests are often inconsistent, even for single speakers. Most often, singular nouns ending in [i] or [u] are treated as *V*-final when a **pronominal possessor** suffix is added, so we usually get postvocalic 1Sg allomorph *-nin*, though postconsonantal allomorph *-in* is occasionally attested. Some of these same nouns consistently form ablaut or suffixal **plurals** that presuppose final /əy/ or /əw/ in the singular. All the verbal nouns of the heavy verb stems ending in ...əy and ...əw are of this type, e.g. VbIN *ə-fləwfə́ləw* [əflufə'lu] from (PerfP) *-æfləwfə̀ləw-* 'flicker' (1Sg possessive *ə-fləwfə̀ləw-nin*, much less often *ə-fləwfə̀ləw-in*, but plural consistently *ə-fləwfə̀liw-æn*). There are also a number of simple nouns like *ə-bóri* 'stick' of this type, though for these nouns the singulars are more consistently treated as *V*-final (1Sg possessive regularly *ə-boři-nin*, but plural *i-bòrəy-æn*).

One way to analyse the differential effect of a pronominal possessor suffix and a Pl formation (ablaut or suffixal) is to argue that plurals take shape at an

early (perhaps lexical) cycle, while possessor suffixes are added at a later (perhaps postlexical) cycle.

3.1.1.10 Loss of nonfinal semivowel

Nonfinal stem-consonant *w* is lost, or alternates with homorganic vowel *u*, in certain forms of the adjectival word-families $\sqrt{\text{šwɾ}}$ ‘red, brown’, $\sqrt{\text{wɾɾ}}$ ‘yellow, light brown’, and $\sqrt{\text{wšɾ}}$ ‘big’. In (25) I show the PerfP and Imprt of the verbs (‘become X’), the associated noun (‘an X one’), and the abstractive (‘red/yellowness’).

(25) Presence/Absence of *w* in Certain Adjectival Stems

	PerfP	Imprt	noun	abstractive
a. ‘red’	šæggɾɾ	šwɾɾ	á-šwɾɾ	t-ə-šure
b. ‘yellow’	-æɾɾɾ-	šwɾɾ	á-wɾɾɾ	t-ə-rove (t-ə-rure)
c. ‘big’	wæššɾ	šwšɾ	—	t-ù-šære
		[Imprt also ùšɾ (A-grm)]		

‘Yellow’ lacks *w* in the PerfP. In Niger, this stem has dialectal forms based on $\sqrt{\text{rwɾ}}$ instead of $\sqrt{\text{wɾɾ}}$ (LTF 2 282), suggesting that metathesis has played a role.

The abstractives for ‘red’ and ‘yellow’ in (25) show *o* or *u* instead of *w*. Note also the Imprt variant ùšɾ for A-grm.

Nonfinal stem *y* is lost in the (Timbuktu-area) Pl òr-æn or òr-an ‘months’ for Sg íyor (or æyyor). The unreduced Pl àyyor-æn was recorded in A-grm. (Some dialects, e.g. those around Kidal, use an unrelated stem for ‘month’.) A stem meaning ‘grass’ is variably t-é-yšše (Pl t-i-yðšiw-en) or t-éšše (Pl t-àššiw-en). The stem t-à-yette ‘mind, intelligence’ has a variant Pl t-ì-tw-en (alongside the more regular t-i-yèttɔ-w-en). The *i* in t-ì-tw-en might be taken as the usual Pl prefix -i-, but it could alternatively be taken as a vocalized version of the lexical *y*, or as the contraction of /iy/.

The dialectal alternation ælɾáfəyæt and ælɾáfet ‘peace’ (<Arabic) is a little different since it involves contraction rather than just monophthongization.

There are a handful of alternations like ællæwɾ-æt and ællóɾ-æt ‘language’ (<Arabic), involving æw varying with *o*. The stems are loans or regional words. It is not immediately clear whether the variants reflect multiple borrowing, or whether the monophthongal variants have evolved out of the diphthongal ones.

3.1.2 Vowels

3.1.2.1 Full and short vowels

The vowel phonemes are the short V's in (26) and the full V's in (27).

(26) Short Vowels

high:		ə
low:		æ

(27) Full Vowels

high:	u	i
mid-height:	o	e
low:	ɑ	

The **short V's** do not occur word-finally. All seven V's occur in closed syllables, in nonfinal open syllables (though ə is syncopated in some contexts), and word-initially before a C. Some neutralizations occur before BLC's (see §3.1.1.2, below).

All of these V's occur as distinct phonemes word-initially and word-medially. All may occur in either open or closed syllables, though under some conditions medial interconsonantal ə is subject to syncope. Word-finally, only full V's occur. The high (H) and low (L) V's constitute sets in ablaut patterning; note in particular that ə patterns with {u i} while æ patterns with ɑ. The mid-height V's are largely outside of the H/L system, but behave like low V's in the environment for Short-V Harmony.

The difference between short and full V's is entirely unrelated to accent. The Default Accentuation rule is based on syllable counts, regardless of how "heavy" the syllable is.

The only phonemic opposition expressed primarily by length is æ (=short a) versus ɑ (=full or long a). Duration is not the only cue, however; the phoneme æ varies phonetically from (short) [æ] to (short) [ɑ] depending on consonantal environment, while the phoneme ɑ is realized as [ɑ:] with little variation in quality. A pair illustrating æ versus ɑ is æ-kala 'rope for pulling camel' versus à-kæla 'moist flesh (of melon)'.

Since the sets of short and full V's are not parallel, it is not really necessary to use macrons for the full V's, e.g. ē and ā. Such transcriptions, however, are reasonable structurally.

I use the symbol "æ" for short a, and "ɑ" for full (long) a. For Niger Tamajak, LTF2 used "ǎ" and "a," respectively. For Mali, DN86 uses "ǎ" and "ɑ". My choice is designed to make the two symbols more clearly distinct. Furthermore, by avoiding the micron (i.e. breve diacritic) in the symbol for

short a, I am able to add accent markings (ǣ, æ̇, etc.), which are generally not used by the other authors.

3.1.2.2 Vowels before backing and lowering consonants (BLC's)

The consonants {r q ʀ x ʎ ħ}, all pharyngealized alveolars {d t l ʒ ʒ}, and to some extent h, hereafter “**backing and lowering consonants**” (abbreviation: **BLC's**), have the effect of lowering preceding high full V's and of backing and lowering short V's. In T-ka, this is systematic and results in surface mergers of vocalic phonemes, provided that the BLC is syllable-final. When the BLC is not syllable-final, there is still a notable backing or lowering effect, but complete phonemic merger does not always occur (in such cases, my field transcriptions are variable).

The mergers, in phonemic terms, are those in (28).

(28) Backing/Lowering of V's

short V:	ə > æ
full V's:	i > e u > o

That is, schwa is backed to merge with the æ (i.e. short a) phoneme, while high full V's are lowered to mid-height.

In addition to inducing these vocalic mergers, BLC's also affect the phonetic realization of the resulting {æ e o}. The merged æ (=short a) is pronounced [a]. This applies both to true /æ/, and to underlying /ə/ that has lowered to merge with /æ/. Similarly, before a BLC, e (either true phonemic /e/, or lowered /i/) is realized as [ɛ], while o (either true /o/ or lowered /u/) is realized as [ɔ].

For the short V's, compare e.g. PerfP -əʎfɪa- 'be split' with PerfP -əʎɪma- [-a'ʎɪma-] 'apply henna', using verbs of the same class. For i > e, compare nominal MaPl forms i-kləstif-æn [ik...] 'chatterings' and ɪ-ʀbab [ɛ'ʀ...] 'holes in tree' (both of which contain MaPl prefix i-). For u > o, compare the infinitives (of the same verb class) újəš [u'dʒəʃ] 'entering' and úvəl [ɔ'vəl] 'waiting'.

Backing/Lowering also occurs before certain **PQ clusters** where Q is a backing and lowering C while P is a C (usually a liquid or nasal) that **passively transmits** the effect to a preceding V. The attested clusters of this type are /lɖ/, /lʒ/, /nɖ/, /mɖ/, /ŋʀ/, /mʒ/, /nʒ/, and less systematically /bɖ/. Examples: -əʎdæš- [-a'ʎdæš-] 'become tired', -əʎʒa- [-a'ʎʒa] 'shave', əndəw [a'ndu] 'throw!', t-əmɸe [te'mɸe] 'taste' and variant t-əmɖe [te'mɖe] 'taste', /ənrɑ-æʀ-ʌt/ > əŋʀe-q-ʌq [a'ŋʀeq:] 'I killed him', -t-ɪm-z-əʒzɪj- [-te'mz...] 'pull each other', ənzəj [a'nzəj] 'blink!', and for some speakers i-bɖɑ [e'bɖɑ] 'he was separated'. I did not observe this treatment with ʀ (q, ʎ) after l or m, e.g. əlqəbil-æt 'tribe'.

The short-V merger is potentially momentous, given the importance of the ə versus æ opposition in verbal ablaut. In verbs of the shape -vCCvC-, for example, the PerfP stem is -əCCæC- while the ShImpf stem is -əCCəC-, and if the final C is a BLC this aspectual distinction is phonetically neutralized. The stem-initial ə of this and many other verb types is also subject to backing, if the first C of the stem is a BLC. With a stem-initial short V, however, we can test for underlying /ə/ versus /æ/ status by adding 3MaPl subject prefix i-, which combines with stem-initial /ə/ as i- (surfacing as [e] after Backing/Lowering) but with stem-initial /æ/ as Ø-æ. In many other cases there is no such test, but particularly in verbal morphology it is usually possible to choose between underlying /ə/ versus /æ/ by comparison to forms of the same pattern with verbs with plain C's.

In my normal transcription, I attempt to **undo the effects** of Backing/Lowering, restoring original ə, i, and u where possible. Most Tamashek stems belong to recognizable patterns with characteristic vocalic patterns (often reflecting ablaut melodies). This is true of all verb forms (except the perfective stems of some verbs of adjectival quality). It is also true of ablaut and mixed suffixal-ablaut nominal plurals, and of some singular nouns. However, there are some nouns, prepositions, adverbs, and perfective verbs of adjectival quality (these perfectives are noun-like in form), whose underlying vocalism cannot be reliably determined on the basis of such class analogies. If such stems have BLC's, there may be no basis for deciding between phonemic /i/ and /e/, /u/ and /o/, or /ə/ and /æ/. In such indeterminate cases, I transcribe the vowel as it is heard phonetically, i.e. as æ, e, and o. Examples: preposition [ɾɔɾ] 'chez' transcribed ɾòɾ (not ɾùɾ), adjectival verb PerfP [ka'ɾ:oz̩] 'it became narrow' (where both r and z̩ are BLZ's) transcribed kàɾroz̩, though the transcriptions ɾùɾ and kàrruz̩ are equally compatible with the phonetic output and are not ruled out by any morphological pattern.

Because of these indeterminacies, my transcriptions of vowels before BLC's should be used with caution in reconstructions of proto-vocalism. The Tamajak dialects of Niger seem to have the most conservative vocalism, since BLC's do not seem to produce phonemic mergers in those varieties. I have not done enough careful work on eastern Tamashek (A-grm, Gao, Kidal) to be completely sure of the situation there. There is certainly some merging of vowels before BLC's but the mergers are perhaps less rigorous than in T-ka.

3.1.2.3 Deletable final vowels (nouns, suffixes, clitics)

Even without comparison to other Tuareg and Berber varieties, there are indications in the morphology that original stem- or word-final vowels have been lost. In some cases, a good case can be made for a lexical representation with some kind of final V that is subject to deletion in word-final position.

First, some suffixes like FeSg -t behave, for purposes of Default Accentuation, as though they ended in a vowel: α-bàɛmbæɾα 'Bambara man'

but feminine t-a-bæmbæra-t-t ‘Bambara woman’ (or ‘Bambara language’). The Default Accentuation rule normally depends only on the vowels, producing an antepenultimate accent on multisyllabic words lacking a lexical accent on the final or the penult. The addition of suffixes consisting entirely of C’s should not change the accent, but the ‘Bambara’ examples above show that FeSg -t does force the shift of a default antepenultimate accent onto the penult. For fuller discussion of this and other suffixes and clitics with similar accentual effects, see §3.3.1.1.

There are a few noun stems that appear to preserve an original final vowel before FeSg -t (actually -t-t with additional inner Fe suffix), but not in the unsuffixed masculine singular. For ‘gazelle’ we have male e-dæm versus female t-e-dæmi-t-t. For ‘noble (freeborn)’ we have male e-læll and female t-e-lælli-t-t, cf. verb -ðlullæ-t ‘be noble’ and abstractive ðlløllu ‘nobility, freeborn state’. See §4.1.2.4 for fuller data.

A number of V-final noun stems have a MaPl suffix -an with full vowel, instead of the usual MaPl suffix -æn. In some cases the full V is due to ablaut (/ -æn/ plus $\bar{\chi}$), but in other cases it is due to contraction with a stem-final V (/V-æn/ → -an, see (39)). Examples of the contraction type are ð-kæsa ‘fresh vegetation’, Pl i-kæs-an; and e-kæši ‘speckled one’, Pl i-kæš-an. The accent shift in the first example, from prefix (in the singular) to the surface penult (in the plural), reinforces the view that these cases of surface -an suffix result (at least historically) from contraction of a stem-final V with /-æn/. If Default Accentuation applies to /i-kæsa-æn/ prior to VV-contraction (39), the accent is on the underlying antepenult as expected, though after contraction this ends up as the surface penult. See §4.1.2.13 for more data and analysis.

Another set of nouns, including one important verbal noun pattern, have an apparent Pl ending -awæn that I interpret as a stem-final α (missing from the singular) plus an epenthetic stem-extension w- plus MaPl suffix -æn. Example: éff ‘shelter’, Pl èffaw-æn.

A somewhat more complex case of stem-final V alternating with zero is discussed in the next section.

3.1.2.4 Stem-Final *ɪ*/A-Deletion (in verbs)

A number of verbs have stem-alternations involving full V’s, short V’s, and zero. These are the only unaugmented V-final verbs. For example, ‘vomit’ has a PerfP -ðbsa-, with 3FePl subject ðbsæ-næt ‘they-Fe vomited’; I take its basic lexical form to be -vbsu-. The ShImpf is -æbs (e.g. Sg Imprt æbs ‘vomit!’) without the final V. The ShImpf combines with 3FePl subject suffix -næt as ðbsæ-næt, with a stem-final α that also induces an assimilatory (i.e. harmonic) change of stem-initial /æ/ to α . It also combines with 3MaPl subject suffix -æn to give ðbsæ-n. I take the basic (lexical) form of the ShImpf to be /-æbsɪ-/, ending in an underspecified high V “ɪ” that is deleted without trace word-finally (i.e. where no subject suffix appears). The /ɪ/ contracts with the /æ/ of a

following V-initial subject suffix to form ə, in effect transferring its [+high] feature to the surviving short V. The /ɪ/ surfaces as ə before C-initial subject suffixes like 3FeSg -næt.

A good case can be made for a parallel underspecified and deletable low V that I write /A/. This occurs only in long imperfectives of a subset (namely, bisyllabic -vCCv-) of the same V-final verbs that have /ɪ/ in the short imperfective (preceding paragraph). The LoImpfP in question appears as -PáQQ word-finally (i.e., with no subject suffix), as in -báss ‘vomit’. However, when a C-initial subject suffix is added, we get forms like 3FePl bás-sæ-næt with a stem-final low V, and this is the main evidence for a representation of the type /-bássA-/. When a subject suffix beginning in æ is added, we get forms like 3MaPl bás-sæ-n, which could be generated with or without a stem-final /A/, but which I take (by parallelism to the short imperfectives) as due to contraction, i.e. /bássA-æn/ with the /A/ transferring its [-high] feature to the surviving contracted V. In sum, the evidence for /A/ is weaker than that for /ɪ/, and /A/ occurs in the paradigms of a subset of the stems that have /ɪ/.

For more on these unaugmented V-final verbs see §7.3.1.3.

Both final /ɪ/ and /A/ in these verbs correspond to “u” in the corresponding forms of Niger Tamajak (LTF2 424, class I.A.7-11, e.g. Imprt “æ̀knu” and LoImpfP “ikannu” for ‘do well’). However, Foucauld’s data do not have a final V in such forms as “iläss” for ‘he dresses’ (DTF 4.2020) and “ed iken” for ‘he will do well’ (DTF 2.821).

Synchronically in Tamashek, one might equate stem-final /ɪ/ with ə, and /A/ with æ, noting that {ə æ} do not otherwise occur as stem-final segments. However, these equations are not transparent, and the fact that the verbs in question have stem-final full V’s in the perfective and long imperfective stems makes it difficult to justify short-vowel representations for /ɪ/ and /A/. No other stems or words in the language end with short V’s.

If we were to identify /ɪ/ and /A/ with full V’s (the only V’s that otherwise occur in stem-final position), /ɪ/ should probably be identified with i rather than with u. This is because there are some verb classes with a non-deleting final u, either in the imperfective forms only or in both perfective and imperfective stems. For example, the verb ‘cough’ appears as -əs-u- in both PerfP and ShImpf stems (§7.3.1.4). This u does not delete word-finally, and contracts with /æ/ at the beginning of a subject suffix to form u rather than ə, as in əsu-n ‘they-Ma coughed’ from /əs-u-æn/. This true stem-final u therefore has no phonological similarity to /ɪ/. However, there is only one verb with true i in the ShImprt stem, namely -ĩwi- ‘be born’. Since this verb has a /-iCi-/ shape not found with any of the verbs that I analyse as having final /ɪ/ in the ShImpf (and /A/ in the LoImpfP), one could imagine identifying /ɪ/ with i and trying to connect the phonological differences in some way with stem shape. However, again this is a somewhat convoluted argument, and I prefer to think of /ɪ/ and /A/ as abstract segments with vowel-like properties.

The deletion rule may be formulated as (29).

(29) **Stem-Final *ɪ*/A-Deletion (Verbs)**

Stem-final underspecified vowels /*ɪ*/ (high) and /A/ (low) are deleted when not followed by a nonzero subject suffix

The nonzero suffixes expressing imperative subject (MaPl -*æt*, FePl -*mæt*) do not count as “subject suffixes” for this purpose and do not block the deletion (§7.2.3.2).

When deletion of /*ɪ*/ produces a word-final CC cluster, depending on which C’s are involved it may be necessary to resyllabify by inserting a schwa between the two. In T-ka this also entails an accent shift onto the schwa. See §3.2.4 and §3.3.2 for details.

3.1.2.5 *Phonological status of final [u] and [i]*

Because word-final (or preconsonantal) *u* and *əw* (phonetic [u]) are indistinguishable, as are *i* and *əy* (phonetic [i]), clues from suffixation and ablaut may be relevant to determining the correct phonological representation.

For nouns, a true final *u* or *i* will become *ɑ* in a nonsuffixal ablaut plural, since Pl ablaut replaces the last V of the stem by *ɑ*. By the same token, a stem-final *əw* will become *ɑw* in an ablauted Pl, and *əy* will become *ɑy*.

We observe *u* to *ɑ* in *æ-karfu* ‘rope’ (<Songhay), Pl *ĩ-kurfɑ*, and *t-ɑ-də̀rnu-t-t* ‘millet beverage’, Pl *t-ĩ-də̀rɲɑ*. I know of no example where Sg stem-final *u* corresponds to Pl *ɑw*, though the irregular compound initial *mə̀ssi* ‘owner of’, Pl *mə̀ssɑw-* ‘owners of’ (§4.1.2.26), is suggestive. Examples where final /*ɪ*/ is replaced by Pl *ɑ* include: *t-ɑ-tbə̀qqi-t-t* ‘dot’, Pl *t-ĩ-tbə̀qqɑ*, and *t-ɑ-ɣ̀imi-t-t* ‘sitting’ (VblN, $\sqrt{\text{ɣym}}$), Pl *t-ĩ-ɣ̀ima* (A-grm). Examples where the Pl has *ɑy* include *t-ɑ-s-ə̀ss-ə̀wi-t-t* ‘package’ (A-grm), Pl *t-i-s-ə̀ss-iway*, and *t-ɑ-s-ə̀nji-t-t* ‘channel’, Pl *t-i-s-ə̀njay*. These Pl forms justify e.g. /*tbə̀qqi-*/ for ‘dot’ with final *i*, and /*s-ə̀ss-ɑwə̀y-*/ for ‘package’ with final *əy*, as the representations to which Pl ablaut applies. Further examples of ablaut plurals can be gleaned from the lists in the sections beginning §4.1.2.15. Many of the relevant nouns are derivatives of verbs, where the difference between final diphthong (*vy* or *vw*) and final vowel (*v*) is clearly expressed in verbal inflection. Thus *t-ɑ-s-ə̀ss-ə̀wi-t-t* ‘package’ is a derivative of the Causative of *-uwvy-* ‘bring’ (PerfP *-ə̀wwə̀y-*).

While the plural-ablaut test suggests singular representations for ‘package’ and ‘channel’ (preceding paragraph) ending in /...*əy-*/, the Sg forms end in *-t-t*, including inner Fe suffix *-t-*. This suffixal pattern is otherwise confined to V-final stems, so the different pieces of evidence conflict. One might conclude from this that ablaut applies at an early (lexical) stage, while FeSg suffixation applies to later (post-lexical) representations.

Suffixal plurals (without ablaut) also provide evidence for the status of final [u] and [i] in singular noun stems. If the noun ends in a true V, we

frequently get *-tæn*, as in Sg *à-dwənni* ‘talk (noun)’, Pl *i-dwənni-tæn*. If the noun ends in /əy/ or /əw/, we get just *-æn* without the (intervocalic epenthetic) *-t-*, and the semivowel is audible: ...əy-æn, ...əw-æn. An example is *æ-bóri* ‘stick’, Pl *i-bòrəy-æn*. The two stems can therefore be assigned lexical representations /dwənni/ and /bòrəy/, respectively. However, the Sg type *æ-bóri* behaves like a V-final (not C-final) stem for purposes of assigning allomorphs of possessive pronominal suffixes. Thus *æ-borì-nin* ‘my stick’, with postvocalic allomorph; we would expect #*æ-borəy-in* with postconsonantal suffix allomorph if the stem were treated as ending in a semivowel. So again, there are data pointing in opposite directions, perhaps lending themselves to a distinction between lexical and postlexical rules.

The type *æ-borì-nin* seems to be quite regular for nouns of this type. For common nouns, the only evidence available to the native speaker that [u] is from /əw/ or that [i] is from /iy/ is the form of the plural, and evidently this is not powerful enough to influence the suffixal allomorphy of the singular. However, verbal nouns are somewhat different, in that they are closely associated in form with inflected stems. Thus the VblN ‘expressing thanks’, phonetic [ɑ-dʒə'di], can be safely assigned a representation *ɑ-júḍəy* rather than #*ɑ-júḍi* since the corresponding verb (PerfP *-jòḍəy-*) has an unmistakable final diphthong. If this isn't enough, verbal nouns ending in ...CəC have a variant with full *ɑ* instead of schwa, in this case *ɑ-júḍay* alongside *ɑ-júḍəy*. The representation *ɑ-júḍəy* is confirmed more directly by its own Pl *i-jùḍəy-æn* (varying with *i-jùḍay-æn*). However, here there is some fluctuation in the data, and plurals of the type *i-jùḍi-tæn* are attested (rarely) along with those of the types *i-jùḍay-æn* and *i-jùḍəy-æn*.

The situation may be summarized as follows. For common nouns, the plural (ablaut or suffixal) may require a stem representation ending in a diphthong /əy/ or /əw/, but even in this case the Sg may behave as V-final for purposes of its own suffixal allomorphy (which arguably involves post-lexical processes). With verbal nouns, where the evidence for a final diphthong is much more visible to native speakers, the Sg VblN is often (but unreliably) treated as diphthongal.

3.1.2.6 Phonological status of medial [u] and [i] before C

Most cases of medial [u] and [i] are unproblematically assigned to u and i phonemes. However, there are some cases where I transcribe them as diphthongs, əy or əw. The stems in question have ablaut alternations of the type əw versus [u], or əy versus [i]. For example, the verb ‘dust off’ has a ShImpf stem *kəykəy* [kæ'jkæj], and a PerfP stem [ə'k:ikæj] that I transcribe *-əkkəykəy-*. Likewise ShImpf *ləwləw* ‘tower (above)’ and PerfP [ə'l:ulu], the latter transcribed *-əlləwləw-*.

For the irregular verb ‘sit’ ($\sqrt{\text{rym}}$ or $\sqrt{\text{ym}}$), the most common forms are of the perfective stem family, e.g. PerfP [-æq:ima-] (for T-ka, the [æ] is a backed

realization of /ə/, harmonic to i, before a BLC, but for other dialects it is a true initial ə). The ShImpf is dialectally variable, e.g. Sg Imprt ɾəm (qəm) versus ɾəyəm. This variation suggests competing analyses of the perfectives, as either -əqqima- or -əqqəyma- (plus variants with initial ə). The LoImpfP is usually -t-àɾəyma- but -t-àɾama- is attested dialectally. See §7.3.2.9 for more on ‘sit’, and on the other stem of the same type (√jyh or √jh ‘witness’).

3.1.2.7 Medial ...Cy/...Cəy/...Ciy, ...Cw/...Cəw/...Cuw before V

A noun meaning ‘preaching’ is pronounced [təlu'lija]. Just from its pronunciation, it is difficult to determine whether the correct phonemic transcription of the stem is -lúlya, -lùləya, or -lùliya. This uncertainty is reflected in the accents of variant suffixal plurals.

The main T-ka informant gave the Pl as phonetic [tilu'l(i)jəwən]. Since the accent is never to the left of the antepenult, there is clearly no structurally recognized V between the second l and the y of the Sg, which I therefore represent as t-ə-lúlya. However, the same speaker also gave a variant Pl [tiluli'jəwən], where the V between l and y ([j]) is accented and so is obviously structurally recognized. This variant Pl points to a Sg t-ə-lùləya.

Another case of variation, this time dialectal, is the Arabic loanword əlxáfəyət or əlxáfəyət ‘peace’ (among other variants). The difference is best seen in the Pl, əlxáfəyət-æn (T-md) or əlxáfəyət-en (A-grm).

The same uncertainty can apply to ...Cw/...Cəw/...Cuw before a V. Thus ‘kinship’, pronounced [tət:i'r(u)wə], arguably phonemic t-əttirwa or t-əttirəwa.

In many cases one can decide on a “correct” transcription by recognizing the morphological pattern involved, and transcribing on the model of the clearer instances of that pattern. This is always the case in verbs, which fall into fixed syllabic types, each of which has its own paradigm. For example, PerfP -əjyæš- ‘vaccinate’ and -əjwæš- ‘trim’, regardless of any low-level phonetic variation, clearly belong to the -vPQvC- verb type, as confirmed by their various inflectable stems and derivatives. In the case of ‘kinship’ (preceding paragraph), the transcription t-əttirəwa seems best, by comparison with similar abstractives like t-əwwiməða ‘humanity’ (§8.6.5). As a result, the only real uncertainties occur in a modest number of nouns like [təlu'lija] ‘preaching’ that do not fit transparently into a stem class.

3.2 Local assimilations and syllabification rules

3.2.1 CC-cluster rules

3.2.1.1 Stem-final C plus stop-initial suffix or clitic

Within words, i.e. at the boundary between a stem and a suffix (or clitic), or between a suffix and a following suffix or clitic, certain **C C-cluster assimilations** apply. Most of the C-initial suffixes/clitics begin in t and k, notably FeSg -t, 3MaPl object clitic -\t, and some other pronominal clitics beginning in t or k. The assimilations, including “vacuous” cases where the output is identical to the input, are listed in (30).

(30) CC-cluster Assimilations (Suffix Boundary)

C plus t		C plus k			
1.. regressive voicing assimilation only					
a. assimilation is vacuous					
pt	>	pt	pk	>	pk
ft	>	ft	fk	>	fk
tt	>	tt	tk	>	tk
	—		ɬk	>	ɬk
št	>	št	šk	>	šk
st	>	st	sk	>	sk
ħt	>	ħt	ħk	>	ħk
	—		kk	>	kk
xt	>	xt	xk	>	xk
b. produces geminate (j treated as g)					
dt	>	tt		—	
	—		jk	>	kk
	—		gk	>	kk
c. produces nongeminate cluster					
bt	>	pt	bk	>	pk
	—		dk	>	tk
	—		ɖk	>	ɬk
zt	>	st	zk	>	sk
žt	>	št	žk	>	šk
ʎt	>	ħk	ʎk	>	ħk

2. regressive voicing assimilation plus other assimilations (producing geminates)

d. progressive pharyngealization assimilation

dt	>	tt	—
tt	>	tt	—

e. progressive point-of-articulation assimilation (j treated as g)

jt	>	kk	—
kt	>	kk	—
gt	>	kk	—

f. regressive fricative-stop, progressive position assimilation

ɣt	>	qɣ	ɣk	>	qq
----	---	----	----	---	----

All of the clusters are consistent with **regressive voicing assimilation**. In (30.a-c) there is no other change. In (30.a) the assimilation is vacuous since the two C's already have the same voicing value. In (30.b) the assimilation produces a geminate, while in (30.c) we end up with a nongeminate cluster.

The remaining cases in (30.d-f) are consistent with regressive voicing assimilation, but also involve other changes, always leading to geminate clusters. All cases except one involve t as second C. In (30.d), in addition to regressive voicing assimilation we have **progressive pharyngealization assimilation**. In (30.e), treating j as g, we have **progressive point-of-articulation assimilation**, whereby the velar first C imposes velarity on the following t. In (30.f), we see the same progressive point-of-articulation assimilation starting with ɣ, which also assimilates (regressively) stop articulation from the following t or k.

The changes in (30.a-d) reflect surface **phonetic constraints** and are therefore consistent with the set of allowed and disallowed clusters even within stems. However, the progressive point of articulation assimilations do not apply stem-internally and are therefore morphologically specialized. In particular, the clusters kt and ɣt can occur stem-internally: (PerfP) -əktə- 'remember' and -əɣtə- 'be planted'.

Because of the assimilations in (30), it may be impossible to identify the final C of a stem, based only on the phonetic transcription of a single word containing suffixes or clitics. In particular, surface kk at the boundary could reflect input kk, jk, gk, jt, kt, or gt. On the other hand, qq in this position could reflect ɣt or ɣk, so the stem-final C is clearly identifiable as ɣ, but the suffix- or clitic-initial C could be either alveolar or velar.

The "C plus t" assimilations in column 1 of (30) apply to C-final noun stems combined with Fe[mine] suffix -t (§4.1.2.3), and to C-final inflected verbs followed by a 3rd person object clitic (§10.3.1): 3MaSg -t(t), 3FeSg -\tæt, 3MaPl -\tæn, 3FePl -\tænæt. Examples of the more interesting assimilations are in (31). The "roots" show the normal consonant sequence for

the respective word-families (for feminine nouns, these are seen as such in the plurals).

(31) Assimilations with t (FeSg -t, 3rd Person Object Clitics)

word form	gloss	“root”
a. FeSg -t		
t-a-bælbɔt-t	‘grain sack’	√blbɔ
t-ë-šek-k	‘chase’	√sj (or √šg)
t-æ-mäšæq-q	‘Tamashek woman’	√mšr
t-à-wdæk-k	‘settling down’	√dk
b. 3FeSg object clitic -\tæt		
ĩ-ddæq-\qæt	‘he drove her away’	√dɾ
s-əbdæk-\kæt	‘make it-Fe wet!’	√bdj

For more feminine nouns see §4.1.2.3.

The “C plus k” assimilations in column 2 of (30) apply to combinations involving a C-final stem or word followed by a 2nd person object clitic (§10.3.1): 2MaSg -\kæy, 2FeSg -\kæm, 2MaPl -\kæwæn, 2FePl -\kæmæt. Examples of the more interesting assimilations are in (32).

(32) Assimilations with k (2nd Person Object Clitics)

word form	gloss	“root”
2MaSg object clitic -\kæy		
ĩ-ddæq-\qæy	‘he drove you-MaSg away’	√dɾ
i-ss-əbdæk-\kæy	‘he made you-MaSg wet’	√bdj

No assimilation occurs when the first C is a sonorant {y w r l m n}, except for positional assimilation of n, e.g. /nk/ > [ŋk] (subphonemic shift).

Except for sonorants, the output value of the [±voiced] feature is determined by the second rather than first C, so {d ɖ j g b ʒ z ʕ ɾ} in (30) lose their voicing before t or k.

My informant for R (Gourma zone) had two multisyllabic nouns, phonetically similar to each other, with apparent /jt/ becoming tt instead of kk (33).

(33) Rharous Cases of /jt/ → tt

	gloss	Sg	Pl
a.	'wild onion'	t-a-mzəl̀l̀l̀l̀t-t	t-i-mzəl̀l̀l̀j-en
b.	'ankle'	t-a-mzə̀zzət-t	t-i-mzə̀zzaj

However, these apparently irregular *t/j* alternations may involve dialect mixing. Both 'wild onion' and 'ankle' have dialectal variants with final consonants (in the Pl) other than *j*. 'Wild onion' is attested with stem-final *j*, *k*, and *y*, and with zero *C* in this position.

3.2.1.2 Nasal assimilation and dissimilation

In most dialects, /*n*/ appears as [m] before a labial stop {*b p*}, and as velar or uvular [ŋ] before stops {*g k ɣ*}. In the cluster *ŋɣ*, the *ɣ* is pronounced as uvular stop or affricate (§3.1.1.3). Observable alternations occur primarily in verbs whose first *C* is a nasal. Two examples: 1) PerfP -əmbær- '(herd) be taken to pasture at night' and variant VblN t-ä-mbær-t versus LoImpfP -nábbær- and VblN a-nǽbar ; 2) PerfP -əŋɣa- 'kill' versus LoImpfP -náqq- and VblN t-è-næ̀ɣe. The most obvious analysis for these cases is that the /*n*/ is basic but undergoes point-of-articulation assimilation to an immediately following *C*.

One could alternatively argue that an initial /*m*/ or /*ŋ*/ shifts to *n* stem-initially. This is dubious for /*ŋ*/ since the velar nasal is a marginal phoneme in prevocalic position (§3.1.1.2). However, this analysis is fairly credible for /*m*/, since /*m*/ in verb prefixes (there is no /*m*/ in nominal prefixes) shifts to *n* when the stem contains a labial. The prefixes in question are Mediopassive (§8.3) and Agentive (§8.8). By extending this dissimilation to e.g. -nábbær- (preceding paragraph), one could actually argue for a basic lexical representation with /*m*/ instead of /*n*/.

On the whole, I prefer the nasal-assimilation analysis, since it makes more sense for the alternations of *n* with *ŋ*.

(34) Nasal Assimilation

n adopts the point of articulation features of an immediately following noncoronal (i.e. labial, velar, or uvular) stop.

For T-ka and most other dialects, it makes no difference whether the /*n*/ is the first member of an underlying cluster, or comes into contact with the following obstruent due to Stem-Initial Syncope. However, the K-d informant conspicuously failed to apply Nasal Assimilation in clusters resulting from Stem-Initial Syncope, i.e., in cases where the initial *n* is separated from the

following obstruent by a short V in the imperative. This is the case with superheavy verb stems that have basic (i.e. Imprt) shapes beginning CvCV... (v = short vowel subject to Stem-Initial Syncope, V = any long or short vowel). An example is '(door shutters) be brought together', Imprt *nəkəbbə-t*, hence basic lexical form *-nvkvbbu-* (+ *-t*). The LoImpf appears in T-ka (and T-md) as *-t-ĩnkəbbu-t* with phonetic [ŋk], showing Stem-Initial Syncope followed by Nasal Assimilation and Default Accentuation. In K-d we get *-t-ĩnkəbbu-t*, showing Stem-Initial Syncope followed by Default Accentuation but no Nasal Assimilation. The K-d informant occasionally had a faint short vowel, or at least a separate consonantal release, between the two C's, suggesting that Stem-Initial Syncope here is very low-level indeed. In A-grm we get *-t-inəkəbbi-t*, where Stem-Initial Syncope fails to apply, Default Accentuation targets the unsyncopeated schwa, and of course there is no opportunity for Nasal Assimilation to apply.

In all dialects, Nasal Assimilation does apply to the onsets of light verb stems, e.g. PerfP *-əmbær-* 'be taken to pasture at night' and Imprt *əmbær*, compare LoImpfP *-nábber-* and VblN *ɑ-nǽbar* (dialectally also *t-à-nəbre* and *t-à-nəbra*).

One could infer from these data that Stem-Initial Syncope in the onset of superheavy stems like *-nvkvbbu-* (+ *-t*) is a recent dialectal development.

Mediopassive prefix *-m-* on verbs, and Agent prefix *-m-* deriving nouns from verbs, are replaced by **dissimilatory** allomorph *-n-* when the stem contains a labial consonant {b f m}. It does not matter whether there is an intervening n or other coronal. Thus agentive *ɑ-n-ánam* 'one who is fond' (verb *-vnvm-* 'be fond'), and mediopassive *-ənn-əbða-* 'be dislocated'. The regular labial prefix *-m-* is observed in agentive *æ-m-ájrəd* 'one who can disappear' and mediopassive *-əm-erə-* 'be opened' (PerfP). For more details, examples, and exceptions, see §8.3 (mediopassive) and §8.8 (agentive). Similarly, the Reciprocal prefix, normally *-nvm-*, is replaced by *-n-* (§8.4), and denominal derivational prefix *-mvs-* is replaced by *-nvs-* (§8.10) when the stem contains a labial consonant.

3.2.1.3 /d/ → ʈ before voiceless obstruent

ɖ is devoiced to ʈ before a voiceless obstruent (stop, fricative, or sibilant, but not h). Thus *-əʈfæs-* '(udder) be full', Imprt *əʈfəs*, etc., but LoImpfP *-ɖáfæs-* bringing out the lexical ɖ. Likewise, *-əʈfa-* 'be poured', Imprt *əʈf*, but LoImpfP *-ɖáf-* and related noun *t-è-ɖæffe* 'bank (of pond)'. Contrast *-òðha-* 'fold (tent)'.¹

ɖ and ʈ may once have been allophones of a single phoneme (see §3.1.1.4, §3.1.1.8) but they are now at least partially separate.

In the case of the verb 'laugh', the C sequence is either $\sqrt{tʂ}$ (in the unbroken cluster *tʂ*) or $\sqrt{ɖz}$ (when the two are separated by a V), thus PerfP *-əʈʂa-* but LoImpfP *-ɖáz-*. Since the cluster *tʂ* is entirely voiceless, there is no

reasonable way to derive it by assimilation from /d̥z/, which would be perfectly pronounceable without change. Moreover, in the causative, where only the cluster ʃs occurs in the stem proper, the Causative prefix allomorph is -s- (or -ʃ-) rather than -z- (e.g. PerfP -əss-əʃsə-), though -z- would be expected if the lexical representation of the core stem contained /z/.

3.2.1.4 *zd → zz, *zɖ → zz

Historically, there are indications of reductions of *zd to zz and of *zɖ to zz. Perhaps in some cases the etymon had *t instead of *d. Compare (Imprt) əzzəy ‘get to know’ with Niger Tamajak “əzdəy” (LTF2 367). This verb has now merged formally, in Malian Tamashek, with (Imprt) əzzəy ‘get well’ (Niger Tamajak “əzzəy”); cf. MGT 7.93. Likewise, compare (Imprt) əzzəf ‘be black’ (Imprt) with e.g. abstractive nominal t-æssæʃtæf-t ‘dark color; blackness’, and with Niger Tamajak forms based on consonant sequences √stf and √zdf (LTF2 384). In these cases, we get a transfer from the nongeminate type -vPQvC- to the geminate -vPPvC- type, which has morphological consequences (different shapes for long imperfectives, and for the VbIN).

A case involving incomplete paradigmatic reassignment is (Imprt) əzzə ‘weave’, which corresponds to Niger Tamajak “əzɖu” (LTF2 384, cf. MGT 7.119). The Tamashek PerfP is -əzzə-. Given such Imprt and PerfP forms, one would expect LoImpfP #-t-ázz- on the model of LoImpfP -t-ákk- for Imprt əkk ‘go’, the other geminate -vPPv- verb. Instead we get -zát- (all dialects), showing an alternative consonantal sequence √zt also seen in VbIN t-è-zæte (cf. Niger Tamajak “tezæte”). The t in -zát- and in t-è-zæte is evidently a vestige of the alveolar stop in Niger √zd.

‘Mount (donkey) bareback’ has Imprt əzzəm. Tamajak “əzɖəm” (LTF2 384) shows that this is another case of *zɖ → zz.

3.2.1.5 Prefixal t-Deletion

This rule is morphologically specialized. It applies clearly in combinations of pronominal subject prefix t- (3FeSg or any 2nd person category) plus a C-initial stem. Because perfective and inflectable short imperfective verb stems begin with V’s in most paradigms, the principal context for Prefixal t-Deletion is with stems of the long imperfective family. Example with a LoImpf stem: 3MaSg i-sáss ‘he drinks’, nə-sáss or n-sáss ‘we drink’, but 3FeSg Ø-sáss ‘she drinks’ and 2Sg Ø-sássæ-d ‘you-Sg drink’. It does not matter what C the stem begins with. In addition to long imperfectives of virtually all stem-classes, the rule also applies before inflectable short imperfectives of causatives, which are also C-initial since they fail to undergo Stem-Initial V-Insertion, hence 3FeSg ðð Ø-s-irəd ‘she will wash’. I use Ø- to indicate that Prefixal t-Deletion has occurred. There are also many adjectival

C-initial perfectives, before which *t-* fails to appear, but these stems avoid 3MaSg *i-* (and often 1Pl *n-*) as well, so in this case the absence of *t-* is entailed by a more general avoidance of subject prefixes.

(35) **Prefixal t-Deletion**

A pronominal subject prefix of the form /*t-*/ is deleted before a C-initial verb stem.

The rule does not apply to nominal morphology, where Fe prefix *t-* is never deleted. In the rare cases (involving loanwords) where Fe *t-* directly precedes a C-initial stem that lacks a vocalic prefix, Schwa-Epenthesis applies and we get *tə-* (§3.2.5). In several dialects, though not in T-ka, the FePl prefix combination *t-i-* reduces (by Prefix Reduction) to *t-∅-* before a stem beginning in CV..., e.g. Pl *t-ĩ-kəbr-en* ‘sparrows’, but reduced form (in a PP) *dæɾ ʔ-t-∅-kəbr-en* ‘in the sparrows’. In this combination, the *t-* is not deletable. (T-ka reduces *-i-* to schwa here: *dæɾ ʔ-t-ə-kəbr-en*.)

Whether Prefixal *t-* Deletion also applies to the *-t-* prefix marking the long imperfective stems in many verb classes is a tricky question. In those cases where it appears audibly, this *-t-* is always followed by a V, so there is no question of deletion. However, all cases (except one) where *-t-* is absent from a long imperfective stem involve C-initial stems like LoImpfP *-búddəd-* ‘get up’ and causative *-s-árad-* ‘wash’. Although I do not favor this analysis, one might argue that *-t-* is underlyingly present here but is always deleted by Prefixal *t-* Deletion.

The one case where *-t-* is (or rather may be) absent from a long imperfective stem is in the class of verbs of basic shape *-vPvC-*. Here the LoImpfP varies between *-əPPáC-* and *-t-əPPáC-*, e.g. *-əwwát-* and *-t-əwwát-* ‘hit’. We therefore have only equivocal evidence as to whether *-t-* is part of all long imperfective stems. The alternative analysis is that *-t-* is in complementary distribution with Γ -c2 (i.e. gemination of C_2); see §3.4.2.1.

In the type *-əPPáC-* varying with *-t-əPPáC-*, if a *t-* subject prefix is present we always get e.g. phonetic [təw:a't], which can be parsed morphologically as either *t-əwwát* (with 3FeSg *t-*) or as \emptyset -*t-əwwát* from /*t-t-əwwát*/.

3.2.2 Longer-distance consonantal interactions

3.2.2.1 Consonantal metathesis

There are no truly productive metathesis rules. The cases discussed here involve the consonantal sequences (often with intervening V, sometimes also with an intervening C) in (36).

(36) Cases of Consonantal Metathesis

a.	hS	Sh		(S = a sonorant or fricative)
b.	rwr̥	wr̥r̥	r̥r̥	
c.	rs	sr̥		
d.	dj	jd̥		
e.	dj	jd̥	jj	

I begin with instances involving h, mainly underlying /hS/ metathesizing to Sh when not separated by a V, where S is a sonorant or fricative.

The verb ‘see’ appears with consonantal sequence √nhy or √hny. The latter is used when a V intervenes between the first two stem C’s, the former when there is no V in this position: LoImpfP -hánnæy- and VbIN a-hænnay, but ShImpf -ənhəy-, PerfP -ənhæy-, and nominal m-ənhuy ‘something visible, (a) sight’. I recognize a lexical stem /-vhnvy-/ that metathesizes /hn/ to nh when the two are not separated by a V.

The verb ‘weep’ has a similar alternation: LoImpfP -háll- and VbIN t-à-hæla, but ShImpf -ælh (/ælh̥r̥-/) and PerfP -əlhə-. I recognize lexical /-vhlv-/ with /hl/ metathesizing when the two C’s are not separated.

Metathesis does not occur when the C’s in question are the first two in a superheavy stem subject to Stem-Initial Syncope. Examples: ‘break loose’, with Sg Imprt hələbbə-t, PerfP -əhləbbə-t (not metathesized to #-əlh...), and (inflected) LoImpfP -t-ihləbbi-t; ‘moan’ with Sg Imprt hənəffə-t and PerfP -əhnəffə-t. If we take the metathesis in ‘see’ and ‘weep’ to be a genuine phonological rule, we would have to order it before Stem-Initial Syncope, which seems reasonable on other grounds (in some dialects Stem-Initial Syncope either fails to apply [A-grm], or does apply but does not feed even routine CC-cluster assimilations such as Nasal Harmony [K-d]).

The LoImpfP corresponding to PerfP -ðhæx- ‘snatch’ is -t-ihəx- in most dialects. For Im, R, and some Kidal-area dialects, LoImpfP verbs of the type -t-íCəC- syncopate the schwa before a V-initial subject suffix (an Im example is t-íwr̥-ən ‘they-Ma dance’; for K I can cite tíhz̥-æn ‘they approach’). In R but not the other dialects, this syncope leads to metathesis of /hr̥/ to /r̥h/: metathesized t-ír̥h-ən ‘they-Ma snatched’ corresponding to K-d t-ih̥x-ən (cf. T-ka t-ih̥x-æn). No metathesis occurs in R in this morphological context when the cluster is /hr̥/ or /hz̥/ instead of /hr̥/, so there is no general rule even in this dialect that /hC/ metathesizes to /Ch/: wær t-íhz̥-əd ‘you-Sg do not approach’. T-ka and some other dialects do not syncopate -t-íCəC- stems, so the issue of metathesis does not arise here.

Another dialectal case is the term for ‘scrub acacia’, i.e. *Acacia tortilis* (dominant species in thorn scrub): á-həkš (K, T, Ts) but á-həšk (R), also á-šək without the *h in the east (A-grm, Gao, Im).

I now turn to cases not involving h. The stem ‘(be) yellow, light brown’ has a C-sequence √wr̥r̥ (Imprt íwr̥r̥ ‘be yellow!’, adjectival noun à-wr̥r̥ ‘yellow one’) alternating intraparadigmatically with √r̥r̥ (PerfP ær̥r̥ ‘it

became yellow' (but variant wæraʀ also recorded for K-d), abstractive t-æ-roʀe (arguably t-ə-ruʀe) 'yellowness'. For Niger Tamajak, forms with √rwʀ alongside √wrʀ and √rʀ are reported (Impʀt "irwaʀ", LTF2 282). For Algeria we have √rʀ and √rwʀ (DTF 4.1662).

Another case is 'carrion', which appears as m-æʀsoy or feminine t-a-m-æʀsoy-t in most dialects with √ʀsy consonantism (also reported for Niger, LTF2.124), but as m-æʀsoy in T-ka.

There are a number of cases involving C sequences √dj and √jd, or √dj and √jd. Tamashek generally has √jd corresponding to √dj (dʒ) in Niger and Algeria. It is not clear to me which sequence is historically original. Tamashek verb -vʀvd- 'rap on nape' (PerfP -əjæd-) still corresponds to a noun t-ḏdʒi-t-t '(a) rap on the nape' in K-d, so there is a synchronic alternation in this dialect; in Niger Tamajak the verb is -vdʒv- (LTF2 49). Tamashek -vʀvd- 'go off to war' has an Algerian counterpart -vdʒv- (DTF 1.263ff.). Tamashek -jvdʒvd- 'be terrified, flee' corresponds to Niger -dʒggʒv- (LTF2 50). 'Morning' is attested in variants such as a-jdálset (or a-gdálset), compare Niger Tamajak √dʒlšt (LTF2 30). There are also some cases of three variants showing metathesis and assimilation. For example, 'hail, hailstones' appears as æ-djʀæš (and æ-dígræš), æ-jídræš, and (assimilated) æ-jíjʀæš. Likewise, 'wide acacia pod' is recorded as a-šæjæda, a-šædæja, and (assimilated) a-šæjæja.

A verb 'scoop up' appears normally as -vksvl- (A-grm, T-ka, also Niger and Algeria), but I recorded -vskvl- for K-d.

There is one case of **consonant-vowel metathesis**. This is the verb 'wound', which appears (depending on dialect) as -biwvs- (PerfP -æbewæs-T) or -buyvs- (PerfP -æboyæs-, K and R). I can find no attestation of this verb in Niger Tamajak; for Algeria -buyvs- is reported (DTF 1.44 "bouis").

3.2.2.2 Long-distance sibilant assimilation (Sibilant Harmony)

In causative verbs, and in Instrumental nominals derived from verbs, there is a prefix -s-. If the following stem contains a sibilant other than s, the prefix assimilates to this sibilant. Thus compare causatives -s-vlvbbvqqu- (+ -t) 'dip in liquid', -š-vrjvš- 'cause to walk', and -z-vm-vzlvv- 'differentiate'. For more examples see §8.1.2 (causatives) and §8.11 (instrumental nominals).

One partial exception is -š-vnšv- 'buy, sell', which appears as -ž-vnšv- in some dialects and as -z-vnš- (or -z-vnh^v-) in K-f. In this rather lexicalized causative (the simplex -vnšv- 'be bought, sold' is not common), we get positional but not voicing assimilation. The A-grm speaker (less often the R speaker) occasionally failed to assimilate the prefixal -s-, as in -s-vttvšv- (+ -t) 'sneeze', especially in elicited causatives that are probably not in common use. Speakers of all other dialects applied the assimilation more systematically.

This sibilant assimilation is a reflection of **Sibilant Harmony**, which seems to apply to stems as well as to stem-prefix combinations. Other than

'buy, sell' cited above, I have a hard time finding a single example (not a recent borrowing) that does not respect sibilant harmony, as opposed to hundreds of stems with harmonized sibilants.

3.2.3 VV-Contraction

When two vowels come together at a morpheme boundary, contraction occurs unless the combination can be converted into a VCV sequence (by inserting *h* or a homorganic semivowel). See (41), below, for a summary of the various outputs.

3.2.3.1 VV-Contraction with 3MaSg subject prefix *i-*

One case of VV-Contraction is when 3MaPl subject prefix *i-* is attached to a verb beginning in a vowel. Inflectable verb stems may begin with a *C* (see below) or with one of the *V*'s {*ə æ ɑ i o u*}, with *u* the rarest (-*ùjəj-* 'be distant').

When the verb-initial vowel is *ə*, the contracted output is *i-*, as in /*i-əbdæd/* > *ĩ-bdæd* 'he stood up'. This is true even when a verb-initial *ə* appears on the surface as *æ* because of the shift of *ə* to *æ* before a BLC like *q* or *ɖ* (§3.1.2.2). However, the BLC does force the contracted /*i/* to lower to *e*, phonetic [ɛ]. An example is 'he consented', with 3MaSgS /*i-*/ added to PerfP stem -*əqbæl-* to produce *ĩ-qbæl*, phonetic [ɛ¹qbæl].

However, when the 3MaPl prefix is added to a verb beginning with a true *æ*, the output is *æ*, hence *Ø-æss-omæm* 'he sucked'. Because many PerfP verbs stems begin in *ə* in T-ka but in *æ* in other dialects, there are many conspicuous dialectal differences, e.g. between T-ka *ĩ-mmu-t* 'he died' and other dialects' *Ø-æmmu-t*.

The 3MaSg prefix is likewise realized as zero before a full vowel {*ɑ i o u*} (there are no verb forms beginning in *e*), as in (PerfP) *Ø-ògdæh* 'he was equal' and (Reslt) *Ø-ujəj* 'he is distant'.

The 3MaSg subject prefix that I interpret as *i-* for Tamashek may well have been **y-* originally. In this event, Tamashek contracted **y-ə* to *i*, and deleted **y* before other vowels. In Tayert dialects of Niger, we still get 3MaSg *y-* before *ə* and before the full vowels (LTF2.419).

3.2.3.2 VV-Contraction with *C(ə)-* subject prefixes

The *C*-initial subject prefixes (§7.4.1), e.g. 1Pl *n(ə)-*, 2nd person *t(ə)-*, and 3FeSg *t(ə)-*, could be represented either as *C-* or *Cə-*. If we choose *C-*, at least in some dialects a Schwa-Epenthesis rule would have to apply (before a stem-initial *C*) to account for a *Cə-* allomorph, as in 1Pl LoImpfP *nə-báss* 'we

vomit' (but dialectally *n-báss*). If we choose *Cə-* as the basic representation, we must apply VV-Contraction to delete the schwa before a stem-initial V, as in PerfP *-əjjæš-* 'enter' in 1Pl */nə-əjjæš/* → *n-əjjæš* 'we entered', and PerfP *-ðyya-* 'leave' in 1Pl *n-ðyya* 'we left'. See §7.4.1 for more dialectal detail on this matter.

3.2.3.3 VV-Contraction at suffixal or clitic boundaries

In this section I will first cover verb-suffix combinations, then noun-suffix combinations, then combinations involving clitics.

Verbs may end in a full V {i a u}, or in one of the underspecified vocalic segments /ɪ/ or /A/ (§3.1.2.4). In this section I discuss contractions, beginning with inflectional suffixes and then passing to clitics.

With **inflectional suffixes**, the initial V is always *æ* or *e*. This affects subject suffixes (1Sg *-æɾ*, 2Sg *-æd*, 3MaPl *-æn*, 2MaPl *-æm*), Participial suffixes (MaSg *-æn*, FeSg *-æt*), and MaPl Imperative ($\ddot{\text{~}}$)-*æt*. These suffixes always contract with a preceding vowel (there is no insertion of *h* or of a semivowel). One suffix begins with a full V, namely Hortative ($\ddot{\text{~}}$)-*et*. This suffix contracts with a preceding deletable stem-final V, but when it follows a full V (as in some long imperfectives) we get an allomorph ($\ddot{\text{~}}$)-*het* that does not require VV-Contraction. The outputs of VV-Contraction are shown in (37).

(37) Verb plus Inflectional Suffix VV Outputs

a. deletable stem-final V_1 plus full V_2

/A + e/ → *e*

/ɪ + e/ → *e*

b. high full V_1 plus short V_2

/u + æ/ → *u*

/i + æ/ → *i*

c. deletable stem-final V_1 plus short V_2

/ɪ + æ/ → *æ* with 1Sg subject *-æɾ* or MaPl Imprt ($\ddot{\text{~}}$)-*æt*

/ɪ + æ/ → *ə* otherwise (2Sg *-æd*, 2MaPl *-æm*, 3MaPl *-æn*)

/A + æ/ → *æ*

d. /a/ plus short V_2 (see discussion below for specific contexts)

/a + æ/ → *e* [augmented verb]

/a + æ/ → *æ* [non-augment verb, PerfP]

[this *æ* can be modified by ablaut to *e* (PerfN) or *a* (Reslt)]

(37.a) applies to combinations of deletable stem-final V, as in many short imperfective verbs, plus Hortative ($\ddot{\text{~}}$)-*et* (§7.2.3.3). The stem-final V is simply

deleted before the full vowel *e*, as we would expect. The Hortative suffix requires accent on the preceding syllable, so we cannot really tell whether VV-Contraction here precedes or follows Default Accentuation. Examples of (37.a) are *n-às-et-łódd* ‘let’s come!’ (§7.2.3.3) with ShImpf /-ası-/ ‘come’, and long hortative *nə-jáll-et* ‘let’s go (every day)’ (§7.2.5.5) with LoImpfP /-jállA-/.

Now consider cases where V_2 is a short vowel (37.b-d). In (37.b), the suffixal /æ/ is deleted after the full high V. We see this in *əsu-n* ‘they-Ma coughed’ and *t-łwi-n* ‘they-Ma are born’, both of which end in 3MaPl subject suffix /-æn/. This treatment was observed in most Tamashek dialects, but I did record *əs-æn* ‘they-Ma coughed’ for A-grm, where the stem-final high V is deleted before *æ*.

In (37.c), the stem ends in a deletable vowel, high /ɪ/ or low /A/. These segments are deleted in word-final position, and show up as short *ə* and *æ*, respectively, before a C-initial subject suffix. When they combine with suffix-initial /æ/, the regular outputs are /ɪ + æ/ → *ə*, and /A + æ/ → *æ*. Since /ɪ/ is arguably a special case of stem-final /ə/, and /A/ is arguably a special case of stem-final /æ/, one could summarize these outputs as deletion of the suffixal /æ/ following the stem-final short V. Examples, using 3MaPl -æn, are Future *əd ækšə-n* ‘they-Ma will eat’ (/ækšɪ-æn/), and LoImpfP *jállæ-n* ‘they-Ma (regularly) leave’ (/jállA-æn/). Because the quality of the stem-final V determines the quality (*æ* or *ə*) of the output, I put the hyphen after the output V.

In the case of /ɪ + æ/, there are two suffixes that give the output *æ* instead of the usual *ə*. For these suffixes, therefore, /ɪ + æ/ and /A + æ/ merge as *æ*. The first suffix is **MaPl Imprt** (˘)-æt. The effect is that (˘)-æt is just added to the unsuffixed Sg imperative (prior to resyllabification if applicable). Thus Imprt *ækš* ‘eat!’, MaPl Imprt *ækš-æt* ‘eat!’, with /ækšɪ/. It is questionable whether *ækš-æt* is really produced by VV-Contraction applying to /ækšɪ-æt/; it may be more realistic to first derive Sg Imprt *ækš* and then add the MaPl Imprt suffix as an outer morphological layer.

The other problematic suffix is **1Sg -ær**. Because *ɾ* is a BLC, we could get phonetic -ær from either /æɾ/ or /əɾ/, so we might allow VV-Contraction to apply in the same way as for e.g. 3MaPl -æn and then have a late rule merge *æ* and *ə* into *æ* before *ɾ*. In this way, VV-Contraction could apply in the same way to 1Sg -ær as it does to the other (non-imperative) subject suffixes beginning in *æ*, though the distinction between *æ* and *ə* outputs would later be neutralized. However, this analysis will not work.

Consider the inflectional paradigm of stems like ShImpf /ækšɪ/ ‘eat’: 1Sg *ækš-ær*, 2Sg *t-ækšə-d*, 2MaPl *t-ækšə-m*, 3MaPl *əkšə-n*. We may throw in 2FePl Imprt *əkšə-mæt* for good measure. Note that all the combinations except 1Sg *ækš-ær* show a surface *ə* in the first (as well as second) syllable. This is due to Short-V Harmony (§3.2.6), where the initial syllable shifts /æ/ to *ə* under the influence of *ə* in the following syllable. The fact that this does not happen in 1Sg *ækš-ær* shows that the second syllable has /æ/ rather than /ə/ at

the point when Short-V Harmony applies. Therefore, VV-Contraction must exceptionally convert /I + æ/ to æ instead of ə in connection with the 1Sg suffix. For this reason, I transcribe ækš-ær with the hyphen before the suffixal æ.

Since, before a C, stem-final /I/ is realized as ə, while /A/ is realized as æ, one could simply equate /I/ with ə and /A/ with æ. Or we could just say that these abstract segments “become” ə and æ, respectively, before a suffix, including a V-initial suffix. If so, the regular formulae /I + æ/ → ə and /A + æ/ → æ in (37.c) reduce to /V₁ + æ/ → V₁, exactly parallel to the cases with V₁ = full high V in (37.b). Can we do the same when V₁ is /a/, followed by a short suffixal V?

In (37.d), we see **variable treatment of /a + æ/**. There are actually three surface outputs of this combination, namely æ, e, and a. However, the a output and some instances of the e output are secondarily derived from /æ/, by belated attachment of ablaut formatives.

Consider the following 3MaPl forms for ‘eat’: PerfP əkšæ-n, PerfN əkšə-n, and Reslt əkšá-n. These forms reflect the ability of verb stems of the (light) shape -v(C)Cv- to include the material **up to and including the first C of a subject suffix in the domain of ablaut**. This **rebracketing** allows the entire 3MaPl suffix -æn to be included in this domain; for 3FePl -næt the domain stops at the n. When combined with -vkšv- ‘eat’, the 3MaPl PerfP /əkša-æn/ is realized as əkšæ-n, showing an apparent contraction /a + æ/ to short æ. The sequence əkšæ-n, when under negation, is subject to PerfN ablaut (formative ε-pc1f, §7.2.2.3), which changes /æ/ in the relevant position (first postconsonantal vowel, also final-syllable vowel) to e. Likewise, əkšæ-n can take Reslt ablaut (χ-pc1 and χ̄-pc1, §7.2.2.2), which lengthens and accents the first postconsonantal vowel, turning /æ/ into á. In this analysis, VV-Contraction itself is not responsible for the e or a outputs, just for the initial æ output. Behaving like 3MaPl -æn in these respects is 2MaPl -æm. After heavy (though not light) V-final non-augment verbs, we can add 1Sg -ær and 2Sg -æd (to make a clean sweep of V-initial subject suffixes). Thus -rvftv- ‘have a scare’, 3MaPl PerfP ərrəftæ-n, 1Sg ərrəft-ær.

However, the short output æ seems rather odd phonologically for /a + æ/, i.e. for the combination of a full and a short V. I will now argue that the regular phonological output for this sequence (in verbs at any rate) is not æ but e.

In fact we get e rather than æ when any /æC/ subject suffix, including 1Sg -ær, is added to an augment verb. Verbs of the augment class end in a full V, as seen most clearly in their Vb1N (which end in i or u). The combination of inflected verb plus C-initial subject suffix, or zero suffix (in connection with a subject prefix), requires Augment -t- immediately following the verb stem. However, a V-initial subject suffix such as 3MaPl -æn or 1Sg -ær does not allow the Augment, so VV-Contraction must occur. The result is e. Example (‘be in large quantity’): Vb1N à-bəffu, 3MaSg PerfP ì-bbuffæ-t (T-ka,

dialectally ĩ-bbøffæ-t or Ø-əbbuffæ-t , 3FePl PerfP əbbuffæ-t-næt , but (with VV-Contraction) 3MaPl PerfP əbbuffe-n and 1Sg PerfP əbbuffe-ɣ .

e rather than æ is also the output when light V-final non-augment verbs like -vkšv- ‘eat’, in the perfective (PerfP -əkša-), combine with singular V-initial subject prefixes, 1Sg -æɣ and 2Sg -æd . Thus contrast 3MaPl əkšæ-n ‘they-Ma ate’ and 2MaPl t-əkšæ-m ‘you-MaPl ate’ with 1Sg əkše-ɣ and 2Sg t-əkše-ɣ .

If e is the regular output of $/a + æ/$, at least for verbs, how do we account for the short æ output for the light V-final non-augment verbs like -vkšv- ‘eat’? I take this output to be due to **Presuffixal α-Shortening** (§3.4.9.1), a morphophonemic rule that is seen most transparently with V-final non-augment verbs followed by a C-initial subject suffix, as in 3FePl PerfP əkšæ-næt ‘they-Fe ate’ from $/əkša/$. If this rule is allowed to apply before V-initial (as well as C-initial) subject suffixes, then the derivation of 3MaPl əkšæ-n ‘they-Ma ate’ from $/əkša-æn/$ is mediated by Presuffixal α-Shortening, which produces intermediate $/əkšæ-æn/$. This is, for all practical purposes, the $/A + æ/ \rightarrow \text{æ}$ process already seen in (37.c).

The difference between outputs æ and e for underlying $/a + æ/$ in (37.d) also correlates with a **difference in accentuation**. In both cases, the data are consistent with Default Accentuation, but only if the **relative ordering of Default Accentuation and VV-Contraction** is inverted in the two cases. Specifically, when the output is æ, both the stem-final and suffix-initial V’s are “counted” in Default Accentuation, so after contraction we get a default accent on the word-penult (which is the underlying antepenult). In this derivation, Default Accentuation must precede VV-Contraction. Example: $/ərrəfta-æn/$, surface ərrəftæ-n ‘they-Ma had a scare’. By contrast, when the output is e, this contracted V is treated as a single V in Default Accentuation, resulting in a default accent on the word-antepenult. Example: $/əbbuffa-æn/$, surface əbbuffe-n ‘they-Ma were in large quantity’. For more on interactions between VV-Contraction and Default Accentuation, see §3.3.1.3.

The grammatical distribution of the regular e output, and of the morphophonemically specialized æ output, is summarized in (38).

(38) æ/a Versus e Outputs for $/a + æ/$ in Verb-Suffix VV-Contraction

conversion	distribution
$/a-æ/ \rightarrow e$	a. augment verbs: all V-initial subject suffixes
	b. light V-final non-augment verbs: 1Sg and 2Sg subject suffixes
	c. V-final non-augment long imperfectives: all V-initial subject suffixes

- /ɑ-æ/ → æ
- d. light V-final non-augment verbs: 2MaPl and 3MaPl (but not 1Sg or 2Sg) subject, and V-initial Participial suffixes
 - e. heavy non-augment verbs: all subject and Participial suffixes

Some V_1V_2 combinations escape contraction by adding *h*, or by converting a high V_1 into V_1 plus **homorganic semivowel**. One could explain the alternations of *h* and zero as due to allomorphy, to **h-Insertion**, or to *h*-deletion. Simple allomorphy works for MaPl Imprt (¨)-æt, Hortative (¨)-et, and Future è, which occur in very restricted environments. The *h*-Insertion rule is formulated as (653) in §10.2.1.1, but note the fine print there. With dative pronominal clitics, the *h*-form occurs in several postconsonantal environments, making *h*-Insertion dubious. *h*-Insertion and homorganic semivowels are absent from nominal morphology, and where they do occur there is much variation. Thus -vsu- ‘cough’ has MaPl Imprt əsù-hæt (T-ka), əsùw-æt (R), or əss-æt with VV-Contraction (A-grm).

In T-ka, the ShImpf of augmented verbs like -buffu- ‘be in large quantity’ undergoes (among other things) *u*-Spreading (119, §3.4.9) in forms lacking the Augment -t-, as in 3MaPl ShImpf əbbəffu-n ‘they (will) be in large quantity’ from /əbbuffi-æn/ (via /əbbəffu-æn/ with *u*-Spreading and Medial V-Shortening (120)). If the *u* of -əbbəffu-n is considered to be contracted from /u-æ/ (after *u*-Spreading), it fits (37.b). Alternatively, we could order VV-Contraction before *u*-Spreading, e.g. /əbbuffi-æn/ → /əbbuffi-n/ → /əbbəffu-n/.

However, in some eastern dialects, *u*-Spreading and Medial V-Shortening do not occur in this ShImpf paradigm. Instead of -əbbəffu-n, the 3MaPl ShImpf appears (e.g. in R dialect) as -əbbuffe-n ‘they (will) be numerous’. Here the medial *u* has not been shortened, and has not transmitted its rounding feature to a subsequent *V*. Since the augmented forms in the ShImpf paradigm have ə (i.e. a high *V*), as in 3MaSg ï-bbuffə-t, it can be inferred that the 3MaPl is from /əbbuffi-æn/. If so, we would have a **case of /i + æ/ realized as e** (rather than as *i*). This aberrant output *e* may reflect analogical interference from the perfective paradigms of the same verbs, where output *e* results from stem-final /ɑ/ plus suffix-initial /æ/, e.g. PerfP əbbuffe-n ‘they were (or became) numerous’.

For **nouns**, VV-Contraction occurs in a subset of combinations of V-final stem plus MaPl suffix -æn. The majority of such cases avoid VV-Contraction by using a postvocalic MaPl allomorph -tæn, but there is a significant subset of cases where the MaPl allomorph -æn is used (§4.1.2.13), and these instances do require VV-Contraction. The output of /...V-æn/ is -an after contraction. The input stem-final *V* is *ɑ* or *i* in the vast majority of instances, but there is one case each of *o* and *u* (39.a). Though I cannot cite a full set of stem-final *V*’s, there is no counterexample to the generalization that stem-final *V* combines with MaPl -æn to produce -an.

There are some additional cases where we can posit an underlying stem-final V that is deleted from the unsuffixed MaSg form, based on morphological analogy, vocalism, and/or accent (39.b). For fuller data and discussion see §4.1.2.13.

There are fewer cases of VV-Contraction involving FePl suffix *-en*, since most V-final feminine nouns have an inner Fe suffix *-t-* (before FeSg *-t* or Pl *-en*), or else (if the FeSg is unsuffixed) use FePl allomorph *-ten*. In the rare case where FePl *-en* is added directly to a V-final stem, the output is predictably *-en* since the suffix already has a full V (39.c).

(39) VV-Contraction with V-Final Noun Stem and MaPl *-æn* or FePl *-en*

	input	output:	example (Sg)	Pl	gloss
a.	/a + æ/ → a		æ-hara	i-hár-an	'saltlick'
	/i + æ/ → a		e-dæhi	i-dæh-an	'sand'
	/u + æ/ → a		æ-s-áru	i-s-úr-an	'pretext'
	/o + æ/ → a		à-læššo	ĩ-læšš-an	'turban cloth'
b.	/V + æ/ → a		a-s-ént	ĩ-s-ənt-an	'beginning'
			["V" = deletable stem-final vowel, here /ɪ/ in /a-séntɪ/]		
c.	/ə + e/ → e		t-a-kə̀ndə-t-t	t-ĩ-kənd-en	'lily tuber'

Comparison of the verb and noun data show that no simple phonological analysis can account for VV-Contraction in the two cases. Nominal MaPl suffix *-æn* imposes its quality on the contraction V, resulting in *a*. By contrast, 3MaPl suffix *-æn* on verbs basically loses its /æ/ after a stem-final V. Even within verb morphology, there are important differences between e.g. 3MaPl *-æn*, 1Sg *-ær*, and 2Sg *-æd*. As usual in Tamashek, the "phonology" is morphologically specialised.

V-initial clitics are directionals (Centripetal *-lədd* or *-lidd*, Centrifugal *-lín*), dative pronominals (beginning in *-la-*), and certain object pronominals (beginning in *i* or *e*). All of the V-initial clitics have allomorphs beginning in *h*, or else allow a homorganic semivowel to be inserted after a preceding high V, either of which obviates the need for VV-Contraction. A further complexity is that several object pronominals have structurally different allomorphs depending on whether the preceding stem ends in a V or in a C (e.g. 3MaSg *-łtt* and *-łe*), so we do not always have a non-contracted version to clarify the "underlying" form of the postvocalic allomorph. There is also a fair amount of dialectal variation, especially in the use of *h*-initial allomorphs, but also in the vowel of directional clitics (e.g. Centripetal *-lədd* or *-lidd*).

The inventory of VV-Contractions for clitics is given in (40). Combinations requiring intervening *h* or a homorganic semivowel are omitted.

(40) Verb plus Clitic VV Outputs

- a. deletable stem-final V plus full V
- | | |
|------------------|-----|
| /A + e/, /I + e/ | → e |
| /A + i/, /I + i/ | → i |
| /A + a/, /I + a/ | → a |
- b. full V plus full V
- | | |
|---------|-----|
| /a + e/ | → e |
| /a + i/ | → i |
| /i + i/ | → i |
| /a + a/ | → a |
- (if no h)
- c. deletable stem-final V plus short V
- | | |
|------------------|-----|
| /I + ə/, /A + ə/ | → ə |
|------------------|-----|
- d. full V plus short V
- | | |
|---------|-----|
| /a + ə/ | → æ |
|---------|-----|

Except in (40.d), the clear generalization is that the clitic V surfaces while the verb-final V is deleted. An example of (40.a) is dative LoImpfP *i-jáll-\\a-s* ‘he goes for him’ with LoImpfP */-jállA-*. Examples of (40.b) are *ĩ-ŋʁi-\\kmæt* ‘he killed them-Fe’, *t-əŋʁ-\\e* ‘she killed him’, and *ĩ-ŋʁa-\\Ø-hi* ‘he killed me’, all from PerfP *-əŋʁa-*, and *i-s-álh-\\e* ‘he made him weep’ from LoImpfP *-s-álha-*. (40.c) occurs in imperative *nazz-\\ád ...* ‘sell ...’ (with following NP).

The aberrant case is (40.d), as in PerfP *Ø-osæ-\\dd* ‘he came’ from *-òsa-*. This pattern is limited to verbs with following Centripetal clitic *-ád* (and therefore affects /a/ before a CC cluster). Since the Centripetal clitic also has positional allomorphs without an initial V (e.g. *-\\d*), it may be that *Ø-osæ-\\dd* is really from */osa-\\dd/* with no VV-Contraction at all. In either case, the shortening to *æ* is probably due to a special shortening rule rather than to VV-Contraction itself. This could be taken care of formally by modifying Presuffixal *α*-Shortening (§3.4.9.1). However, the phonology here is less than transparent.

In my data (which are not complete for all dialects), the 3rd person object clitics other than 3MaSg *-\\e*, namely 3FeSg *-\\et*, 3MaPl *-\\en*, and 3FePl *-\\enæt*, are among the clitics that impose word-penultimate accent on an unaccented word. In other words, they behave accentually like the corresponding postconsonantal allomorphs, e.g. 3FeSg *-\\tæt* and 3MaSg *-\\tæn*. Technically, this means that these clitics have a true initial V that (along with the stem-final V) is “counted” in Default Accentuation. This corresponds to a possible historical scenario, whereby e.g. 3FeSg *-\\et* derives from **-\\æt*. By contrast, 2nd person object clitics like 2FePl *(i)-\\kmæt* allow antepenultimate default accent. Therefore either these clitics lack an initial V (though forcing the

preceding V to shift to i), or else they do have an initial V but undergo VV-Contraction prior to Default Accentuation.

3.2.3.4 *Possible VV-Contraction with Pl prefix i-*

In the analysis I prefer, such Sg/Pl nominal prefixal alternations as seen in Sg *æ-jola* ‘stepchild’, Pl *i-jól-an* are interpreted as alternations of a Sg prefix (here *æ-*) and a corresponding Pl prefix *i-*. However, there are two alternative analyses. One, not involving VV-Contraction, is that *æ-* (or any other prefixal V) becomes *i* by **ablaut** (i.e. by having the Sg prefixal V targeted by both a <H> vocalic melody and a V-lengthening ablaut component $\tilde{\chi}$). I reject this analysis, since the Sg/Pl prefixal alternation takes place not only when the Pl shows stem ablaut, but also when the stem is unchanged from Sg to Pl so the Pl is expressed solely by affixes.

There remains a possible third analysis whereby Pl prefix *i-* is added to, rather than replacing, the initial V of the Sg, which is therefore better considered to be part of the stem (rather than a Sg prefix *α-*, *e-*, *æ-*, or *ə-*). This would entail a VV-Contraction rule, e.g. */i-æjola-æn/ → i-jo...* I reject this analysis too. There are other reasons to segment Sg prefixes, specifically those with a full V (*α-* or *e-*), since these reduce to $\text{ʔ}æ-$ or $\text{ʔ}ə-$ in certain syntactic positions by Prefix Reduction, as in *α-bæmbæra* ‘Bambara man’ (reduced $\text{ʔ}æ-bæmbæra$, cf. Pl *i-bæmbæra-tæn*). Such stems contrast with others that begin with a true stem-final V that shows no reductions or Sg/Pl prefixal shifts, e.g. *árab* ‘Arab (man)’ and Pl *àrab-æn* ‘Arabs’.

In short, while mildly tempted by the alternatives, I consider Pl *i-* to be a simple prefix, replacing Sg vocalic prefixes.

3.2.3.5 *Summary of VV-Contraction processes*

The treatment of underlying VV combinations in the preceding sections is summarized in (41), showing contractions, and (42), showing intervening *h* or homorganic semivowel. The summary is valid for T-ka and excludes some minor eastern and northern dialectal peculiarities mentioned above. Also excluded are the analyses of nominal Pl *i-* that were just considered but rejected in (§3.2.3.4, above), and cases of suffixal *α* instead of *æ* that are not due to VV-Contraction as such, rather to ablaut-induced lengthening from */æ/* to *α*.

(41) **VV-Contraction** ("V" = any vowel)

	input	output	grammatical context
noun + suffix			
a	/V + æ/	→ a	noun + MaPl suffix /-æn/
	/V + e/	→ e	noun + FePl suffix /-en/
verb + suffix (or clitic)			
b	/A + e/	→ e	verb + Hortative suffix or object clitic
	/I + e/	→ e	"
	/A + i/	→ i	verb + object clitic
	/I + i/	→ i	"
	/A + a/	→ a	verb + dative or 1st person object clitic
	/I + a/	→ a	"
c	/a + e/	→ e	verb + Hortative suffix or object clitic
	/a + i/	→ i	verb + object clitic
d	/a + æ/	→ æ	verb + subject suffix (via short /æ + æ/)
	"	→ e	" (regular, direct contraction)
	/a + ə/	→ æ	verb + Centripetal clitic
	/a + i/	→ i	verb + Centripetal or Centrifugal clitic
e	/u + æ/	→ u	verb + subject suffix
	/i + æ/	→ i	"
f	/I + æ/	→ ə	verb + subject suffix
	/A + æ/	→ æ	"
prefix + verb			
g.	/ə + V/	→ V	subject prefix + verb [valid if subject prefixes are represented as Cə-]
	/i + ə/	→ i	3MaSg subject prefix + verb
	/i + V/	→ V	" [V ≠ ə]

It is not possible to reconcile all of the data in a simple VV-Contraction rule. The most glaring divergence is between /V + æ/ → a in noun plus suffix combinations (41.a) and the various combinations of vowel plus /æ/ in verb plus suffix combinations (41.d-f). In the verb plus suffix/clitic data, one can (almost) generalize that **when a short (or deletable) V and a full V come together (in either order) the full V survives intract** (except when stem-final

/a/ has been previously shortened before a suffix). This would work for nearly all verb plus suffix/clitic data but not (quite) for the verb plus Centripetal clitic case /a + ə/ → æ (41.d) unless supplemented by a later shortening rule.

(42) summarizes the cases where an intervening C breaks up the VV cluster and obviates the need for VV-Contraction. The T-ka cases with h are best handled as suffixal allomorph rules, while the eastern pattern with homorganic semivowel is more phonological in nature.

(42) **Non-Contraction** (including h-initial postvocalic allomorphs)

	input → output	grammatical context
a.	/u + V/ → u-hV (T-ka)	verb + Pl Imprt verb + directional stem + 1st person clitic
	/u + V/ → uw-V (eastern)	verb + Pl Imprt verb + directional stem + 1st person clitic
b.	/i + V/ → i-hV (T-ka)	[same as for u]
	/i + V/ → iy-V (eastern)	[same as for u]

3.2.4 Resyllabification (Final-CC Schwa-Insertion)

Resyllabification occurs when an unstable word-final CC cluster results from the deletion of a final V. The relevant rule is **Stem-Final /A-Deletion** (29) (§3.1.2.4). The deletion rule applies to short imperfectives and VbIN's of V-final verbs. These verbs have a clear word-final *a* in the perfective stem system, but some of them have short imperfective (including Imprt) ending in /i/, an abstract, underspecified V. Many of the verbs are of the basic shape -vCCv- or -vCCv-, and when the final v is deleted we get a CC cluster. Some CC clusters are stable in word-final position. However, if the cluster is not a geminate, and if the final C is a sonorant, it cannot be pronounced as such, so resyllabification is required.

An example is /æknɪ/, Sg Imprt of 'make', which appears as ækón in T-ka, but as əkən in most other dialects. Compare PerfP -əknə-, which shows the stem-final V more clearly (-vknv-). Another verb, in form perhaps the causative of this -vknv-, is -s-vknv- 'show', with Imprt s-əkón (A-grm T-ka) or s-əkən (Im K-d R T-md). Because -s-vknv-, unlike -vknv-, is long enough to qualify for the VbIN type with *a*-Sg prefix and <H> vocalic melody, we get VbIN /a-s-əkni/ in T-ka and several other dialects, and this too must be resyllabified when the /i/ is deleted. The Sg VbIN appears variably as a-s-əkónn (T-ka), a-s-əkón (Im R), a-s-əkən (T-md), or a-s-kón (K-d),

depending on what other rules apply (gemination, syncope, accent shift). A-grm, on the other hand, has α -s- $\acute{\epsilon}$ kni, retaining the original final V, so no resyllabification is needed there.

As these examples show, resyllabification takes the form of insertion of ə (Final-CC Schwa-Insertion, see below) to break up a nongeminate final CC cluster whose second element is a sonorant, and is accompanied in T-ka by accent shift onto the epenthetic schwa and by gemination of the final C. The accent shift (**Epenthetic-Vowel Accentuation**) and the doubling of the final sonorant in the VblN and other nominalizations (**Stem-Final Gemination**) are covered in §3.3.2. Both processes are characteristic of T-ka but do not apply in most other dialects. Even in T-ka, neither is a general phonological rule, though both are parasitic on Final-CC Schwa-Insertion.

Final-CC Schwa-Insertion also feeds Short-V Harmony, though this interaction is somewhat difficult to analyse. The relevant fact here is the shift of the initial / æ / in e.g. / $\text{æ}kni/$ 'make!-Sg' to ə in $\text{ək}\acute{\epsilon}n$, apparently under the influence of the medial schwa. See §3.2.6, below, for discussion.

Consider the data in (43), which show the morphological contexts where Resyllabification can occur. In all cases the stem in question is an unaugmented verb whose final V is deletable.

(43) Morphological Contexts for Resyllabification (V-Final Stems, T-ka)

a. for -vPQu- verbs (Q a sonorant)

1. Sg Imprt (and other word-final short imperfectives)

/ $\text{æ}jli/$	underlying
/ $\text{æ}jl/$	after Stem-Final /A--Deletion
$\text{ə}j\acute{\epsilon}l$ 'go!'	
(cf. MaPl $\text{æ}j\text{-}\acute{\epsilon}t$ 'go!')	

2. Sg Imprt of prefixal derivation

/m- $\text{æ}swA/$	underlying
/m- $\text{æ}sw/$	after Stem-Final /A-Deletion
m- $\text{æ}s\acute{\epsilon}w$ '(liquid) be drunk!'	
(cf. MaPl Imprt m- $\text{æ}sw\text{-}\acute{\epsilon}t$)	

3. Agentive (§8.8.1)

/e-m- $\text{æ}swi/$	underlying (arguably /e-m- $\text{æ}swA/$)
/e-m- $\text{æ}sw/$	after Stem-Final /A-Deletion
e-m- $\text{æ}s\acute{\epsilon}ww$ 'drinker; water source'	
(cf. Pl $\text{ĩ-m-}\text{æ}sw\text{-}\text{an}$)	

4. Verbal Noun of prefixal derivative

/a-m-éswi/	underlying
/a-m-ésw/	after Stem-Final <i>ɪ</i> /A-Deletion
a-m-əsésww ‘being drunk’	
(cf. Pl <i>ĩ</i> -m-əsw-an)	

b. for -vPQu- verbs (Q a sonorant, only two such verbs known)

1. Sg Imprt

/alwi/	underlying
/alw/	after Stem-Final <i>ɪ</i> /A-Deletion
alów ‘be spacious!’	

2. Sg Imprt of prefixal derivation

/s-ilwi/	underlying
/s-ílw/	after Stem-Final <i>ɪ</i> /A-Deletion
s-ilów ‘make spacious!’	

3. Agentive

[no examples; the two -vPQu- stems are non-agentive semantically]

4. Verbal Noun of prefixal derivative

/a-s-ílwi/	underlying
/a-s-ílw/	after Stem-Final <i>ɪ</i> /A-Deletion
a-s-ilóww ‘making spacious’	
(cf. Pl <i>ĩ</i> -s-ilw-an)	

5. LoImpfP

/-t-ílwi/	underlying
/-t-ílw/	after Stem-Final <i>ɪ</i> /A-Deletion
-t-ilów ‘is spacious’	
(cf. 3MaPl <i>i</i> -t-ílw-æn)	

The only verbs of shape -vPQu- with two full V’s, where Q is a sonorant, are (PerfP) -òlwa- ‘be spacious’ and -òdwa- ‘leave in afternoon’. The only respect in which they differ from the -vPQu- verbs is insofar as their long imperfectives are also subject to resyllabification.

I know of one underived (and unaugmented) -CvPQu- verb of the same type, namely -lvjwu- ‘bend, veer’ (PerfP -èlləjwa-, LoImpfP -t-àləjwa-, but Imprt *ləjəw* from /*ləjwi*/ and VbIN *a-ləjəww* from /-*ləjwi*/).

This leaves -vPQu- verbs as the overwhelmingly most common stems subject to resyllabification. The following stems are affected (they are shown in the resyllabified Sg Imprt, for underlying /æPQi/): *əvár* [ævæ’r] ‘read!’ or ‘call!’, *əjól* ‘go!’, *əkón* ‘do (well)!’, *əkól* ‘spend mid-day!’, *əsól* ‘hear!’, and

əsów ‘drink!’. A larger set of -vPQv- stems end in stable CC clusters in the Sg Imprt and so do not undergo resyllabification: (Imprt) æbs ‘vomit!’, ætf ‘be poured!’ (√df), ætʃ ‘laugh’ (√dʒ), æxt ‘be implanted!’, æks ‘sprout!’, æls ‘get dressed!’, ælz ‘shave!’, ænd ‘collapse!’, æŋr ‘kill!’, æns ‘lie down!’, ænš ‘be sold!’ or ‘excuse!’, ænt ‘begin!’, ærx ‘be on fire!’, ærh ‘want!’, and ærz ‘break!’. Note that these all involve an obstruent or h as final C. I know of no -vPQv- stems where P and Q are both sonorants and do not form a geminate. There is no resyllabification when the cluster is geminate, even when it is a sonorant: ækk ‘go (to)’, æzz ‘weave!’, ænn ‘say!’. In the one case involving h preceding a sonorant, the necessity for resyllabification is avoided, since the two C’s are metathesized (§3.2.2.1) when not separated by a V: ‘weep’ (LoImpfP -háll- with √hl, but PerfP -əlhə- and Imprt ælh with √lh).

Resyllabification is blocked in most cases when the verb form in question is followed by a **V-initial suffix or clitic**. This is regularly the case with inflected verbs (including imperatives). Thus 2Sg Imprt əsól ‘hear!’ but 2MaPl Imprt æsl-æt, the latter having the same shape as the 2MaPl forms of non-resyllabifying verbs, e.g. æbs-æt ‘vomit!-MaPl’. For the agentives and VbIN’s, resyllabification is likewise blocked when a Pl suffix (MaPl -æn, here realized as -ən) is added; see the plurals given in parentheses in (43). However, in the T-ka VbIN (and certain minor nominals) that show Stem-Final Gemination, the geminate is retained when possessive suffixes are added, hence α-s-əkənn ‘showing’, α-s-əkənn-in ‘my showing’ (not #α-s-ək-n-in as we might expect on the basis of unpossessed Pl i-s-ək-n-an).

In the case of /sw ‘**drink**’ and its derivatives, the only set where the final C is w, the resyllabified form -əsów is pronounced [-əsʊ] and can be treated as V-final at least for purposes of assigning allomorphs (postvocalic versus postconsonantal) to a following clitic. Thus Imprt əsów-łt occurs dialectally as an alternative to əsw-ə ‘drink it-MaSg!’. The latter variant shows the pattern that is obligatory in other resyllabifying verbs, e.g. æxr-ə ‘read it!’.

However, in the more **easterly dialects**, the number of forms subject to Stem-Final /A-Deletion is diminished, which of course limits the scope of resyllabification. For example, the high-frequency motion verb -vjl- (eastern -vglv-) ‘go’ has short imperfectives that undergo Stem-Final /A-Deletion (29) in a few dialects (A-grm T-ka T-md), but not elsewhere (Gao K-d K-f Ts), e.g. T-ka Sg Imprt ejól ‘go!’ versus K-d èglu. Likewise, the long imperfectives of verbs like -ulwu- ‘be spacious’ show Stem-Final /A-Deletion (29) in some dialects (K-d R T-ka) but keep the stem-final V in others (A-grm Gao R), e.g. T-ka 3MaSg LoImpfP i-t-ilów versus Gao i-t-ílwa.

The most systematic dialectal difference is in the **VbIN’s of prefixally derived stems**. For example, T-ka α-s-ilóww ‘making spacious’ (Pl ì-s-əlw-an) corresponds to A-grm α-s-əlwi, and T-ka α-s-əkənn ‘showing’ (Pl ì-s-ək-n-an) corresponds to A-grm α-s-əkni (Pl i-s-əkni-tæn).

On occasion I have recorded Imprt and ShImpf verb forms ending in Augment -t, although the verb in question is not otherwise of the augment class. This tends to happen in elicitation of paradigms of less common heavy

verbs. Example: for the T-md informant, 'become long (or tall)' was recorded as PerfP šəjru-, Imprt šijra-t, and LoImpfP -t-išəjru-. The Imprt form here also shows the i...a vocalism typical of the imperfective of adjectival verbs. This verb shows up in other dialects either as an augmented verb (PerfP -əššəgræ-t in A-grm, for example), or as an unaugmented verb with final stem consonant t (PerfP šəjrət- in several dialects); see §7.3.2.2. The T-md speaker appears to have made selective, opportunistic use of the augment option to avoid having to resyllabify the Imprt stem.

The formulation of the Final-CC Schwa-Insertion rule is tricky, since the epenthetic V appears as ə in most cases, e.g. alów 'be spacious!', but appears as æ in m-æsəw 'be drunk!' and e-m-æsəww 'drinker; water source'. In three morphological patterns we get ə. One is the VblN type for derived or long underived verbs, where the entire stem is subject to a <H> vocalic melody, so schwa is the expected short V: α-m-əsəww 'being drunk', α-s-iləww 'making spacious'. A second is the set of imperfectives like (Caus) Imprt s-iləw 'make spacious!' and LoImpf -t-iləw 'is spacious', where we again assume a stem-wide <H> melody (underlying /s-ilwɪ/, /-t-ilwɪ/). The third is the underived short imperfective of type Imprt əjəl 'go!' and alów 'be spacious!', where the epenthetic schwa breaks up a CC cluster that separates underlying <L> and <H> melodic components (/æjɪl/, /əlwɪ/). Here it is not clear whether the schwa is determined by the <H> melodic component, or is simply the default epenthetic vowel.

This leaves mediopassive Imprt m-æsəw 'be drunk!' and e-m-æsəww 'drinker; water source', from -vswu- 'drink'. For m-æsəw, the basic form is arguably /m-æswA/ instead of /m-æswɪ/, since mediopassive short imperfectives favor <L> melody. In the case of e-m-æsəww 'drinker; water source', in the agentive interpretation 'drinker' we would probably expect a composite <H L> melody; compare e-m-ækš 'eater', feminine counterpart t-e-m-ækši-t-t with stem-final i. I know of one other agentive of this type, e-m-ærær 'reader, pupil' from -vrvu- 'read'. e-m-æsəww in the sense 'water source' is a nonagentive nominal and might have a stem-wide <L> melody, but agentives e-m-ærær and e-m-æsəww presumably have <L H> melody like other agentives of -vCCv- stems. Given that Imprt /æswɪ/ and /ærɪɪ/ appear as əsəw (or əsú) and ərər, while agentives /e-m-æswɪ/ and /e-m-ærɪɪ/ appear as e-m-æsəww and e-m-ærær, it is necessary to explain why the L part of the <L H> melody extends to the epenthetic V in the agentives but not in the Imprt. Pending further dialectological study, it is far from clear that Stem-Final Gemination (which is limited to T-ka nominals, including VblN's and agentives) is correlated with this difference in melodic domain. For now I will simply stipulate the difference as a morpho-phonological fact (45).

(44) **Final-CC Schwa-Insertion**

Word-finally (or before suffix or clitic beginning with a C), a sequence ...VPQ where V is any vowel, P and Q are distinct C's, and Q is a sonorant (semivowel, liquid, nasal), insert ə between P and Q.

(45) **Melodic Association to Epenthetic Vowel**

If the ə inserted by Final-Syllable Epenthesis is at the junction between the L and H components of a <L H> melody, the L component extends to the epenthetic V in agentives and related nominals (so ə is lowered to æ), but not in short imperfectives (including Imprt verbs).

Except as noted below ('drink'), resyllabification does not apply when the verb stem in question is followed by a **V-initial suffix or clitic**. This cannot be explained as Syncope applying to a previously resyllabified sequence, since there is no evidence for Stem-Final Gemination in the relevant suffixal combinations, and since Short-V Harmony (§3.2.6) does not affect the first syllable in Imprt or other verbs. Thus for -vʀʀv- 'read', T-ka Imprt /æʀʀɪ/ → /æʀʀ/ → əʀʀ 'read!' without further suffix or clitic, but æʀʀ-ə 'read it!' with V-initial 3MaSg object clitic.

However, in the specific case of -vswv- 'drink', the resyllabified variant -əsəw occurs (in several dialects) before the 3MaSg object clitic, which therefore takes its postvocalic allomorph -tt. Probably -əsəw [əsʉ:] has been reanalysed as -əsú, resulting in this (dialectal) generalization. For Sg Imprt 'drink it-Ma!' we therefore get, depending on the dialect, two results. The first type is seen in A-grm əsw-ə and T-ka əsw-ə, parallel to əʀʀ-ə 'read it!' and əkš-ə 'eat it!'. Here -ə (including A-grm variant -ə) is the postconsonantal allomorph of the 3MaSgO object clitic. The second type is seen in əsú-tt (K-d K-f R Ts) and əsú-ətti (Im), where the clitic has a postvocalic allomorph.

3.2.5 Schwa-Epenthesis

The most conspicuous cases of epenthesis (insertion of schwa) have just been described in §3.2.4, where unstable stem-final CC clusters were involved. There are some additional combinations involving prefixes that may require a more general **Schwa-Epenthesis** rule, depending on whether we assign schwas to underlying forms of the morphemes involved or consider them to be epenthetic.

Prefix t- has some special properties, but different patterns appear in nominal and verbal morphology. For the nouns, it is rare to get **Feminine** t- before a C-initial stem with no intervening vocalic prefix (Sg -a- and variants,

Pl -i-). There are a small number of cases where a masculine C-initial stem without vocalic prefix has a feminine counterpart with prefix t-. In these cases, a short V may appear after the t- in the Sg, but it may be either ə or æ, usually harmonic to the V of the following syllable. The Pl (if attested) has -i-, which suggests that the -ə- or -æ- in the singular is the Sg vocalic prefix rather than an epenthetic vowel due to the phonology. The stems are generally loanwords, often dialectal. Examples: kæyá ‘monkey’, specifically female form t-æ-kæya-t-t, Pl t-i-kæya-t-en; šakú ‘100-kilo sack’, diminutive feminine t-æ-šäku-t-t ‘50-kilo sack’, Pl t-i-šäku-t-en.

Another combination where Fe prefix t- arguably calls for Schwa-Epenthesis is in dialects where the Prefix Reduction form of **Feminine Plural** prefix sequence t-i- is vowelless ʔ-t-Ø- before a CV-initial noun stem. This does not apply to T-ka, our focal dialect, which in this position has ʔ-t-ə-, whose -ə- must be analysed as a reduction (but not deletion) of -i-. However, we do get ʔ-t-Ø- before CV-initial stems in T-md and several eastern dialects (§3.5.1). Before CCV-initial stems, these dialects (like T-ka) have ʔ-t-ə-. In the eastern dialects, one might argue that the basic FePl Prefix Reduction form is ʔ-t-Ø-, in which case the schwa in ʔ-t-ə- is epenthetic (inserted to break up a CCC cluster). However, even for the eastern dialects, I cannot accept an epenthesis analysis here, since the schwa in ʔ-t-ə- preserves the accentual status of its unreduced t-i- counterpart. If the -i- were deleted by Prefix Reduction, and then (before a CC cluster) effectively “restored” as a schwa, one would have difficulty explaining how the underlying accent on -i- is retained.

In verbs, the t- prefix is a **subject prefix** for **3FeSg** and for all **2nd person** categories. Nevertheless, whereas the apparently parallel nominal Fe t- prefix never loses its stop, the verbal t- prefix is regularly deleted before a CV-initial stem; see **Prefixal t-Deletion** (35) (cf. §7.4.1.2). The deletion is not terribly frequent, since most inflectable verb stems are V-initial. However, we do get CV-initial stems in long imperfective stems, which have shapes like LoImpfP -CáCC- and (with LoImpfP prefix -t-) -t-ĩCəCCuC-. Example: -báss- (/bássa/) ‘vomit.LoImpfP’, 3MaSg i-báss, 3FeSg Ø-báss (for underlying /t-bássa/), 2Sg bássæ-d (for /t-bássa-æd/). There are also some adjectival verbs whose perfectives begin with CV.

The other relevant subject prefix on verbs is **1Pl n-** (or nə-). Dialects differ as to how this is treated before a CV-initial stem. For example, with -báss- ‘vomit.LoImpfP’, both n-báss and nə-báss are attested. The latter is typical of T-ka, our focal dialect, but the former occurs in a number of other dialects. For dialects with nə-báss, one could argue for a Schwa-Epenthesis rule. Alternatively, we could propose that the basic form of the prefix is nə- and that the schwa is deleted by VV-Contraction before another V (§3.2.3.2).

There is also a set of processes affecting inflected verbs of the perfective system, usually also the short imperfective (other than Imprt), of underived verbs. These processes include insertion of a stem-initial short V, but in combination with either gemination or syncope creating a CC cluster. This is

not epenthesis, since it applies even at the beginning of CV-initial stems that have no need to resyllabify; see §3.4.8 for details.

Finally, there are some **CC-final noun** stems, mostly accented monosyllables of the form (C)VCC with nongeminate final cluster, that have MaPl suffix allomorph *-tæn* (rather than *-æn*). The result would be a CCC cluster. If the stem ends in a geminate, it is sometimes degeminated to produce a pronounceable combination: bæww ‘monitor lizard’, Pl bæw-tæn. However, this option is not available for nouns ending in a nongeminate CC cluster. Informants from the T-ka area occasionally pronounced the triple cluster without modification, as in líns-tæn ‘red dyes’, but this may have been “elicition-ese” involving uncommon plural forms. More often, a schwa is inserted. Example: ðŋɣ ‘palate’, Pl ðŋɣə-tæn ‘palates’. For further examples involving simple noun stems, see §4.1.2.2. There are also some VCC verbal nouns that have the same treatment, e.g. ðdh ‘folding’, Pl ðdhə-tæn (§8.6.1.1).

Some dialects, especially A-grm, have dialectal variants of these stems with a final V even in the Sg, so the Pl is phonologically unproblematic: ðŋɣɑ ‘palate’, Pl ðŋɣɑ-tæn. The R speaker tended to follow T-ka in the Sg forms, but had several plurals of A-grm type based on stem-variations with final V. The K-d speaker frequently had the CC-final Sg, but added ɑ instead of ə as a more or less epenthetic V: útayy ‘tea’, Pl ðtayyɑ-tæn (cf. A-grm Pl i-tàyyə-tæn). So the dialects differ considerably among each other, and even in T-ka the Schwa-Epenthesis rule is somewhat erratic in its application to suffixal combinations.

3.2.6 Short-V Harmony

3.2.6.1 Asymmetrical version

Short-V Harmony is a word-internal process, very productive in T-ka and considerably more restricted in other dialects. It consists of the shift of the low short vowel æ to high (ə). The formulation in (46) is asymmetrical; for a possible symmetrical version see §3.2.6.2, below.

(46) **Short-V Harmony** (asymmetrical version, applying only to /æ/)

æ → ə before a syllable with a high V {i ə u}

This applies most consistently in the contexts in (47).

- (47) a. /-æC(C)ɪ-/ ShImpf (including Imprt) verb when resyllabified as əCəC or when /t/ is realized as ə
 b. Sg vocalic prefix of noun when reduced from {ɑ- e-} to short {æ ə}
 c. Agentive prefix -næs- (in variant -nəs-)

- d. first syllable of multisyllabic stem
 e. (sometimes) 1Sg subject suffix $-\text{æ}\gamma-$ before directional clitics like Centripetal $-\text{ádd}$ or $-\text{ídd}$

For the $/-\text{æC(C)}_1-$ **ShImpf verbs**, the process does not operate when the $/l/$ is deleted word-finally, provided that the resulting stem-final (C)C does not undergo resyllabification. Examples are $\text{æ}k\check{s}$ 'eat!-Sg' and $\text{æ}j$ 'do!-Sg'. However, when the $/l/$ surfaces as ə (before a C-initial subject suffix), or combines with the initial $/\text{æ}/$ of a subject suffix to produce ə , the conditions for Short-V Harmony are fulfilled and the harmonic rule applies: (Future) $\text{ad } \text{ə}k\check{s}\text{ə}-\text{næt}$ 'they-Fe will eat', $\text{ad } \text{ə}k\check{s}\text{ə}-\text{n}$ 'they-Ma will eat', FePl Imprt $\text{ək}\check{s}\text{ə}-\text{mæt}$ 'eat!-FePl'. Likewise $\text{æ}j$ 'do!-Sg', $\text{ad } \text{ə}j\text{ə}-\text{næt}$ 'they-Fe will do', $\text{ad } \text{ə}j\text{ə}-\text{n}$ 'they-Ma will do'.

For those $/-\text{æCC}_1-$ ShImpf verbs that require **resyllabification** (§3.2.4) in word-final position because the final C is a sonorant, the insertion of schwa (Final-CC Schwa-Insertion) also feeds Short-V Harmony. Thus $/\text{æ}j\text{l}/$ 'go!-Sg' is realized, depending on dialect, as $\text{ə}j\text{əl}$ or $\text{ə}j\text{əl}$. Leaving the accent aside, we note that both outputs not only show an epenthetic medial schwa (between the j and the sonorant l), but also change the stem-initial $/\text{æ}/$ to ə . The derivation can be modeled as $/\text{æ}j\text{l}/ \rightarrow / \text{ə}j\text{əl}/ \rightarrow \text{ə}j\text{əl}$.

When Final-CC Schwa-Insertion is blocked by the presence of a V-initial suffix or clitic, as in 2MaPl Imprt $\text{æ}j\text{l}-\text{æt}$, the absence of the epenthetic schwa correlates with the failure of the initial $/\text{æ}/$ to shift to ə . These data can be explained by assuming at least the one-way harmonic process in (46), by which $/\text{æ}/$ assimilates to the quality of ə in a following syllable. (For some second thoughts on this, see end of this section.)

When a full-V nominal **Sg vocalic prefix** a- or e- (as opposed to short-vowel allomorphs æ- or ə-) undergoes Prefix Reduction (§3.5.1), the prefix appears as æ when the following syllable has a low or mid-height V {e æ a o}, or when there is no following syllable (' æ-xx 'milk'), and as ə when the following syllable has a high V {i ə u}. It is reasonable to think that the reduction rule itself converts a or e (note that e is often associated with a in Tamashek) to æ (i.e. to the short counterpart of a), which is then subject to Short-V Harmony if applicable. Examples in (48), where ʔ , as usual, precedes nouns whose vocalic prefix has been audibly reduced.

(48)	unreduced	reduced	gloss
a.	$\text{e-bæ}g\text{g}$	$\text{ʔæ-bæ}g\text{g}$	'jackal'
	$\text{e-dæ}b\text{er}$	$\text{ʔæ-dæ}b\text{er}$	'dove'
	$\text{á-}\text{d}\check{\text{r}}\text{a}\gamma$	$\text{ʔæ-}\text{d}\check{\text{r}}\text{a}\gamma$	'rock, hill'
	é-ben	ʔæ-ben	'tobacco pipe'
	e-mm	ʔæ-mm	'mouth'

b.	ɑ-dúbən	ʔə-dúbən	'marriage'
	ɑ-fəffəru	ʔə-fəffəru	'scrubbing'
	ɑ-jīwəd	ʔə-jīwəd	'fleeing'

When the consonant(s) immediately following the vocalic prefix are neutral (i.e., not BLC's, §3.1.2.2), the output of Prefix Reduction can be diagnostic for the lexical representation of the first stem-internal V. This is useful when this stem-internal V is phonetic [ɛ] or [ɔ] before a BLC, since the BLC merges preceding lexical {i e} as [ɛ] and preceding lexical {u o} as [ɔ]. For example, the noun 'sunrise' is heard as [ɑ'dʒmɔð], compatible with either á-jmuð or á-jmoð, since {u o} merge as o before the BLC ɖ. In most dialects (including T-ka), but not A-grm, Prefix Reduction converts ɑ- to ə- before this stem, which implies that native speakers take the [ɔ] to be a high V (namely, u). This test does not work in dialects like A-grm, which reduce ɑ- and e- to æ- regardless of harmonic environment. Even in T-ka, the test fails to work when both the prefixal V and the first stem-internal V are followed by BLC's, as in [ɑ'dʒrɑʒ] 'sauce'. The reduced form is heard as [ɑ'dʒrɑʒ], a pronunciation that could be phonemicized either as ʔé-ɖrəʒ or ʔé-ɖræʒ. Based on the large number of á-CCəC nouns whose vocalism is indisputable, I take 'sauce' to be á-ɖrəʒ, but there is no obvious way to test this hypothesis.

For T-ka, Short-V Harmony also applies as a kind of filter to the first two syllables of nouns and verbs. In other words, in T-ka, ə but generally not æ is possible in these contexts when the following syllable contains high {i ə u}. For **verbs**, this results in a large number of dialectal variants in perfective stems such as T-ka -əmmu-t 'die (PerfP)' versus -æmmu-t in most other dialects (§7.3.2.1). In the case of verbs, A-grm sides with T-ka, though since Short-V Harmony is not productive in A-grm it is best to account for the schwa in this dialect as a function of vocalic ablaut melodies rather than as due to a harmonic process as such. Since 3MaSg subject prefix i- combines with schwa to form i but with æ to form æ, the dialectal differences are very conspicuous in the 3MaSg subject form: T-ka (and A-grm) i-mmu-t 'he died' versus other dialects' Ø-æmmu-t. A great many verbs are subject to this dialectal variation in perfective verb stems; for example, the verbs of type PerfP -əkuɸ- 'swell, be inflated' (§7.3.1.9) and PerfP -əffud- 'be thirsty' (§7.3.1.10) have variants outside of T-ka and A-grm of the type -ækuɸ- and -æffud-. Clearly, Short-V Harmony is not particularly productive outside of T-ka.

In the first syllable of a **multisyllabic noun** stem, T-ka usually enforces harmony. This is seen in stems that appear elsewhere as e.g. -CəCi..., disregarding any vocalic prefix. For example, 'fine sand' appears in most dialects as e-də́hi, but T-ka has e-də́hi. However, I did record a few exceptions in T-ka, such as t-e-sə̀ni-t-t 'white spot above nose (e.g. of horse)'.

The **1Sg subject suffix** -əɾ on verbs sometimes shifts to -əɾ- in the one case where it is followed by a high V within the word (including clitics), namely before directional clitics including Centripetal -lə́dd (dialectally -lídd).

Thus æqǫim-əɾ-ǎdd 'I sat (=stayed) here'. Because ɾ is a BLC, it is often difficult to distinguish æ from ə in this combination. In cases like ShImpf ækš-æɾ 'I (will) eat', where -æɾ combines with the /ɪ/ of /ækšɪ/ to give æ instead of the usual ə, and therefore does not trigger Short-V Harmony to #ækšə-ɾ (parallel to 3MaPl ækšə-n), the low-level optional raising of -æɾ to -əɾ- before the Centripetal does not affect the first syllable, hence ækš-æɾ-ǎdd varying with ækš-əɾ-ǎdd, not #ækš-əɾ-ǎdd. Likewise, cases like Imprt ænɾ-ǎdd 'kill!' with Centrip clitic do not raise the æ of the stem to ə.

Nouns borrowed from Arabic often incorporate **Arabic Definite prefix** al-, and some of these cases require harmonization in T-ka. An example is T-ka əddəlil 'reason' versus əddəlil in other dialects. The important noun meaning 'people' is of Arabic origin too and shows the same dialectal variation: T-ka əddinæt, other dialects' əddinæt.

The harmonic rule is basically **asymmetrical**, converting æ to ə but not vice-versa. At least I know of no cases (in T-ka) where an underlying ə is converted to æ due to harmony with a low V in the following syllable. There are composite <H L> vocalic melodies in both verbal and nominal ablaut, which have the effect of producing vowel sequences (in adjacent syllables) of the type schwa plus low V (PerfP -əjjæš- 'enter', Pl t-i-ǫákkol 'handfuls'). Note that the schwa's are not converted to æ here, even for T-ka.

3.2.6.2 Symmetrical version

The analysis of (asymmetrical) Short-V Harmony given above, especially as it interacts with Final-CC Schwa-Insertion, is debatable. I have presented it as a more or less pure phonological process, but at least for some dialects it is more highly morphologized than this suggests. Consider, for example, verbs with PerfP shape -əCæC- like -əwæt- (dialectally also monosyllabic -wæt-) 'hit' (§7.3.1.1). The ShImpf stem in most dialects is invariant -əwæt-, with the ShImpf <H> melody found for other similar verb types (compare ShImpf -əPQəC- and -əPPəC- for stems with a medial CC cluster).

However, some dialects around Kidal have **ShImpf -æwt-** (instead of, or varying with, -əwæt-) when followed by a V-initial suffix, hence Future 1Sg *ad* æwt-æɾ (note the accent) instead of or varying with the more widespread *ad* əwæt-æɾ. Likewise, Kidal-area 2Sg Future *ad* t-æwt-æd and 3MaPl *ad* æwt-æn. In all dialects the word-final or preconsonantal form is -əwæt-, as in Future 3FeSg *ad* t-əwæt and 1Pl *ad* n-əwæt.

In Kidal-type dialects with prevocalic -æwt- alternating with word-final or preconsonantal -əwæt-, one should take -əwæt- as basic in the light of the overall nature of the ablaut system. This means deriving -æwt- by some (morpho-)phonological process sensitive to prevocalic position. The only reasonable implementation of this strategy is to allow the medial /ə/ of -əwæt- to be syncopated, giving /-əwt-/. (For Syncope see §3.2.7.2, below) Actually,

the penultimate accent in 1Sg *ad æwt-ær* suggests that Default Accentuation precedes Syncope in this case (whereupon the accent becomes “marked”). This leaves us with the problem of how to account for the shift from expected #*æwt-* to *-æwt-*. Perhaps the shift is just another case of Short-V Harmony, since the V-initial subject suffixes all happen to begin with *æ*, and since postconsonantal 3MaSgO allomorph *-e* has a mid-height vowel (which functions as “low” in the environment for harmony). A possible derivation is given in (49).

(49) Derivation of ShImpf *-æwt-* (Kidal)

<i>/əwət-ær/</i>	underlying
<i>/ə̃wət-ær/</i>	Default Accentuation
<i>/ə̃wt-ær/</i>	Syncope (accent becomes marked)
<i>æwt-ær</i>	Short-V Harmony (symmetrical version)

If, with whatever morphological restrictions, underlying */ə/* as well as */æ/* is subject to harmony with the V of the following syllable, we would have to formulate Short-V Harmony as **symmetrical**, converting vowel sequence «*ə æ*» to «*æ æ*», as well as converting «*æ ə*» to «*ə ə*». The symmetrical version of the rule is given as (50).

(50) Short-V Harmony (symmetrical version, applying to both */ə/* and */æ/*)

<i>æ</i> → <i>ə</i>	before a syllable with a high V { <i>i ə u</i> }
	[morphological range as in §3.2.6.2]
<i>ə</i> → <i>æ</i>	before a syllable with a low V { <i>ɑ æ</i> }
	[morphologically restricted contexts]

However, objections may be lodged to the derivation (49) and in general to the symmetrical version of Short-V Harmony (50). In other morphological contexts (e.g. many PerfP stems) the vocalic sequence «*ə æ*» is stable, so there is no basis for a broadly applicable harmonic rule converting «*ə æ*» into «*æ æ*» in any dialect. As a result, Short-V Harmony could only apply to «*ə æ*» under very tight morphological restrictions even in the Kidal dialects. Therefore even in this version the rule is not fully symmetrical.

Moreover, it seems odd that, in the ShImpf paradigm of *-vCvC-* verbs like *-vwvt-* ‘hit’, the (Kidal) *-æCC-* form is derived (via syncope) from the *-ə̃CəC-* form, whereas in the ShImpf of *-vCCv-* verbs like *-vknu-* ‘make’ (see beginning of this section) resyllabified *-ə̃CəC* is derived from */-æCCɪ/*, via */-æCC/* (after Stem-Final *ɪ/A*-Deletion (29), by Final-CC Schwa-Insertion (44)). In both cases, *-ə̃CC-* is associated with prevocalic position, while *-ə̃CəC-* occurs word-finally or before a C. It may well be that speakers in some dialects are trying to reconcile the alternations in the two paradigms, resulting in an

emerging unitary morphophonological interpretation that differs significantly from the analysis given above.

3.2.7 Syncope and Leftward L-Spreading

3.2.7.1 Syncope

In some positions, a Syncope rule affecting /ə/, and arguably /æ/, appears to apply. Whether or not the rule affects only /ə/ (**asymmetrical** version) or applies equally to both /ə/ and /æ/ (**symmetrical** version) depends on decisions about how to represent the stems in question. The data just below on Syncope are for T-ka, while some dialectological color is given at the end of this section.

The most important cases of **Stem-Initial Syncope** involve alternations of stem-initial surface -CvCV... and -vCCV... in verbs, where “v” is a short vowel and “V” is any vowel. Consider the examples in (51).

(51) Examples of Stem-Initial Syncope

gloss	unsyncoated	category	syncoated	category
‘(hole) gape’	xəbubə-t	Imprt	-əxbubə-t	ShImpf
			-æxbabæ-t	PerfP
			à-xbubu	VblN

Within the set of pronominally inflectable verb forms, the unsyncoated onset is confined to the Imprt forms, which are always unprefixes. On the other hand, we find Syncope at work in all of the fully-inflectable (i.e. prefix-tolerant) stems such as ShImpf and PerfP, which begin with a short V absent from the Imprt, due to Stem-Initial V-Insertion (99). This initial short V is also found in other verbs that geminate the initial C and therefore are not subject to syncope, converting e.g. PvQR... to vPPvQR... (§3.4.8). (51) also shows that Syncope operates in the VblN, targeting a short V in the first stem syllable, which follows the vocalic prefix, here ə-.

There is no Stem-Initial Syncope when the basic form of the stem is of the **middleweight shape** -CvCvC- (with only short V’s). This is the shortest of the heavy verb-stem shapes (§3.4.1.4) that begins with a short open syllable of the sort that could, in principle, be syncoated. The absence of Stem-Initial Syncope is seen in VblN’s of the form α-CáCəC (or its variant α-CáCaC), e.g. α-bə́rəj (or more common variant α-bə́rəj, subject to possible reinterpretation as α-bə́rəj) ‘boasting, boastfulness’. Likewise, causative ShImpf stems like -s-ə́rəf- ‘pester’ with subject prefix, e.g. 3MaSg Future ad ǐ-s-ə́rəf ‘he will not pester’, fail to syncoate. There are also some nouns like t-α-bə́kun-t ‘heap’ with unsyncoated ə. The stem (minus the vocalic prefix) is again

bisyllabic. However, I did record a syncopated suffixal Pl *t-i-bkun-en* (alongside ablaut Pl *t-i-bókkān*).

In cases like VbIN *à-xbubu*, note that the **accent** is on the surface antepenult. However, this does not necessarily mean that Default Accentuation applies only to the output of Stem-Initial Syncope. We can get the correct output either by having Default Accentuation apply last, or by having it apply first but adding a rule that accent is reassigned to the next syllable on the left when the accented V is deleted (by Stem-Initial Syncope). This latter interpretation would have a stage /*ɑ-xəbubu*/ in the derivation that ends up as *à-xbubu* (compare A-grm *ɑ-xəbubi*).

Assuming a Stem-Initial Syncope rule in the forms on the right in (51), the deleted short V is clearly /*ə*/ in ShImpf *-əxbubə-t* (from /*-əxəbubə-t*/) and in VbIN *à-xbubu* (from /*ɑ-xəbubu*/). This is based on the prevailing <H> vocalic melodies for ShImpf stems and VbIN's for stems of this general shape. Let us see if the other cases of Syncope can be analysed in such a way that the syncopated V is /*ə*/ rather than /*æ*/, so that an asymmetrical Syncope rule can be posited.

The obvious problem with this is that Stem-Initial Syncope also applies to PerfP *-əxbabə-t*, which appears to have a uniform <L> melody. The most straightforward derivation would be from /*-əxəbabə-t*/ with stem-wide <L> melody. This would force us to adopt a symmetrical version of Stem-Initial Syncope, applying to /*æ*/ as well as /*ə*/). However, there is an alternative analysis where *-əxbabə-t* is instead derived from /*-əxəbabə-t*/, first syncopating to /*-əxbabə-t*/ before surfacing (after Leftward L-Spreading, see below) as *-əxbabə-t* by Short-V Harmony. In this case, we could argue that Syncope applies specifically to /*ə*/.

The first part of the argument for this analysis is as follows. In the perfective family of stems (and disregarding the unprefixated perfectives, probably of nominal origin, of adjectival verbs), the surface melodies are either of the type <L>, as in *-əxbabə-t*, or <HL>, the latter expressed as surface vocalic sequence «HL», «HHL», «HHLL», etc., depending on the number of stem syllables. The stem-wide perfective <L> melody occurs precisely in those verbs that also show Syncope, while non-syncopating verbs have the composite perfective melody <HL>. We should therefore consider the possibility that the stem-wide <L> perfective melody is reducible to an underlying <HL>, which would permit us to position a schwa in the syncopation site.

Second, in deverbal nominals of verbs, and in some nominal Sg/Pl alternations, there is evidence that *ə* syncopates while *æ* does not. For example, the same verb *xvbubu-* (+ *-t*) seen in (51) above is related to a noun *t-æ-xəbūbu-t-t* 'gaping hole'. The first two syllables of the stem have L vocalism, so we get *æ* rather than *ə* after *x*. Whereas *ə* in VbIN /*ɑ-xəbubu*/ syncopates, giving *à-xbubu*, the *æ* between *x* and *b* in *t-æ-xəbūbu-t-t* fails to syncopate. Many verbs have pairs of formally similar VbIN's with stem-wide <H> stem melody and a related noun (often agentive in sense, beginning with

<L ...> melody), showing the same association of Syncope with ə while æ fails to syncopate (§8.11.1).

In addition, the plural of *t-æ-xæbðbu-t-t* ‘gaping hole’ is *t-ĩ-xbuba*. The Pl is syncopated from */t-i-xæbuba/*, assuming the standard <HL> melody of unsuffixed ablaut plurals. There are many similar Sg/Pl plurals with unsyncopated æ in the Sg and Syncope (presumably of /ə/) in the Pl, e.g. Sg *α-bætol* ‘ground depression’ and Pl *ĩ-btal* (from */i-bðtal/*), and *æ-xærárad* ‘thick-knee (bird)’ and Pl *i-yrúrad*. Note also *α-næbaj* ‘hole’, irregular variant Pl *ĩ-mbujja* (with extra gemination and final V). Note that Syncope is **not blocked by accent** in */i-bðtal/*; when the schwa syncopates, the accent simply reattaches to the syllable to its left. There are also some suggestive alternations among minor nominal ablaut patterns, where ə appears to syncopate while æ does not, e.g. *t-α-blülæq-q* and virtually synonymous *t-æ-bælðlaq-q* ‘ball, lump’ (cf. Imprt verb *bðlulæx* ‘be ball-shaped’).

We therefore have considerable evidence for an asymmetrical version of Syncope that applies to ə but not to æ. This evidence comes from nominal plurals, and from contrasts between VbIN and L-initial nominalizations of verbs. In this light, it is not unreasonable to take another look at syncopated perfective verb stems like *-æxbabæ-t*. In particular, we could argue that Stem-Initial Syncope applies at a stage where the first two V’s are schwas (*/-əxəbabæ-t/*). This has the advantage of reconciling the apparent stem-wide <L> melody of this perfective type with the prevailing <HL> perfective melody. The latter results in surface «HHLL» with quadrisyllabic stems like *-fuffvru-* (PerfP *-əffüffæxæ-t*) ‘scrub’, and «HHLL» is precisely the vocalism of the assumed underlying */-əxəbabæ-t/*, since schwa is H while {α æ} are L. The idea, then, is to allow e.g. */-əxəbabæ-t/* to syncopate to */-əxbabæ-t/*. To account for surface *-æxbabæ-t*, a further rule is needed to spread the L part of the <HL> melody to the left edge of the stem, resulting in an apparent stem-wide <L> melody. On this spreading, see §3.2.7.2, below.

Stem-Initial Syncope applies most productively to CvC syllables when preceded and followed by V’s, but even here the rule is somewhat specialized. As a productive rule, Stem-Initial Syncope is confined to **superheavy stems** (§3.4.1.4) whose basic form is at least trisyllabic, e.g. to *-CvCvC(C)vC-*. It applies to the “middleweight” (though still “heavy” for some purposes) stem type *-CvCvC-* only in certain morphological contexts. The set of these contexts, showing Syncope even with middleweight *-CvCvC-* stems, is given in (52), followed by the set of contexts limited to superheavy stems in (53). The syncopated V’s are taken here to be /ə/ in all cases, adopting the suggestion made above. As usual, “V” = any vowel (full or short), “v” = short vowel. All of the contexts involve a prefix or (for certain verbs) an extra initial short V due to Stem-Initial V-Insertion. Accents are shown in the general formulae only when applicable to all examples, otherwise omitted.

(52) Contexts for Syncope of Stem-Initial -CvC..., all heavy stems

- a. -vs-əCV... → -vs-CV...
causative verb (perfective system only)
examples: -æs-dakæ-t 'calm (sb) down' (PerfP)
[cf. Imprt s-əddukə-t, VbIN a-s-ədduku]
-æs-jæn- 'make knee'
[cf. Imprt s-əjæn, VbIN a-s-əjæn]
- b. (t-)i-CəCV... → (t-)i-CCV...
ablaut Pl noun (see §4.1.2.22)
examples: í-šrak (Sg a-šárik 'evil spell')
í-kyan (Sg a-káyon 'tortoise')
t-ĩ-bka (Sg t-a-bə̀ka-t-t 'jujube tree')
- c. a-s-əCəC → á-s-CəC
Instrumental nominal with -s- of -vCvC- verb
example: á-s-fəl 'roof material' (verb -v̆vl- 'roof')
[Syncope does not apply in T-ka to causative VbIN a-s-əCəC]

(53) Contexts for Syncope of Stem-Initial -CvC..., superheavy stems only

- a. -vCəCV... → -vCCV...
type: verb stem with initial v due to Stem-Initial V-Insertion
example: ShImpf -ə̀xbubu- '(hole) gape' (51, above)
- b. -vm-əCV... → -vm-CV...
type: reciprocal verb after Stem-Initial V-Insertion
example: -ə̀m-bə̀bba- 'carry each other (on back)'
[from /-ən-əbabba-/, compare Imprt n-ə̀bə̀bb]
- c. a-CəCV...
type: VbIN of underived or prefixally derived verb (except Caus)
examples: a-m-bə̀bb 'carrying each other'
[< /a-n-əbə̀bbi/]
à-xbubu '(hope) gaping'
- d. (t-)a-CəCV... → (t-)a-CCV...
type: Sg noun
example: t-a-bl̥l̥æq-q 'ball, lump'
- e. (t-)i-CəCV... → (t-)i-CCV [rare, only one example]
type: suffixal Pl of bisyllabic Sg noun
example: variant Pl t-ĩ-bkun-en (Sg t-a-bə̀kun-t)

To illustrate the morphologization of Syncope, note particularly the difference between unsyncoated causative VbIN α -s- $\acute{\alpha}$ fəl ‘covering (with roof)’ and the syncopated instrumental noun $\acute{\alpha}$ -s-fəl ‘roof material’, both of which can be taken as underlying / α -s- $\acute{\alpha}$ fəl/ (§8.6.1.6, §8.11). This representation is obvious for the Caus VbIN, and reasonable for the instrumental nominal by comparison with other such nominals, e.g. α -s- $\acute{\alpha}$ kməs ‘cloth bag’. Note again that even a marked accent fails to block Syncope; the marked accent simply shifts to the preceding syllable (instrumental / α -s- $\acute{\alpha}$ fəl/ → $\acute{\alpha}$ -s-fəl). (In K-d, the causative VbIN and the instrumental noun do fall together, in this case as $\acute{\alpha}$ -s-fəl.)

In R dialect, Syncope additionally applies to VbIN’s of type $\grave{\alpha}$ -CəCv from bisyllabic stems (54.a). For the R speaker I also recorded Syncope in long imperfectives with <H> stem melody (54.b).

(54) Syncope in $\grave{\alpha}$ -CəCv VbIN’s (R Dialect)

- a. $\grave{\alpha}$ -CəCv → $\acute{\alpha}$ -CCv
 VbIN
 example: $\acute{\alpha}$ -mku (R) ‘being extinguished’
 [compare T-ka $\grave{\alpha}$ -mæku, A-grm $\grave{\alpha}$ -mæki]
- b. s- $\grave{\alpha}$ CəCv... → s- $\acute{\alpha}$ CCv...
 causative long imperfective
 example: -s- $\acute{\alpha}$ mku-t (R) ‘extinguishing’
 [compare T-ka -s- $\acute{\alpha}$ mæku-t, A-grm -s- $\acute{\alpha}$ mæku-t]

I write $\acute{\alpha}$ -mku and -s- $\acute{\alpha}$ mku-t with acute accent since the accented syllable is no longer the surface antepenult, but the output can be obtained simply by ordering Default Accentuation before Syncope.

The small set of contexts where Syncope applies to a **stem-final CvC** syllable, always involving a V-initial suffix, is given in (55). The type in (55.a) syncopates only in certain dialects (not including T-ka).

(55) Contexts for Syncope of Stem-Final ...CvC- (with examples)

- a. -t- $\acute{\alpha}$ CəC-V... long imperfective of -vCvC- before V-initial subject
 suffix [T-md and R dialects]
 examples: -t- $\acute{\alpha}$ kəl- ‘step on’, 3MaPl t- $\acute{\alpha}$ kl-ən
 -t- $\acute{\alpha}$ həx- ‘snatch’, 3MaPl t- $\acute{\alpha}$ rh-ən (R)
 [for metathesis in ‘snatch’ see §3.2.2]
 [compare T-ka: 3MaPl t- $\acute{\alpha}$ kəl-ən, t- $\acute{\alpha}$ həx-ən]
- b. $\acute{\alpha}$ CəC-V... Sg noun of shape $\acute{\alpha}$ CəC in MaPl $\acute{\alpha}$ CCaw-æn
 examples: VbIN $\acute{\alpha}$ dəh ‘pounding’, Pl $\acute{\alpha}$ dhaw-æn
 $\acute{\alpha}$ ləs ‘tongue’, Pl $\acute{\alpha}$ lsaw-æn

In (55.a), note that the syncopated ə leaves a trace behind, in that the /æ/ of 3MaPl subject suffix -æn is realized as ə. For K-d, I have also seen this with ShImpf verb stems of the shape -əCəC- before a V-initial subject suffix, as in t-əzɪl-əd 'you-Sg pay', cf. T-ka t-əzəl-əd. In these dialects, some additional machinery must be recognized to account for the **spreading of the H vocalic feature** from the /ə/ to the suffixal /æ/. A derivation involving metathesis /CəC-æ/ to /CCə-æ/ (equivalent to /CCɪ-æ/) might be considered, but a more revealing analysis would extract the H feature from the schwa and attach it to the /æ/. The details probably differ from dialect to dialect; for some K speakers I recorded e.g. 2SgS -əd after many ShImpf verbs whose final stem-syllable had ə, so for these speakers a more general harmony seems to be at work; an example is 2Sg ShImpf t-əjəy-əd 'you-Sg tie'. In any event, my focal dialect is T-ka, which does not show e.g. 2SgS -əd except due to VV-Contraction from /t/ plus /æ/ (37.c).

While at least some of the cases in (55.b), are pan-dialectal, they involve a rather complex and archaic-looking Pl formation, where Syncope is combined with an additional əw added to the stem before the usual MaPl suffix -æn (§4.1.2.10).

The great majority of stem-final CvC syllables in both nouns and verbs are quite stable (i.e. unaffected by Syncope) even when followed by a V-initial suffix or clitic. For example, PerfP -əwæt- 'hit' and its ShImpf counterpart -əwət- do not syncopate (in T-ka or most other dialects) when a V-initial clitic or suffix is added: ad əwət-ær 'I will hit'.

In summary, Syncope as interpreted here applies to ə, in the environment VCəCV including the relevant affixal segments, with various morphological restrictions (some of them sensitive to the size of the stem). These restrictions amount to a preference for allowing Syncope to apply to stem-initial CəC with fewer cases of application to stem-final CəC. The rule is given informally as (56), which incorporates by reference the morphological contexts just given.

(56) **Syncope** (asymmetrical version, applying to /ə/ but not /æ/)

ə → Ø in the environment VC_CV
 [in environments given in (52-55)]

In dialects other than our focal T-ka, FePl prefix combination t-i- on nouns, which reduces to ʔt-ə- by Prefix Reduction (as in T-ka) in syntactically defined positions, further syncopates to ʔt-Ø- when followed by CV... (but not by CCV...). Thus t-ĩ-rəjw-en 'stomach cavities', but dəɾ ʔt-ə-rəjw-en 'in the stomach cavities' (T-ka), dialectally syncopated to dəɾ ʔt-Ø-rəjw-en (e.g. T-md, K-d). In this example, the -i- prefix is accented, so when it is zeroed in ʔt-Ø- we get a phrasal accent on the preposition.

3.2.7.2 *Leftward L-Spreading*

In order to complete the analysis of syncopated perfective verbs, it is necessary to formulate a rule spreading the L part of <HL> to the left edge of the stem precisely when Syncope also applies. Let us begin with PerfP -æxbabæ-t ‘(hole) gape’ mentioned in §3.2.7.1, above. Given the asymmetrical Syncope rule suggested above, the derivation should be of the general type (57), leaving the precise nature of the final spreading rule open for the moment. Note that Syncope applies to /ə/, and only thereafter does the <L> part of the <HL> melody spread to the left edge of the stem.

(57) Derivation of -æxbabæ-t via (symmetrical) Short-V Harmony

/-əxəbaba-t/	after Melodic Association
/-əxbaba-t/	Syncope
-æxbabæ-t	spreading rule (and other rules)

One possible candidate for the mystery spreading rule is Short-V Harmony. As noted above (§3.2.6), the harmony rule could arguably be formulated in either a symmetrical or asymmetrical form. If we go for the symmetrical version, it should harmonize /ə...ə/ to surface sequence «æ æ», as well as harmonizing /æ...ə/ to surface sequence «ə ə», as special cases of a more general harmonic process (where the second V in each sequence can be either full or short). In this scenario, the spreading rule at the end of (57) could just be a special case of (symmetrical) Short-V Harmony.

However, I argued for an asymmetrical (i.e. more restricted) Short-V Harmony rule, on the grounds that «ə ə» and other «HL» sequences are stable in several environments. This includes unsuffixed ablaut plurals of nouns, which have a clear <HL> melody. It also applies to perfective stems of some verb types, e.g. PerfP -əhlæk- ‘destroy’ and -əzʒəlbæbbæy- ‘be slippery’, where we observe such surface sequences as «HL», «HHL», and «HHLL» as the basic <HL> is mapped onto stems of varying syllable count. As a result, I argued above for an asymmetrical version of Short-V Harmony not applicable to underlying /ə...ə/ or other /ə...L/ sequences. As a consequence, a special, morphologically conditioned rule I call Leftward L-Spreading is needed as the final step in the derivation (57) of -æxbabæ-t.

Leftward L-Spreading also applies to superheavy stems, like the perfective of ‘sway’ in (58).

(58)	gloss	Sg Imprt	VbIN	PerfP
	‘sway’	nəhəltəttəw	ɑ-nhəltəttəw	-ənhəltəttəw-

The suggested derivation of the PerfP stems is (59). This assumes a prior application of Melodic Association, whereby <H...L> produces a sequence «H H L L L» when mapped onto a pentasyllabic string (§3.4.5).

(59) Derivation of -*ænhæltættæw-*

<i>/-ənhæltættæw-/</i>	after Melodic Association
<i>/-ənhæltættæw-/</i>	Syncope
<i>-ænhæltættæw-</i>	Leftward L-Spreading

The spreading rule can be formulated as (60).

(60) **Leftward L-Spreading**

when Syncope applies after the initial C of a (perfective) verb, the L component of the <H L> melody spreads across the site of Syncope to the preceding (i.e. stem-initial) syllable, effectively erasing the H component of the melody.

If Melodic Association is formulated in such a way that perfective stems never have more than two initial H syllables, since the syncopated V is always the ə of the second syllable, the spreading is always confined to the immediately preceding syllable (the stem-initial syllable). The fact that the H component is entirely erased may therefore be an “accidental” effect of a rule that directly targets a single syllable.

Because it is closely associated with Syncope, it is difficult to discern a (local) phonological logic to Leftward L-Spreading. For example, the rule applies to post-Syncope PerfP */-ənhæltættæw-/* in (59), but does not apply to (unsyncopated) PerfP *-əhlæk-* ‘destroy’, which also begins in *-əCCæC-*. As a result, I regard Leftward L-Spreading as a morphophonological rule.

It is possible that Leftward L-Spreading as formulated here, making specific reference to Syncope, is **historically incorrect**. In the A-grm dialect, the relevant perfective stems show the same stem-wide surface <L> melody as in T-ka and the other dialects, but in A-grm Syncope does not apply here. For example, in A-grm we get PerfP *-næhæltættæy-* ‘sway’ and *-xæ̀babæ-t* ‘(egg) be hollowed’, cf. T-ka *-ænhæltættæw-* ‘sway’ and *-æ̀xbabæ-t* ‘(hole) gape’, cited above.

Whatever the historical origin may be, speakers of most Tamashek dialects have little exposure to A-grm speech, and data from this peripheral dialect do not suffice to shoot down (60) as a synchronic formulation for K-d, R, and T-ka varieties.]

3.3 Accent

3.3.1 Word accent (Default Accentuation)

In my normal transcriptions of word-forms, a phonetic accent may be indicated by any of the following diacritics, where “v” is the vowel: *acute*, *grave*, or *circumflex*.

I use *acute* in four situations, all restricted to word-penult or -final. First, the accent may be **lexically specified**, as with many noun stems: *æ-hólæs* ‘man’. Second, the accent may be due to an **ablaut accent formative** (*á*), as in certain stems of verbs (Reslt, LoImpfP), but also in some ablaut plurals of nouns: *i-kšá* ‘he has eaten’ (Reslt), *i-jáll* ‘he goes’ (LoImpfP), *t-i-ǣddar* ‘betrayals’ (Pl of *t-ǣ-ǣdǣr-t*). Third, a marked accent occurs on the surface stem-final V, in the focal T-ka dialect, when Stem-Final *ɪ/A-Deletion* (29) results in an unstable stem-final CC cluster like /jɪ/ that requires **resyllabification** (§3.2.4): *Imprt əjál* ‘go!’ (from /æjɪɪ/ with no lexical or ablaut accent). Several other dialects have *əjəl* with no shift of accent. Fourth, when **loss of a penultimate V** makes a default-accented antepenult the surface penult, I use *acute*. This applies to cases of penult Syncope, which does not usually apply in T-ka but does occur in some other dialects, e.g. (K dialect) LoImpfP *t-ihz-æn* ‘they-Ma approach’ corresponding to unsyncopeated T-ka *t-ihəz-æn*. As it happens, the accent in *t-ihz-æn* is on the syllable that already has an ablaut accent, so perhaps Syncope merely brings out a marked accent that would otherwise be submerged by Default Accentuation. Loss of penultimate V also occurs when a stem-final V is contracted with a suffix-initial V. I use *acute* in **nominal morphology** where a V-final stem undergoes VV-Contraction (39) with MaPl -æn or (rarely) FePl -en. An example is Pl *i-wær-an* ‘baby camels’ with VV-Contraction from /i-wæra-æn/, cf. Sg *ǣ-wæra*. Note that the accent in *i-wær-an* is not lexical (or grammatical). I use *grave* (see below) in partially comparable verb forms.

I use *grave* when the surface accent is compatible with Default Accentuation (61). On words of three or more syllables, a default accent must be on the antepenult, and is not affected by anything to its left. If the word has fewer than three syllables, default accent occurs on the first syllable, but this accent is not stable. In particular, if the word occurs in a phrase with another stem or particle to its left, we get a phrasal accent on the final syllable of the preceding element.

It may happen that the default accent occurs on a syllable that already has a lexical or grammatical accent; in this event the accent can be thought of as doubly determined, but I use the *grave* accent here. An example, already cited above, is (T-ka) LoImpfP *t-ihəz-æn* ‘they-Ma approach’, compare unsuffixed 3MaSg *i-t-ihəz* ‘he approaches’. In other words, the *acute* accent is used only when the surface accent of the word is farther right than the position predicted by Default Accentuation, or (in the case of a word of fewer than three syllables) the first-syllable accent cannot be overridden by phrasal accent.

I use $\grave{\text{v}}$ (double grave accent) in two situations. First, **certain suffixes and clitics** require that the default accent be on the (surface) penult rather than antepenult of the word, effectively shifting the default location one syllable to the right. Some of these suffixes and clitics may once have had an additional vowel that has been lost. In this event, modern penultimate accent would have once been antepenultimate and therefore compatible with Default Accentuation. The best example of this is 3MaSgO clitic allomorph $\text{-}\grave{\text{t}}$ in dialects like T-ka, since a syllabic variant $\text{-}\grave{\text{tti}}$ is attested dialectally within Tuareg. Another example, more difficult historically, is FeSg suffix -t on nouns. Compare the accent of masculine $\alpha\text{-b}\grave{\text{a}}\text{m}\text{b}\grave{\text{a}}\text{r}\alpha$ ‘Bambara man’ with that of its feminine counterpart $\text{t-}\alpha\text{-b}\grave{\text{a}}\text{m}\text{b}\grave{\text{a}}\text{r}\alpha\text{-t}$ ‘Bambara woman’. If FeSg -t were a reflex of $\text{*}\text{-tV}$, the original vowel would account (historically) for the synchronic accentuation. However, I hasten to add that I know of no direct evidence from other Tuareg varieties or other Berber languages that FeSg -t was ever $\text{*}\text{-tV}$. For a list of the relevant suffixes and clitics see §3.3.1.1, below.

Secondly, I use $\grave{\text{v}}$ when a **verb-stem-final V has been lost**, and where an underlying antepenult with **default** (not marked) accent ends up as an accented penult. It should be noted that the interaction of VV-Contraction (37) with Default Accentuation is complex (§3.3.2, below). For example, in the PerfP/PerfN paradigm of $\text{-v}\grave{\text{n}}\text{s}\text{u-}$ ‘excuse’, the 1Sg subject form is $\grave{\text{a}}\text{n}\text{s}\grave{\text{e}}\text{-}\text{r}$, while the 3MaPl subject form is $\grave{\text{a}}\text{n}\text{s}\grave{\text{a}}\text{-n}$. The difference in accents is observable when we prepose Neg $\text{w}\grave{\text{a}}\text{r}$, hence 1Sg $\text{w}\grave{\text{a}}\text{r } \grave{\text{a}}\text{n}\text{s}\grave{\text{e}}\text{-}\text{r}$ ‘I did not excuse’ with phrasal accent shifting to the preverb, but $\text{w}\grave{\text{a}}\text{r } \grave{\text{a}}\text{n}\text{s}\grave{\text{a}}\text{-n}$ ‘they-Ma did not excuse’, where the accent remains fixed on the surface penult of the verb form.

There is **no phonetic difference** among these accents. In phonetic transcriptions I use [v'] to indicate accent, regardless of its grammatical source. In underlying transcriptions, only lexical and grammatical (=ablaut) accents are indicated: /v'/.

An **accentual minimal pair** is $\grave{\text{a}}\text{-j}\grave{\text{a}}\text{s}\text{u}$ ‘walking past (VbIN)’ and $\grave{\text{a}}\text{-j}\grave{\text{a}}\text{s}\text{u}$ ‘calabash’. There are many verbs whose PerfP (Perfective Positive) and Reslt (Resultative) stems differ only in accent, e.g. PerfP $\text{Ø-}\grave{\text{u}}\text{j}\grave{\text{a}}\text{j}$ ‘he went far away’ and Reslt $\text{Ø-}\grave{\text{u}}\text{j}\grave{\text{a}}\text{j}$ ‘he has gone (=he is) far away’. This is because the Reslt but not the PerfP has an accent formative as part of its ablaut package. A more exotic minimal pair involving verb stems is Imprt $\text{z-}\grave{\text{a}}\text{z}\grave{\text{a}}\text{r}$ ‘exhaust!’ versus Imprt $\text{z-}\grave{\text{a}}\text{z}\grave{\text{a}}\text{r}$ ‘put in front!’; the former shows resyllabification from $\text{-z-}\text{vzr}\text{v-}$ (cf. dialectal variants $\text{z-}\grave{\text{a}}\text{z}\grave{\text{r}}\text{u}$, $\text{z-}\grave{\text{a}}\text{z}\grave{\text{r}}\text{u}$), while the latter has a basic shape $\text{-z-}\text{vzvr-}$.

Any word-form (stem plus any affixes and clitics) that can be pronounced in isolation has a single **primary accent** on one of its final three syllables. If there are two or more pretonic syllables, **secondary accents** (indicated in my normal transcription by a grave accent (´)) may appear on alternating syllables counting back from the primary accent. Here I discuss accents within word-forms, before turning to phrasal accents (which may override word accents), see §3.3.3, below.

The accent of **trissyllabic** stems may fall on any of the three syllables. Schematically, we have the three types $C\grave{v}CvCv$, $CvC\acute{v}Cv$, and $CvCvC\acute{v}$. Since antepenultimate accent is unmarked, the first type can be represented as lexically unaccented $/CvCvCv/$, the surface accent being attributable to Default Accentuation. My normal transcription is therefore $C\grave{v}CvCv$. Stems with the shapes $CvC\acute{v}Cv$ and $CvCvC\acute{v}$ in isolation, on the other hand, have a phonologically distinctive accent that must be marked in both underlying and phonemic transcriptions.

Bisyllabic stems can be heard as $C\acute{v}Cv$ or $CvC\acute{v}$ in isolation. However, the $C\acute{v}Cv$ type must be divided into a genuine $/C\acute{v}Cv/$ with fixed accent and a lexically unaccented $/CvCv/$ that is realized as $[Cv^1Cv]$ due to the default accentuation rule. In my normal transcription, these are represented as $C\acute{v}Cv$ and $C\grave{v}Cv$, respectively. The way to distinguish $C\acute{v}Cv$ from $C\grave{v}Cv$ is to add a prefix or prepose a particle or preposition (within the accentual phrase). For example, after a preposition, a $C\grave{v}Cv$ noun will shift its accent to the preposition, while a lexically accented $C\acute{v}Cv$ noun will keep its accent. A minimal pair showing this is $t\text{-}\grave{e}le$ ‘shade’ versus the modern loanword $t\text{-}\acute{e}le$ ‘television’. In isolation, the two are indistinguishable. Adding preposition $d\grave{a}r$ ‘in’ we get $d\grave{a}r\ t\text{-}ele$ ‘in the shade’ but $d\grave{a}r\ t\text{-}\acute{e}le$ ‘in the television’.

For verbs, a pronominal prefix or a preverbal particle like Future $\grave{a}d$ may be added to test for accent type. Verb stems have no lexical accents, but the $LoImpfP$ and $Reslt$ stems do include a grammatically specified accent. Thus $PerfP\ \grave{i}\text{-}kfa$ ‘he gave’ and $Imprt\ \grave{a}kf$ ‘give!’ show default accent, and the accent “jumps” to a preverb: $w\grave{a}r\ i\text{-}kfa$ ‘he didn’t give’, $\grave{a}d\ \emptyset\text{-}\grave{a}kf$ ‘he will give’. Contrast this with the grammatically accented $LoImpfP\ i\text{-}h\acute{a}kk$ ‘he gives’ (suppletive) and $Reslt\ i\text{-}k\acute{f}\acute{a}$ ‘he has (already) given’.

For **monosyllables**, only $C\acute{v}$ occurs in isolation. We must again distinguish true $C\acute{v}$ from lexically unaccented $C\grave{v}$ ($/Cv/$), by the tests just described for bisyllables.

The rule assigning default accent to words in isolation is formulated here as (61).

(61) **Default Accentuation (Word-Level)**

A word pronounced in isolation, or as its own accentual phrase, is scanned from right to left. Primary word accent is assigned based on the following hierarchy:

- a. a marked (lexical or grammatical accent) on the final or penult;
- b. the third syllable (antepenult), or (if the word has fewer than three syllables) the word-initial syllable

Some examples of the various types are in (62), where “x” represents a prefix, preposition, or preverbal particle within the same accentual phrase as the stem. (“x̂” indicates that phrasal accent appears on this morpheme).

(62) Accent Types

	gloss	isolation	phrase-final
a. trisyllabic or longer			
lexically unaccented	'Bambara'	α-bæmbæra	x ʾæ-bæmbæra
penultimate accent	'tortoise'	α-kæyon	x ʾæ-kæyon
final accent			
lexical	'fungus'	bærbullé	x bærbullé
resyllabified	'gives drink'	i-s-əsəw	x i-s-əsəw
b. bisyllabic			
lexically unaccented	'thing'	hæræt	ʰ hæræt
	'he sleeps'	ĩ-ʦtəs	ʰ i-ʦtəs
penultimate accent	'pipe'	é-ben	x ʾé-ben
final accent			
lexical	'monkey'	kæyá	x kæyá
	'chicken'	e-kæzz	x ʾæ-kæzz
resyllabified	'we go'	n-əjól	x n-əjól
	'he drinks'	i-səw	x i-səw
c. monosyllabic			
lexically unaccented	'we eat'	n-ækš	ʰ n-ækš
	'famine'	lɔʒ	ʰ lɔʒ
final accent	'milk'	ú-xx	x ʾé-xx

When a stem (noun, verb, adjective) is followed by one or more unaccented suffixes (and/or enclitics), the accent may have to shift to the right, even when the suffix or clitic has no inherent accent of its own. For example, a lexically unaccented trisyllabic stem heard as CVCVCV in isolation combines with an unaccented syllabic suffix -Cv to give CvCVCV-Cv, since Default Accentuation applies to the entire word form (not just to the stem). A stem with lexical accent on its penult (CVCVCV or CVCV) would only be affected if the unaccented suffix-clitic complex contained two syllables, as in /CVCV-Cv-Cv/ > CvCVCV-Cv. A stem with final accent would only be affected in the rare case of a trisyllabic unaccented suffix-clitic complex. If the suffix-clitic complex contains a morpheme with its own accent, then this becomes the primary accent of the word.

3.3.1.1 Suffixes and clitics inducing penultimate accent

As noted above, some suffixes and clitics ending in a C are treated for accentual purposes as though they had an additional syllable (a nonsyllabic suffix counts as having one syllable, a monosyllabic suffix counts as having two, etc.). At any rate, they require word accent on the (surface) penult instead

of the antepenult. It is probably best to treat this as a morphophonological fact, simply stipulating that the suffixes and clitics in question have this effect on word accent. I use the double grave accent $\grave{\grave{}}$ to indicate surface accent due to the effect of these morphemes

Alternatively, one could argue for underlying representations of the suffixes and clitics that have one more syllable than appears on the surface. This could take the form of a final (or initial) unspecified vowel (V) that is present when accentuation applies but is then dropped by a late, ad hoc morphological rule.

Another alternative would be to recognize floating accents on the left of the morphemes in question (the accent would attach to a syllable to the left). A floating-accent analysis would be most appropriate when the suffix or clitic is monosyllabic (contains one vowel), and the accent ends up on the immediately preceding syllable. This analysis is less attractive for cases (FeSg -t, 3MaSg -\t) where the suffix or clitic is nonsyllabic (consists of just consonants), so the accent ends up on a nonadjacent syllable farther to the left.

The morphemes in question are those in (63).

(63) Suffixes and Clitics inducing Penultimate Accent

- a. FeSg -t on nouns (but not FeSg -æt in nouns or participles)
- b. 3MaSg -\t or -\tt (object clitic)
- c. certain pronominal suffixes
 - 1Sg, 2MaSg, 2FeSg, and 3Sg possessive clitics after alienable noun
 - 1Pl, 2MaPl, and 3MaPl after preposition or inalienable noun
- d. Hortative -et ('let's ...!')
- e. Pl Imperative suffixes (2MaPl Imprt -æt, 2FePl Imprt -mæt)

When one of these suffixes occurs at the end of a word, the default accent is now penultimate instead of antepenultimate.

The clearest examples involving FeSg -t (63.a) are those with lexically unaccented trisyllabic stems whose unsuffixed MaSg form has default antepenultimate accent: α -bæmbæra 'Bambara (man)'. The FeSg of such stems has penultimate accent t - α -bæmbæra-t-t 'Bambara (woman)'. This can be considered regular default accentuation if the final -t is treated as /-tV/. Therefore the only feminine nouns ending in -t that require lexical specification of the accent are the very rare cases of final-syllable accent. Feminine nouns not ending in -t may have antepenultimate accent: t -æ-fala 'makeshift hut'.

In at least one case, a masculine noun with lexical final-syllable accent has penultimate accent in the suffixed feminine form: $kæyá$ 'monkey', FeSg t - α - $kæy\alpha$ -t-t 'female monkey'. Here we must assume that the feminine derivation wipes out the lexical accent, so t - α - $kæy\alpha$ -t-t gets penultimate accent

in the same manner as t-ɑ-bæmbæ̀rɑ-t-t. Nouns like kæyá with final accent are mainly loanwords and their feminine forms are hard to elicit.

The accentual effect of 3MaSg object clitic -t (63.b) can be seen in ənhæy-ær ‘I saw’, /ənhæy-ær-\\t/ → ənhæy-æq-\\q [ənhæˈjæq:] ‘I saw him’. The clitic still appears as syllabic -\\ti in some eastern dialects (Kidal, Gao). For T-md I recorded -\\t in simple word forms, but -\\ti in some combinations to avoid a pileup of consonants, as in wær-\\fi t-ənhæy ‘she didn’t see him’. In my T-ka data, however, the syllabic allomorph -\\ti is absent and the putative final vowel is merely a phonological abstraction.

All of the pronominal possessive suffixes used to express normal (alienable) possession require accent shifts (63.c). The nonsingular pronominals are bisyllabic and have a fixed accent on the penult of the suffix itself. With é-hæn ‘house’ we get e-hæn-næ̀nær ‘our ...’, e-hæn-næ̀wæn ‘your-MaPl ...’, e-hæn-næ̀snæt ‘their-FePl ...’, etc. There is no dialectal evidence for underlying final vowels here (e.g. /-næ̀wænV/), and it is more straightforward just to assign grammatical accent to the syllables in question. The singular pronominal endings are monosyllabic when the stem ends in a vowel or n, and require accent on the immediately preceding syllable: e-hæ̀n-in ‘my ...’, e-hæ̀n-næk ‘your-MaSg ...’, e-hæ̀n-næ̀m ‘your-FeSg ...’, and e-hæ̀n-net (dialectally -nes) ‘his/her ...’. For these singular pronominals, except 1Sg (always -in after C, -nin after V), a bisyllabic form occurs after a C other than n, hence á-mnæs ‘camel’, ɑ-mnæs-in ‘my ...’, but ɑ-mnæs-ə̀nnæk ‘your-MaSg ...’, ɑ-mnæs-ə̀nnæ̀m ‘your-FeSg ...’, and either ɑ-mnæs-ə̀nnet or ...-ə̀nnes ‘his/her ...’ depending on dialect. In these bisyllabic-suffix cases (2MaSg, 2FeSg, 3Sg after stem-final C other than n), the stem-final accent happens to be on the word antepenult, so it is compatible with Default Accentuation. It is not obvious how to unify these facts. One might argue for underlying forms like /-ə̀nnæk/, which could be reduced to -næk after a vowel or n (but only after the default accentuation rule applies, e.g. /é-hæn-ə̀nnæk/ → /e-hæ̀n-ə̀nnæk/ (accentuation) → e-hæ̀n-næk (suffix reduction)); see §3.3.1.3 on accent and VV-Contraction. However, such derivations are far from transparent, and in any event would not apply to the 1Sg possessive forms (or to the nonsingulars).

A different set of pronominal suffixes (all or them monosyllabic) is used with several prepositions and a small number of kin terms. In this set, the singular suffixes (1Sg -er, -i, or zero; 2MaSg -k, 2FeSg -m, 3Sg -t) show regular default accent, but the nonsingular ones induce an accent shift to the preceding syllable (word penult). Thus /wælæt-mɑ/ ‘sister’ in 1Sg wælæt-mɑ (or wælæt-me-er), but 1Pl wælæt-mä̀-nær, 2MaPl wælæt-mä̀-wwæn, 2FePl wælæt-mä̀-kmæt, 3MaPl wælæt-mä̀-ssæn, and 3FePl wælæt-mä̀-snæt. One could imagine an analysis involving an extra initial vowel on the suffix that is elided by contraction after the accentuation rule, e.g. 1Pl /-Vnær/.

Examples of Hortative -et (63.d) are n-ə̀husk-ət-et ‘let’s be pretty’, n-əkrikə̀w-et ‘lets commit sorcery’, and ə̀jlə̀n-et ‘let them go’.

2MaPl Imperative -æt (63.e) requires accent on the preceding syllable. Example: ə̀rəš̌ ‘repay!’ (Sg imperative, default accent), but ə̀rəš̌-æt ‘repay!-MaPl’ with penultimate accent. Likewise for 2FePl Imperative -mæt, as in ə̀rəš̌-mæt ‘repay!-FePl’. The unsuffixed singular imperative has default accent (except as indicated in the following sections).

While some of these suffixes and clitics have accentual effects suggestive of a lost V, there are difficulties in formalizing such representations. For one thing, when two such elements occur on a single word, they do not both behave as having the extra V. An example is (64)

- (64) æŋɣ-æ̀ɣ-et-ʌt
 kill.ShImpf-1SgS-Hort-ʌ3MaSgO
 ‘let me kill him!’

If we were to represent the Hortative suffix as /-etV-/ and the 3MaSg object clitic as /-tV/, the word form would be underlying /æŋɣ-æ̀ɣ-etV-ʌtV/. The default accent should be on the underlying antepenult, i.e. on the e of the Hortative suffix. In fact, accent is assigned to the preceding syllable. In other words, the special accentual effect of the Hortative is overridden by the special accentual effect of the following clitic. This cannot be captured by a “phonological” solution involving ghost V’s on all of the accent-restricting suffixes and clitics, which do their work and then disappear.

3.3.1.2 Accentual implications of Stem-Final ʌ/A-Deletion

Inflectable verb stems have no lexical accent. Some verb forms do have a marked accent as the result of an ablaut accent formative (Reslt, LoImpfP, some VbIN’s, and some other nominals). This formative is analysed in §3.4.4, and extensive exemplification of relevant verb stems and nominals can be found especially in §7.2.2.2 (Reslt), §7.2.5.1 (LoImpf), and §8.6 (VbIN). In the present section, and the one that follows, I discuss verb-stem penultimate accent that is not due to ablaut accent formatives.

There is a class of -vC(C)v- and -vC(C)v- verbs that have final *ɑ* in the perfective stems, but lose the stem-final V in some other forms. In the ShImpf (including Imprt) and in some derived (e.g. causative) VbIN’s, the deleted stem-final V is interpretable as an underspecified high V that I write /ɪ/ in underlying forms. There are also a few cases where an underspecified low V is deleted (in long imperfectives); I represent this as /A/ in underlying transcriptions. More details and examples are given in §7.3.1.3, below. The deletion rule is Stem-Final ʌ/A-Deletion (29) (§3.1.2.4), which applies to unaugmented V-final verb stems.

The relevance of these abstract vocalic segments for accent is that they are counted for purposes of Default Accentuation, even when they are deleted word-finally. For the **light V-final verbs**, like -vkšv- ‘eat’ (PerfP -ə̀kšv-), this

is easier to see in connection with VV-Contraction (§3.3.1.3, below). This is because (unsuffixed) ShImpf -æ̀kš from /-æ̀kšɪ/ is monosyllabic, and the fact that accent shifts to the final syllable of a preceding particle, as in Future ðð Ø-æ̀kš 'he will eat', does not tell us whether -æ̀kš itself is treated as having one or two syllables. The (unsuffixed) LoImpfP of this verb is -tátt from /-táttA/, suppletive but showing the correct -CáCC shape for this class, but since the LoImpfP has a grammatical accent, the issue of syllable count is moot. We can, however, demonstrate that a stem-final V is counted for purposes of Default Accentuation when we look at the two other stems of the long imperfective family, which occur with preverbal particles. Compare LoImpfP i-tátt 'he eats' with the corresponding LoImpfN stem in wər ̀i-tətt 'he does not eat'. The accent does not shift to the preverb, showing that the LoImpfN stem is treated as bisyllabic /-təttɪ/ for purposes of Default Accentuation. Another example not involving suppletion: -vbsv- 'vomit', PerfP -ə̀bsɑ-, ShImpf -ə̀bs, LoImpfP -báss-, LoImpfN -bə̀ss- (as in wər ̀i-bə̀ss 'he does not vomit'). Contrast e.g. wər i-ggɪt 'he does not hit' (from C-final stem -vwvt- 'hit'), where the Neg preverb does bear the (default) accent.

If we look at **heavy V-final stems**, which have one more syllable than 'eat' and 'vomit', it is easier to see that the stem-final V is "counted" even when deleted word-finally. Take -fvykv- 'be searched' (PerfP -ə̀ffæ̀ykɑ-), for example, which belongs to the middleweight subtype of heavy verbs (§3.4.1.4). The (unsuffixed) ShImpf is -ə̀ffæ̀yk from /-ə̀ffæ̀ykA/. The accent is stable, as we see in Future ad Ø-ə̀ffæ̀yk 'it will be searched'. This makes sense if Default Accentuation treats the stem-final /A/ as syllabic nucleus, so /-ə̀ffæ̀ykA-/ get underlying antepenultimate accent as /-ə̀ffæ̀ykA-/.

The heavy V-final verbs also have VbIN's that lose the final V (in this case /ɪ/ rather than /A/, since the VbIN has stem-wide <H> vocalic melody). The larger class of heavy VbIN's of which this is a special case have grammatically marked penultimate accent, as seen in α-bókbək 'dusting off' (§8.6.1). The V-final verbs have VbIN's with the same grammatically conditioned penultimate accent at underlying level, which becomes surface final-syllable accent due to the deletion of the final V, as in α-fýyk 'being searched' from /α-fýykɪ/.

3.3.1.3 Accentual implications of VV-Contraction

§3.3.1.2, just above, showed that the underspecified stem-final vocalic segments /ɪ/ and /A/, while deletable word-finally, are recognized in the syllable count necessary for Default Accentuation to apply. In this section I consider what happens when /ɪ/ and /A/, or a full-fledged V, contracts with the initial V of a subject suffix. This forces us to look at augment verbs (those with Augment -t- in some forms) as well as at unaugmented stems like -vkšv- 'eat' and -fvykv- 'be searched'. It turns out that, just as the quality of the contracted

V is morphologically specialized, so is the interaction between VV-Contraction and Default Accentuation.

When the /ɪ/ is realized as ə, as in əkʂə-næt 'they-Fe ate', of course it counts as a syllabic nucleus for purposes of Default Accentuation. However, it also counts for this purpose when it contracts with the initial V of a subject suffix, as we can see in 3MaPl Future əd əkʂə-n 'they-Ma will eat' from /əd ækʂɪ-æn/. If the /ɪ/ were not counted, the (phrasal) accent would end up on the Future particle əd, since the 3MaPl verb form is bisyllabic on the surface. Compare e.g. əd əwət-æn 'they-Ma will hit' and əd Ø-ɑjəy 'he will tie', which show that 3MaPl subject suffix -æn is accent-neutral, allowing antepenultimate (i.e. default) word-accent, and that (other) bisyllabic inflected verbs permit phrasal accent on a preverbal particle.

3MaPl subject suffix -æn and other -æC subject (and Participial) suffixes contract with a stem-final V, but the contracted vowel takes different forms and has different accentual implications depending on verb class (37). At the outset it is necessary to distinguish two major classes of V-final verbs, augmented and unaugmented. **Augmented verbs** are V-final, but show a suffixal augment -t- in inflected forms with no subject suffix or with a C-initial subject suffix. (For more details see §7.1 and §7.3.1.6). Except when the stem-final V is protected by an ablaut V-length element (e.g. ȳ-f), it is **shortened** before -t-, cf. (115). An example of an augment verb is -mvku- (+ -t) 'be extinguished': 3MaSg PerfP ɪ-mməkæ-t 'it was ...', 3MaSg LoImpfP ɪ-t-ɪməku-t 'it is ...', and 2Sg Imprt məkæ-t. The PerfP and ShImpf (including Imprt) forms have regular default accent, and since the LoImpfP stems are all at least trisyllabic their stem-initial ablaut accent has no effect on the output.

I assume that augment verbs are V-final, e.g. /əmməkɑ/ for 'be extinguished.PerfP'. Allowing for the shortening rule, this is what we see in 3MaSg ɪ-mməkæ-t 'it was extinguished'. Now consider how the final V contracts with V-initial subject suffixes. The 3MaPl PerfP form should be underlying /əmməkɑ-æn/, but appears as əmməke-n (the hyphen could arguably go before the e). Likewise we get 1Sg əmməke-ɾ and 2Sg t-əmməke-d. The point to note here is that regular antepenultimate accent occurs on the surface forms, in spite of the VV-Contraction (37.d). If indeed /əmməkɑ-æn/ is the correct underlying form for əmməke-n, the VV-Contraction rule must precede Default Accentuation in these forms.

In the LoImpf forms, where the stem-final V is protected by the full-V ablaut feature of the ablaut formula, the short V of the subject suffix is deleted (37.b): 3MaPl LoImpfP t-ɪmeku-n 'they are (being) extinguished'. Again note the default antepenultimate accent (which converges with the ablaut accent in this case).

I discussed some **non-augment V-final** verb stems in §3.3.1.2, just above (-vkʂv- 'eat', -vbsv- 'vomit', -fvyku- 'be searched', etc.). As noted there, these verbs lose the final V in some unsuffixed stem forms (e.g. ShImpfP -æbs and -æffæyk), but behave accentually as though the final V were still present. We

now consider how these stems appear when followed by an underlying V-initial subject suffix.

In these unaugmented V-final verbs (unlike the augment verbs), the V-initial subject suffixes must be divided into two subsets. The first consists of 1Sg -æʀ and 2Sg -æd, while the second consists of 3MaPl -æn and 2MaPl -æm. Consider first the perfective inflections of a **bisyllabic** verb -vjjv- 'stretch to look' (PerfP -ðjja-). The PerfP forms of these verbs are not entirely helpful, since the PerfP does not co-occur with preverbs, and with just two syllables it is impossible to distinguish default from marked accent. In (65) I give the unsuffixed 3MaSg, then the four person-number-gender combinations with underlying monosyllabic suffixes. The forms in (65.b) show the e output of VV-Contraction, while those in (65.c) show (apparent) outright deletion of the stem-final V, leaving only the short æ of the suffix; cf. (37.d).

(65) Perfective Positive of 'stretch on tiptoes' and 'come'

	subject 'stretch'	'come'
a.	3MaSg Ø-ðjja	Ø-ðsa
b. VV-Contraction precedes Default Accentuation, e output		
	1Sg ðjje-ʀ	ðse-ʀ
	2Sg t-ðjje-d	t-ðse-d
c. VV-Contraction follows Default Accentuation, æ output		
	3MaPl ðjjæ-n	ðsæ-n
	2MaPl t-ðjjæ-m	t-ðsæ-m

The accentual difference between types (65.b) and (65.c) is not audible when the words are phrase-initial or occur in isolation, since default and marked accents are identical phonetically, but the difference can be inferred from the broader (morpho-)phonology including the negative counterparts presented below.

The Sg **Participial** suffixes, MaSg -æn and FeSg -æt, show accentuation parallel to that seen in (65.c). Thus Ø-ðsæ-n 'come-Partpl.MaSg', as in ere-ʌd Ø-ðsæ-n 'whoever comes'. Note that the accent remains on the Ø-ðsæ-n rather than shifting to the preceding ère.

The negative (**PerfN**) counterparts to (65), shown in (66) below, bring out the accentual distinctions between 1Sg/2Sg and 3MaPl/2MaPl that are latent in the PerfP (66). This is because PerfN verbs are always preceded by Neg wæʀ, which takes phrasal accent when followed by an unaccented bisyllabic stem as in (66.b), but not when the verb is treated (at the point where Default Accentuation applies) as trisyllabic as in (66.c). The e in (66.c) is ablauted from /æ/, as usual in PerfN verbs, rather than being due to VV-Contraction.

(66) Perfective Negative of ‘stretch on tiptoes’

- a. 3MaSg wær Ø-ojja
- b. VV-Contraction precedes Default Accentuation, e from VV-Contraction
- | | |
|-----|--------------|
| 1Sg | wær ojje-ɾ |
| 2Sg | wær t-ojje-d |
- c. VV-Contraction follows Default Accentuation, e ablauted from /æ/
- | | |
|-------|--------------|
| 3MaPl | wær òjje-n |
| 2MaPl | wær t-òjje-m |

This paradigm has been verified for several dialects (T-ka, K-d, R). In effect, then, the stem-final V of the Perf stems is deleted outright before the 3MaPl and 2MaPl suffixes (66.c). However, the penultimate accent, audible in (66.c) and latently present in (65.c), suggests that this V is present when the accentuation rule applies, so VV-Contraction **follows** Default Accentuation. On the other hand, the stem-final V contracts with the initial short V of the 1Sg and 2Sg suffixes (66.b), but this VV-Contraction **precedes** Default Accentuation.

In **trisyllabic** unaugmented V-final stems, the paradigms are simpler. The PerfN ablaut element e is not applicable to these superheavy stems (it is audibly present only in bisyllables). Moreover, the 1Sg and 2Sg suffixes are treated just like the 3MaPl and 2MaPl suffixes, so the stem-final V is deleted outright but leaves a trace behind in the form of surface penultimate accent. (67) shows the PerfP forms of a sample verb; the perfective negatives are identical (but are preceded by wær).

(67) Perfective Positive of ‘be confused’

- a. 3MaSg Ø-æmtælla
- b. 1Sg æmtæll-æɾ
2Sg t-æmtællæ-d
- c. 3MaPl æmtællæ-n
2MaPl t-æmtællæ-m

The ShImpf /-æmtælli-/ shows similar accentual behavior, allowing for the deletion of word-final /t/: (Future) 3MaSg ad ì-mtæll ‘it will be confused’, 1Sg ad æmtæll-æɾ, 3MaPl ad æmtællæ-n. LolmpfP forms are 3MaSg i-t-ìmtælli ‘it is (often) confused’, 1Sg t-ìmtælli-ɾ, 3MaPl t-ìmtælli-n.

A further example is ‘go south’, PerfP 3MaSg ï-jjussa but 1Sg əjjüss-æɾ and 3MaPl əjjüssæ-n. A causative example is ï-ss-ijja ‘he bent his head’, but

1Sg $\text{əss-}\ddot{\text{ı}}\text{jj-}\text{æ}\text{r}$ and 3MaPl $\text{əss-}\ddot{\text{ı}}\text{jj}\text{æ-n}$. In all of these heavy V-final stems, VV-Contraction converts /a-æ/ to æ (rather than e), effectively deleting the /a/, in the 1Sg and 2Sg as well as 2MaPl and 3MaPl, but only after Default Accentuation applies.

When VV-Contraction applies over a clitic boundary (40), the two V's are both counted for purposes of Default Accentuation. For example, consider the combination of stem-final a and the $\text{-}\text{a}$ - of a dative clitic (40.b). Thus $\text{i-t}\ddot{\text{a}}\text{w-}\text{æ}\text{nn}\text{a}$ 'it is said' (passive, LoImpfP) plus 3Sg dative clitic $\text{-}\text{a}$ -s gives $\text{i-taw-}\ddot{\text{æ}}\text{nn}\text{a-}\text{Ø-s}$ (attested T-md) 'it is called (named)...', with surface word-penultimate accent.

Similarly, when 3rd person object clitics combine with a verb ending in a , we get special clitic allomorphs and (depending on dialect) an i or e vowel (§10.3.1). Although the special allomorphy makes the phonology less than transparent, the i or e is treated as a contraction of two V's, both of which are counted. This can be seen with a heavy V-final unaugmented verb like -rvbbu- 'bring up, raise (a child)'. In 3MaSg PerfP $\ddot{\text{ı}}\text{-rr}\text{əbb}\text{a}$ 'he raised, brought up (e.g. a child)' we have default penultimate accent. If we add a 3MaPl object clitic we get a postvocalic allomorph $(\text{e})\text{-}\text{a}$, arguably underlying /-}\text{a}\text{æn}/, and the result is (for T-ka) $\text{i-rr}\ddot{\text{ə}}\text{bbe-}\text{a}$ 'he raised them-Ma', with surface penultimate accent.

The contextually variable ordering of Default Accentuation and VV-Contraction is also observable in Pl suffixation in nouns. Consider the two examples in (68), which are lifted from a much fuller data set in §4.1.2.13, see also (39) and §3.5.3.3.

(68) Suffixal Plural of Noun

	singular	plural	gloss
a.	$\text{e-m-}\text{æ}\text{sl}\text{i}$	$\ddot{\text{ı}}\text{-m-}\text{æ}\text{sl-}\text{an}$	'voice'
b.	$\text{à-l}\ddot{\text{æ}}\text{ɖ}\text{a}$	$\text{i-l}\ddot{\text{æ}}\text{ɖ-}\text{an}$	'fly (insect)'

In (68.a), the Pl has an underlying form /i-m-}\text{æ}\text{sl}\text{i-}\text{æn}/. VV-Contraction combines /iæ/ as /a/ (39.a), and Lexical Accent Erasure (139) is triggered by the loss of a V, giving /i-m-}\text{æ}\text{sl-}\text{an}/, which then undergoes Default Accentuation to yield $\ddot{\text{ı}}\text{-m-}\text{æ}\text{sl-}\text{an}$ with surface antepenultimate accent. By contrast, in (68.b), Default Accentuation must apply first, giving /i-l}\ddot{\text{æ}}\text{ɖ}\text{a-}\text{æn}/, followed by VV-Contraction (39.a), producing $\text{i-l}\ddot{\text{æ}}\text{ɖ-}\text{an}$. In the latter, my convention is to write an acute accent, but the accent is neither lexical (compare Sg $\text{à-l}\ddot{\text{æ}}\text{ɖ}\text{a}$) nor ablaut-induced, so it can only come from Default Accentuation at an early stage in the derivation.

Clearly the interaction between Stem-Final r/A -deletion (29), VV-Contraction, and Default Accentuation is complicated. It is possible to account for the data using phonological derivations as sketched here. However, the

derivations involves intricate rule sequencing, with the relative order of Default Accentuation and VV-Contraction depending on morphological type.

Additional interactions of accent with morphology, or more accurately with morphosyntax, are described in §3.5.3. There we see that ablaut-induced accent can be shifted (one syllable to the right) or deleted entirely in a syntactically defined context, namely in definite relative clauses.

3.3.2 Epenthetic-Vowel Accentuation and Stem-Final Gemination in Resyllabification

Data given in §3.2.4 show that when Stem-Final /A-Deletion (29) leaves a word-final PQ cluster, where Q is a sonorant, an epenthetic schwa is inserted between the P and Q consonants (Final-CC Schwa-Insertion (44)) to bring about resyllabification.

As seen in (69), this resyllabification can be accompanied by an accent shift and by gemination of the final sonorant, though the dialects differ in this respect.

(69) Accent Shift (Dialectal) with Resyllabification

	form	dialect(s)
a. Sg Imprt 'read!'		
	əvər	T-ka, T-md
	əvər	K-d, T-md, Ts
b. Sg Imprt 'drink!'		
	əsəw (əsú)	K-d, R, T-ka, T-md, Ts
	əsú	A-grm
c. VblN 'showing'		
	ɑ-s-əkənn	T-ka
	ɑ-s-əkən	R
	ɑ-s-kən	K-d (syncopated)
	ɑ-s-əkən	T-md
	ɑ-s-əkni	A-grm
d. Agentive (or similar nominal) 'drinker; water source'		
	e-m-æsəww	T-ka
	e-m-æsəw	R

The T-ka data show the most regular application of Epenthetic-Vowel Accentuation, which assigns the accent to the epenthetic ə that has been inserted by Final-CC Schwa-Insertion. The other dialects agree in having final

accent on ‘drink!’ (and ‘drinker’), but with other stems they show at best sporadic final accentuation. Such cases as A-grm α -s- $\acute{\alpha}$ kni ‘showing’ are irrelevant since Stem-Final ι /A-Deletion (29) has not applied, so there is no need to resyllabify. Another example is causative -s-vjlv- (dialectally -s-vglv-) ‘send’ (< ‘cause to go’), where the Imprt is s- $\acute{\alpha}$ j $\acute{\alpha}$ l (T-ka), s- $\grave{\alpha}$ g $\acute{\alpha}$ l (R), s- $\grave{\alpha}$ glu (A-grm), and s- $\grave{\alpha}$ glu (K-d), and where the VblN is α -s- $\acute{\alpha}$ j $\acute{\alpha}$ ll (T-ka), α -s- $\acute{\alpha}$ g $\acute{\alpha}$ l (A-grm), and α -s- $\acute{\alpha}$ glu (K-d). Likewise, -lvjwv- ‘bend’ has Imprt $\acute{\alpha}$ j $\acute{\alpha}$ w (T-ka) and $\acute{\alpha}$ j $\acute{\alpha}$ w (K-d), and VblN α - $\acute{\alpha}$ j $\acute{\alpha}$ ww (T-ka) and α - $\acute{\alpha}$ gwi (A-grm).

In the VblN, and in agentives and other nominalizations with -m- (-n-) prefix, T-ka (but no other dialect) also shows Stem-Final Gemination, so the underlying n, w, or other sonorant that finds itself after the epenthetic schwa is doubled.

(70) **Epenthetic-Vowel Accentuation** (T-ka and a few other dialects)

Simultaneously with Final-CC Schwa-Insertion, the epenthetic vowel acquires an accent (prior accents on preceding syllables are overridden)

(71) **Stem-Final Gemination** (T-ka only)

Simultaneously with Final-CC Schwa-Insertion, in nominalizations (agentive, VblN)—but not in inflected verbs—Q (i.e. the final C) is geminated after the epenthetic vowel.

These processes are “morphophonological” in the sense that they are not routine consequences of general phonological rules in the language. However, they are closely linked to Final-CC Schwa-Insertion (which does have a fairly clear phonological grounding).

3.3.3 Phrasal accent

The above sections have focused on how accentuation works in single word forms. In sentences, words can be grouped into **accentual phrases**. In such cases, if the final word is of one or two syllables and has no intrinsic (lexical or grammatical) accent, default phrasal accent appears on the preceding word. However, if the final word has a fixed (lexical or grammatical) accent, this accent is stable regardless of what precedes it.

In theory, if the final word is an unaccented monosyllable, default accent should appear on the penult of the next-to-last word (i.e., the antepenult of the accentual phrase). Thus we would expect a phrase of the type [xx y], where each letter represents a syllable, to appear as #[\acute{x} x y] if neither xx nor y has a marked accent. However, I know of no case where this actually happens. Instead, the final syllable of the preceding word is accented, so we get [x \acute{x} y].

For example, *l̩z̩* ‘hunger, famine’ is unaccented, so accent appears on a preceding preposition, as in *d̩æ̩r̩ l̩z̩* ‘in the famine’. With an unaccented bisyllabic preposition like *j̩ənn̩əj̩* ‘above’ (compare *j̩ənn̩əj̩-i* ‘above me’), we might expect *#j̩ənn̩əj̩ l̩z̩* with accent on the antepenult of the phrase, but instead we get *j̩ənn̩əj̩ l̩z̩* with accent on the final of the next-to-last word. This applies to all [xx y] accentual phrases, with unaccented monosyllabic y, that I have recorded. I conclude that it is a principle of Tamashek accentology.

Not all sequences of words can form accentual phrases. The major word sequences that can (72.a) and cannot (72.b) form accentual phrases are given below.

(72) Syntax of Accentual Phrases

a. combinations that form accentual phrases

- verb + noun (subject or object)
- preverb + verb (+ noun)
- preposition + noun
- demonstrative + verb or participle (if the demonstrative is the head of a definite relative)
- numeral + noun

b. combinations that do not form accentual phrases

- noun + noun
- noun + participle
- noun + demonstrative

(72.b) can be summarized as follows: **a noun cannot form an accentual phrase with a following word**, even within NP’s. Thus prosodic groupings are independent of (pure) syntactic groupings.

Examples showing [(x)̩ y] phrasal accents are in (73).

(73) Accentual Phrases with Phrasal Accent

verb + subject

- a. *əjbær-æn-ʌt* *am-an*
 surround.PerfP-3MaPlS-\3MaSgO water-MaPl
 ‘Water [lit. “waters”] surrounded it’

verb + object

- b. *ənhæy-æ̩r̩* *hæræt*
 see.PerfP-1SgS thing
 ‘I saw a thing’

preverb + verb

- c. ðd Ø-ækš
Fut 3MaSgS-eat.ShImpf
'He will eat.'

- d. wðr i-jlɑ
Neg 3MaSgS-go.PerfP
'He didn't go.'

preposition + noun

- e. dæɾ æ-ho
in smoke
'in (the) smoke'

demonstrative + verb (in definite relative clauses)

- f. w-ð Ø-tætt
Ma-Sg/Dem 3FeSgS-eat.LoImpfP
'what she eats' (see §3.5.3)

numeral + noun

- g. mæɾɑw-æt dɛd-en
ten-Fe woman-FePl
'ten women'
- h. əssin efd-an [A-grm]
əssin afd-æn [K-d]
two thousand-Pl
'two thousand'

If clitics occur after the first word of the sequence they are included in the accentual phrase, as in (73.a) above. If the clitic has a vowel, the accent may end up on the clitic, as in $\alpha\text{-}\lambda\text{t}\text{æt}\ \text{Ø-}\text{æk}\text{š}$ 'he will eat it-FeSg', cf. (73.c) above.

Suppose now that an accentual phrase has two or more syllables to the left of the rightmost accent (whether the latter is lexical or default). If the phrase is uttered smoothly, there is often a pattern of **secondary accent on alternate syllables** counting back from this rightmost accent.

This applies even to over-long single words, such as $t\text{-}\text{if}\text{ər}\text{š}\text{ə}\text{š}\text{sin-}\text{æn}$ 'they (=hides) are coarse' or $\text{ɪ-t-if}\text{ər}\text{š}\text{ə}\text{š}\text{sin}$ 'it is coarse', where Default Accentuation gives primary phonetic accent to the antepenult. A slight secondary accent may be heard on the word-initial syllable, which is two syllables from the rightmost accent. Secondary accents are **not as reliable** as rightmost accents, particularly since they require the speaker to compute the accent of the entire long word from right to left before beginning its articulation. In a case like 'it is coarse', in actual discourse the speaker may begin the word as $\text{i-t-}\text{í}\dots$, since the second i actually carries an underlying ablaut accent; in this event we may end up with

[iti'fæ'rʃəʃ:i:n] with adjacent-syllable accents. The “regular” pattern of secondary accents is therefore most easily found in elicitation, especially when the informant repeats an utterance.

In multi-word accentual phrases, the same basic pattern arises. In particular, **accented clitics** like Centripetal -\idd or Centrifugal -\hin, and **accented pre-verbal particles** like Past kæld may have their lexical accent overridden by the alternating accent rule. An example is (74), whose underlying form is /a-\hin itaw-æʀ/. Default accent appears on the i, resulting in the erasure of the lexical accent on the Centrifugal clitic and the appearance of a secondary accent on the Future preverb. The same caveat about on-line production variation made above for single-word forms is even more pertinent here; the smooth rhythms of (74) are most often heard in repetitions.

- (74) à-\hin \itaw-æʀ
 Fut-\Centrif forget.ShImpfP-1SgS
 ‘I will forget.’

Except for compounds not involving Possessive èn (§5.2.1), sequences like **noun + noun** (e.g. subject noun followed by object noun), **noun + demonstrative**, and **noun + participle** (75) are not accentual phrases. Therefore the second word is always independently accented.

- (75) æ-hólès i-jjás-æn
 Sg-man 3MaSgS-enter.Reslt-Partpl.MaSg
 ‘a man who has gone inside.’

A further comment is needed about **possessed NP’s** of the type [X [ən Y]] ‘the X of Y’. When Y is unaccented and has fewer than three syllables, default accent falls on the Possessive preposition èn, hence [X [èn Y]]. However, if X is V-final, and/or if Y is V-initial, the Possessive preposition is realized as n, and in this nonsyllabic allomorph it cannot host an accent. In this case, a phrasal accent that would normally occur on èn is heard instead on the final syllable of X

- (76) a. eði n am-an
 dog Poss water-MaPl
 ‘water dog’ (for /éði [èn am-an]/)
- b. t-à-ʀà-t-t n am-an
 Fe-Sg-goat-Fe-FeSg Poss water-MaPl
 ‘water goat’ (for /t-à-ʀa-t-t [èn am-an]/)

In addition to the phrasal accents described above, there is another type of accentual interaction that is difficult to pin down (without an extensive instrumental analysis of natural data) but may require separate treatment. This

is the appearance of a **final-syllable accent on the first component of a word-pair**. The most consistent examples are masculine numeral + noun combinations, where the numeral typically has an audible final-syllable accent even when the following noun has initial-syllable accent (so the usual alternating-syllable pattern of secondary accents should not apply).

- (77) mærw médd-æn
 ten men-MaPl
 'ten men'

The masculine **numerals** from '2' to '10' all show this accentual pattern when preceding the modified noun. However, the dialects differ as to whether the independent (including phrase-final) form of the same numeral has the same final-syllable accent as in mærw (A-grm) or is unaccented as in mærow (Im K-d T-ka T-md).

One way to handle the accent in mærw in (77) is to compare the masculine and feminine pronominal numeral forms: Fe mærw-æt, Ma mærw. Elsewhere, -æt is a FeSg participial suffix, and the MaSg counterpart is -æn. The accent of mærw in mærw médd-æn would be phonologically regular if we recognized a virtual -æn, as in /mærw-æn médd-æn/, with late deletion of -æn. This analysis is too abstract for a synchronic analysis, but is suggestive historically.

In addition to (masculine) numeral + noun combinations of the type (77), I also hear a less systematic secondary final-syllable accent on other two-word combinations. In (75), for example, I hear a slight accent on the final syllable of æ-hálðs, although a noun + participle combination does not normally function as an intonational phrase.

Frankly, a full analysis of accentual patterning beyond word-level will require a more detailed study than I have been able to carry out to date, preferably using instrumental data as well as impressionistic transcriptions, and ideally covering more than one dialect.

3.4 Ablaut

Prototypically, **ablaut** (as I use the term here) is a set of processes by which one noun or verb stem (either fully spelled out, or perhaps in the case of verbs with underspecified vowels) is transformed into another stem. In the case of nouns, ablaut can be used to derive a plural from a singular. For verbs, there is a much richer set of ablaut processes relating the various MAN (mood-aspect-negation) stems of a verb. There are also several ablaut nominalizations based on verbs.

Ablaut consists of internal changes, unlike (pure) affixation, but there are some nominal and verbal stem patterns that involve both affixation and ablaut in tandem. Much of the fine-grained analysis will be done in the relevant

sections on nominal and verbal morphology. Here we describe some basics of Tamashek ablaut.

3.4.1 Stem shapes and templates

In this section I am concerned only with the representation of stems that serve as the input to ablaut processes. Some nouns, and all invariant forms (particles, minor adverbials, etc.), cannot serve as ablaut inputs and are not considered here.

3.4.1.1 Nouns

The only ablaut that nouns are subject to is plural. Some nouns do not have an ablaut plural and are disregarded here.

For nouns that are subject to ablaut, the **fully-spelled out Sg stem**, along with the attached vocalic prefix (if any), is the input to the Pl ablaut process. Nothing is gained by decomposing the Sg stem into, say, a CV-skeleton and a vocalic melody.

It should be noted, however, that a marked (as opposed to default) accent must be part of the representation. The accent may be on the core noun stem itself, or (if the core stem is monosyllabic) on the vocalic prefix. The accent is, in most cases, carried over from Sg to (ablaut) Pl. Thus æ-mátuj ‘work gear’, Pl i-mútaj, and á-mnəs ‘camel’, Pl i-mnəs.

There is only case where phonological information not easily discernible from the Sg stem is needed to get Pl ablaut to come out properly. This is when a feminine noun, with FeSg suffix -t, has word-penultimate accent in the Sg, e.g. t-ǎ-jǎrjis-t ‘shoulder blade’. This is because -t is one of the suffixes that disallows antepenultimate word accent. In the unsuffixed ablaut Pl, there is (by stipulation) no suffix. This effectively forces the hand of the stem, which must reveal whether it has a lexical accent on the penult that is overridden by Default Accentuation in the Sg. In the case of ‘shoulder blade’, it does turn out that the stem has a lexical accent on the penult, so we get t-i-jǎrjas instead of #t-ǎ-jǎrjas. As a result, the basic lexical representation of the Sg stem plus vocalic prefix is -ǎ-jǎrjis-.

3.4.1.2 Verbs (*specific stem-shapes*)

The issue of **basic lexical representation** is much more difficult for verbs. This is because one can argue that every actual stem (PerfP, Imprt, LoImpfP, etc.) is formed by combining a basic stem shape with a vocalic melody, with or without additional ablaut formatives. If this is the case, then the audible V’s in each stem acquire at least their high (H) or L (low) feature values from the

melody, rather than from the lexical representation of the stem. In this analysis, therefore, the basic representation would be something like -vjjvš- ‘enter’ or -ušvl- ‘run’, where *v* is an unspecified short vowel and *ʊ* is an unspecified full V. ‘Enter’, for example, will actually appear in melodically specified stems such as PerfP -əjjæš- and Imprt əjjəš.

The alternative is to represent e.g. ‘enter’ as -əjjəš- with lexical schwas. Then, instead of applying stem-wide melodies, we would take the Imprt (and ShImpf) as simply retaining the underlying vocalism, and have a more local melodic fragment <L> that converts the second schwa of -əjjəš- to æ in the perfective system.

There are too many difficulties in implementing the latter solution, not the least of which is the fact that for some other types of verb it is not so easy to derive the perfectives from the Imprt and other imperfectives. For example, ‘run’ has Imprt ðšəl and PerfP -ðšæł-. In nearly every case, the vocalism is predictable from the skeletal stem shape, defined as a sequence whose elements are (actual) consonants with interspersed *v* and *ʊ*. Thus all -*ʊ*C*v*C- verbs have Imprt ðCəC, PerfP -ðCæC-. and LoImpfP -t-íCəC- (A-grm dialect -t-áCæC-), while all -*v*PP*v*C- verbs where PP is a geminate consonant have Imprt əPPəC, PerfP -əPPæC-. and LoImpfP -t-áPPæC-. (For some syllabic shapes it is necessary to specify a cluster as geminated PP or as non-geminate PQ.)

I will use formulae like -vjjvš- ‘enter’ and -ušvl- ‘run’ as basic representations of verbs, with *v* and *ʊ* marking the short and full vowel positions. I will use schemata like -*v*PP*v*C- and -*ʊ*C*v*C- to designate the relevant stem-shape classes in a more general way. It should be emphasized that “C” (and its substitutes P, Q, R) is not part of the basic representation of any individual stem. Therefore “C” is used quite differently from *v* and *ʊ*. Capital “V” denotes any vowel (unless otherwise specified).

In some verb types (those with a medial full V, and augmented V-final verbs), it seems necessary to **specify lexical full-V features** rather than relying on vocalic melodies. This is because the melodies consist of L and H elements, which suffice to distinguish the low full V *ɑ* from the high V’s, but are not precise enough to predict which of the two full H vowels will appear, *i* or *u*. In verbs, *u* is more common than *i*, but the choice is lexical. An example with *u* is -*d*urhvn- ‘desire’, which appears as PerfP -əddurhæn- (dialectally -əddurhæn-), Imprt dūrhan, LoImpfP -t-ídərhun- (dialectally -t-àdərhan-), and VblN *ɑ*-dūrhan. The apparent jumping of the *u* into the final syllable in -t-ídərhun- is due to Medial V-Shortening and u-Spreading (§3.4.9). An example with *i* is -*k*vrikvw- ‘perform sorcery’, with PerfP -əkvrækəw-, Imprt kərikəw, LoImpfP -t-íkrikiw- and VblN *ɑ*-kríkəw. There are some difficulties in analysing the relevant paradigms, especially since stems with *i* and *u* are often not exactly symmetrical. However, on the whole it does seem advisable to specify at least some of the lexical *v* positions as *u* or *i*.

The stem -*k*vrikvw- ‘perform sorcery’ just mentioned raises another issue. Many of the longer stems have an extra initial short V in the perfectives and

the inflectable short imperfectives, but not in the *Imprt*. In most cases the extra short V is accompanied by either Stem-Initial Syncope or Stem-Initial Gemination (§3.4.8.1, below). In the analysis used here, the basic (i.e. lexical) representation is modeled on the *Imprt*. Thus *-vkrikvw-* is closely related to *Imprt kàrikəw*, contrast *PerfP -ækrokəw-* and (inflectable) *ShImpf -əkrikəw-*. One could imagine analytical alternatives, with the lexical representation taken either as *-vkrikvw-* or *-krikvw-*, with corresponding adjustments in the formulation of phonological rules. A representation *-vkrikvw-* would directly provide the syllabic shapes of the perfectives and the inflectable *ShImpf*, but would require a rule deleting the initial *v* in the imperative, followed by a resyllabification process that inserts *v* between the two initial C's. A representation *-krikvw-* would split the difference between the *Imprt* and the other stems, but for this very reason is not closely grounded in any actual verb stem and so is psychologically dubious.

One important respect in which verbs differ from nouns is that verbs have **no lexical accents**. In actual verb stems, the only marked (i.e. non-default) accents are those due to ablaut formatives in the *Reslt* and *LoImpfP* stems, e.g. for 'enter' *Reslt -əjjǫš-* and *LoImpfP -t-ǫjjǫš-*, along with (in T-ka dialect) some imperfectives where resyllabification has applied, e.g. *əjəl* 'go!'.

3.4.1.3 Verb types based on full vowels

For morphological purposes, groupings based on full V's (78) are useful.

(78) Broad Verb-Stem Classes Based on Full Vowels

- a. short-V verbs (all vowels are short), e.g. *-vCvC-*, *-vPPvC-*
- b. full-V-initial verbs, e.g. *-vCvC-*, *-vCCv-*
- c. full-V-medial verbs, e.g. *-CvCiCvC-*
- d. unaugmented V-final verbs, e.g. *-vCCv-*, *-vCCv-*
- e. augmented V-final verbs, e.g. *-CvCvCv-* (+ *-t*)

The stem-final V's in (78.d-e) are full rather than short V's, since there are no word- or stem-final short V's. For the unaugmented V-final verbs, in some stems the full V is replaced by an underspecified vowel /*ɪ*/ or /*A*/ that is subject to deletion word-finally. The categories (78.b) and (78.c) can be combined with (78.d-e), but not with each other. In other words, there can be up to two full V's in a stem, in which case one of the two must be stem-final. The augmented V-final verbs have an Augment suffix *-t* in some paradigmatic forms, and in general this class behaves quite differently in morphonology from the unaugmented V-final verbs (§7.1.1).

In effect, the presence of a full (or stem-final) V in a given position determines local (rather than stem-wide) morphophonological patterns. For example, an initial full V appears as *o* in the perfectives, as *a* in the short

imperfectives, and so forth, regardless of the shape of the rest of the stem. A stem-final V likewise has characteristic alternations, sensitive to the unaugmented/augmented split but for the most part not sensitive to the shape of the preceding stem. For the augmented V-final verbs, a lexical distinction between i and u is necessary. A medial full V, lexically either i or u, again has its own set of alternations. Verbs with two full V's, say medial and final (with augment), simply combine the local characteristics of full-V-medial and augmented V-final verbs.

3.4.1.4 Light and heavy (middleweight and superheavy) verb stems

However, in addition to the typology based on location of full V's (if any), there is also a split between light and heavy stems. The productive VblN of heavy stems (in T-ka) is characterized by Sg vocalic prefix α - and stem-wide <H> vocalic melody, with penultimate accent (except for the augment class, which has default accent), e.g. α -dúrhøn 'desiring' from -durhvn- and ù-bræffi 'collapsing' from (augmented) -bvrvffi- (+ -t). By contrast, the light stems have a range of shape-specific VblN's, none of which closely resembles the heavy VblN type. The heavy/light distinction is presented in more detail in (79).

(79) Heavy and Light Verb Stems

	C-final	V-final
a. heavy		
i. middleweight subtype		
	-CvCvC-	-CvCu- (+ -t)
	-CuCvC-	-CuCu-, -CuCu- (+ -t)
	-CvCCvC-	-CvCCu-, -CvCCu- (+ -t)
	-CuCCvC-	-CuCCu-, -CuCCu- (+ -t)
ii. superheavy subtype		
	-CvCuCvC-	-CvCuCu- (+ -t)
	-CvCuCCvC-	-CvCuCCu- (+ -t)
b. light		
	-vCCvC-	-vCCu-
	-uCCvC-	-uCCu-
	-vCvC-	-vCu-
	-uCvC-	-uCv-

It is clear from this distribution that a stem-final V (second column) “counts” as equivalent to a final vC. This is not quite enough to induce me to posit synchronic “ghost consonants” for the surface V-final verbs, e.g. -CvCCv- derived from underlying /-CvCCvw/, but the idea is suggestive historically.

In any event, the basic difference between heavy and light C-final stems is that the heavy ones have at least three **C-positions** (separated by vowels), so that -CvCvC- and -CvCCvC- have three C-positions each, while -vCCvC- and -vCvC- have just two. To incorporate the V-final stems into this classification, we have to treat them as though their final full V concealed a C-position. Alternatively, we could think of a composite criterion for heavy/light, with heavy stems being defined as those with a final “heavy” syllabic nucleus (vC or v) and at least two nonfinal C positions. In any event, we cannot reasonably define light/heavy in terms of conventional metrical patterns, since -vCCvC- with an extra-heavy syllable followed by a heavy one is “light” while -CvCvC- with a light syllable followed by a heavy one is “heavy.” The number of C-positions (with final V counted as though containing a C-position) rather than conventional syllabic heaviness values is decisive. Nevertheless, if stem-shapes were to be extracted not from the *Imprt* stem (which I have used), but rather from the perfective and inflectable *ShImpf* stems (e.g. with -vPPvCvC- instead of my -CvCvC-), one could use a different calculus to distinguish heavy from light.

While -CvCvC- is classified here among the “heavy” stems, it differs in some respects from the longer stems in that class. In particular, verbs of this shape fail to apply Stem-Initial Syncope (§3.2.7.1). For example, the *VblN* appears as α -CǎCǎC (and variants) rather than #ǎ-CCǎC, as in α -bǎrǎj ‘being boastful’. Likewise, the perfectives and inflectable *ShImpf* fail to undergo Stem-Initial Syncope (§3.2.7, §3.4.8), instead applying C₁-Gemination to the first C in conjunction with Stem-Initial V-Insertion: lexical stem -bvrvj-, *PerfP* -ǎbbǎrǎj-, *ShImpf* -ǎbbǎrǎj- ‘be boastful’. Contrast the superheavy stem -mvlvwlvw- ‘shine’, with syncopated *VblN* α -mlǎwlǎw, *PerfP* -ǎmlǎwlǎw-, and *ShImpf* -ǎmlǎwlǎw-.

The V-final counterpart to -CvCvC- is -CvCv- (+ -t). This is a rare augmented stem type limited to a few adjectival verbs. Such verbs do not have the usual *VblN* pattern, and have a special unprefixated perfective, but *ShImpf* forms like -ǎkkǎǎ-t ‘be speckled’ show that -CvCv- (+ -t) likewise fails to undergo Stem-Initial Syncope. The point may be summed up as follows: -CvCvC- and -CvCv- (+ -t) are “heavy” verb shapes because they have three C positions (or two plus a final V), but the Stem-Initial Syncope rule must be formulated so that it fails to apply to them. This supports a three-way distinction between light stems (as defined above), middleweight stems including -CvCvC- and -CvCv- (+ -t), and superheavy stems including longer shapes such as -CvCvCCvC-. As I use the term, “heavy” includes “middleweight” and “superheavy.”

Stem-Initial Syncope is highly morphologized in general, and it does apply (but in the perfective only) to causative *-s-vCvC-*, e.g. *-s-vjvn-* ‘make kneel’, PerfP *-æ̀s-jæn-*, but unsyncopeated ShImpf *-s-ə̀jən* and VblN *ɑ-s-ə̀jən*. So causative *-s-vCvC-* (Stem-Initial Syncope in perfective only) is intermediate between underived middleweight *-CvCvC-* (no Stem-Initial Syncope at all) and superheavy stems like *-mvlvwlvw-* (Stem-Initial Syncope in perfective, ShImpf, and VblN).

The dialects differ in detail as to how Stem-Initial Syncope applies to causative *-s-vCvC-*. A-grm fails to syncopeate, even in PerfP *-ə̀ss-ə̀gæn-*, while on the other extreme K-d syncopeates the VblN as well as the perfective and ShImpf, hence VblN *á-s-jən*.

3.4.1.5 *Stems, componential or templatic ablaut, pre-ablaut reconfiguration*

The model that works best for most Tamashek ablaut processes is a **componential** one. This means that a stem (either a spelled-out singular noun, or a slightly abstract verb stem) is the input, and is modified by applying one or more ablaut components to it. Among the components, the major distinction is between **vocalic melodies**, which (in my analysis) are stem-wide, and **local ablaut formatives**, which target a particular input segment.

For example, the Sg noun *e-rúrdəm* ‘large scorpion’ has an ablaut Pl that is formed by applying to the Sg stem the following: a <HL> melody whose L component is confined to the final input vowel, plus a lengthening feature $\bar{\chi}$ -f that also targets this final input vowel. The result is *i-rúrdəm*, which also shows the Pl prefix *i-*.

Likewise, the verb *-bvlulvɣ-* ‘gape’ undergoes a number of ablaut processes to produce PerfP *-æ̀blalæɣ-*. The *-bvlulvɣ-* shape of the PerfP results from the combination of Stem-Initial V-Insertion (99) and Stem-Initial Syncope (101) (§3.4.8, below). When this syncope rule applies, the usual perfective <HL> melody allows the L component to spread to the left, erasing the H (Leftward L-Spreading (60), §3.2.7.2). The same verb has a LoImpfP *-t-ı̀blulvɣ-* (underlying */-t-ı̀blulı̀vɣ-/*), which represents a more complex ablaut with the following components: <H> melody, *-t-* prefix, an accent formative $\acute{\chi}$ -pɔ1, and two lengthening formatives $\bar{\chi}$ -pɔ1 and $\bar{\chi}$ -f that lengthen the first and third vowels. This ablaut assumes the prior operation of Stem-Initial V-Insertion and Stem-Initial Syncope (perhaps the ShImpf stem is the direct input). The output *-t-ı̀blulvɣ-* also requires u-Spreading (119) (§3.4.9.3), which spreads the rounding feature of the medial V to the final V (this does not apply to A-grm, which has *-t-ı̀blulı̀vɣ-*).

The alternative to a componential ablaut system like this is a **templatic** one. In a templatic ablaut system, the output is produced by forcing raw material from an input stem onto a rigid template. The best example of this is Arabic. For example, in Moroccan Arabic, a noun of profession has the shape CCaCC-i, and input nouns of a range of shapes have to be forced into this

shape. If the input noun does not have four C's, the output makes use of filler semivowels, e.g. *şabun* 'soap', noun of profession *şwabn-i* 'soap seller' with *w* in C_2 position.

Tamashek has no productive ablaut of a templatic nature, and is clearly in the componential camp. However, some long imperfectives approach templatic status. The best example is an output shape $-CáPPæ(C)-$ associated with the (derived) long imperfective stem of several types of light verbs. The various ways in which different verbs achieve this output are somewhat reminiscent of Arabic ablaut. Examples: $-vjjvš-$ 'enter' and $LoImpfP -t-ájjæš-$, $-vknvs-$ 'fight' and $LoImpfP -kánæš-$, $-vbsu-$ 'vomit' and $LoImpfP -báss-$ (underlying $/-bássa-/$).

Nevertheless, even this $-CáPPæ(C)-$ is less rigid than a typical Arabic ablaut. It subsumes two variants, $-CáPP-$ (for $/-CáPPæ-/$) and $-CáPPæC-$, and these are valid (as such) for only certain types of verbs (including no heavy verbs). In this larger context, it is possible to account for the same outputs using a componential model, dismembering the output shape into smaller ingredients such as consonantal gemination, a $\langle L \rangle$ melody, lengthening formative $\bar{\chi}$ - $pc1$, and an accent formative ($\acute{\chi}$ - $pc1$). So Tamashek can be said to flirt with a templatic ablaut pattern, but it probably doesn't get there.

Perhaps a more promising area to look for templatic targets is in infinitives (verbal nouns), where verbs of a given canonical shape tend to have infinitives of a particular shape. For example, $-vPQvC-$ verbs have $Vb1N \alpha$ - $PæQ\alpha C$, $-vPQvC-$ verbs have $\acute{u}P\alpha C$, and $-vCvC-$ verbs have \acute{e} - CeC . The various $Vb1N$ shapes are idiosyncratic and cannot be produced by applying the same set of $Vb1N$ ablaut components to the respective input stems. This suggests that each of these stem-shapes is associated with a $Vb1N$ template whose vocalism is pre-specified, and gets its consonants filled by mapping from the input stem. The $Vb1N$ patterns are therefore templatic, but (unlike the prototypical Arabic cases) they do not force inputs of highly variable shapes into the same output shape. Rather, the templates are in a one-to-one relationship to input shapes.

In nominal plurals, there is one pattern that does seem to force inputs with a modest range of shapes into a single prefabricated output shape (80). This is the Pl type \acute{i} - $C\alpha CC$ - an (masculine) or t - \acute{i} - $C\alpha CC$ - en (feminine). These are mixed suffixal-ablaut plurals, where the Pl suffix (notably $MaPl -\alpha n$) is included in the domain of ablaut, so the α of $-an$ in this case is affected by the L part of the Pl $\langle HL \rangle$ melody and by the lengthening formative $\bar{\chi}$ - f . The $-C\alpha CC-$ shape of the core stem is the templatic feature, since we get $-C\alpha PQ-$ when the Sg input has geminated PP (e.g. 'acacia pod'), and $-C\alpha Pw-$ (several examples) or in one case $-C\alpha Py-$ ('vein') when the input has only two C's (even if the second one is geminated, i.e. PP, in the Sg).

(80) Templatic Ablaut-Suffixal Plurals (-CəCC-)

gloss	Sg	Pl
a. masculine		
'acacia pod'	ɑ-hájjar	ĩ-həjr-an
'horse'	è-bæje	ĩ-bəjw-an
'river'	e-jrėw	ĩ-jərɥ-an
'tomb'	à-zəkka	ĩ-zəkɥ-an
'vein'	é-mijj	ĩ-məjy-an
'money'	á-zrəf	ĩ-zərɥ-an
b. feminine		
'body'	t-à-fəkka	t-ĩ-fəkɥ-en
'tick'	t-ɑ-səlluf-t	t-ĩ-səlf-en

Dialectally, I can cite some further wrinkles, e.g. é-ɖɑɖ 'finger' (A-grm) with ungeminated final C, Pl ĩ-ɖəɖw-an. For more examples, see §4.1.2.14.

A further issue in the "componential" versus "templatic" discussion is the possibility of accounting for some template-like features via a **pre-ablaut reconfiguration** of input stems as they go into certain ablauts. The morphological patterns that I have in mind are the long imperfectives and perhaps some nominalizations (including VbIN) of certain verb classes, namely -vPQu- and -vPQvC- stems (i.e. light stems whose first C position is a nongeminate cluster). In this interpretation, the following initial reconfigurations would be recognized (81).

(81) Pre-Ablaut Reconfiguration of Stem

	gloss	basic stem	reconfigured	LoImpfP	VbIN
a.	'begin'	-vntv-	-nvtv-	-nátt	e-nætt
b.	'destroy'	-hvlvk-	-hvlvk-	-hállæk-	ɑ-hællæk

Such reconfigurations are helpful in allowing us to simplify the rules for associating ablaut formatives, notably in the long imperfectives. For other verbs, the LoImpfP is characterized (among other things) by χ -pɔ1 and $\tilde{\chi}$ -pɔ1, which respectively accent and lengthen the "first postconsonantal C" (see below). The VbIN's and other nominals are less transparent since each stem-shape class has its own patterns, but we do frequently find a vowel between the P and Q consonants.

Of course, given e.g. -vntv- versus -nvtv-, we might flip them and take -nvtv- as basic, or even take -vnvtv- as basic and chip away at the short V's (e.g. with Syncope). However, taking 'destroy' as having a basic form -hvlvk- is undesirable, since there is another class with lexical -CvCvC- shape that has

quite different paradigms. Moreover, both the ‘begin’ and ‘destroy’ classes behave as light verb stems (e.g. for purposes of VbIN formation), while the -CvCvC- type is heavy (more specifically, middleweight). I therefore prefer the reconfiguration analysis given in (81). However, the effect of reconfiguration is similar to the effect of templatic ablaut morphology.

3.4.2 Gemination and degemination in ablaut

3.4.2.1 *T and Γ-c2 in long imperfectives*

Stem-Initial Gemination occurs in the perfectives and inflectable ShImpf of most non-syncopating verbs (§3.4.8): -bvrvj- ‘be boastful’ (Imprt bæ̃ræj, VbIN α-báræj and variants), but PerfP PerfP -əbbəræj-. In verbal ablaut, we get gemination of a medial C (Γ-m) in the perfective of some adjectival verbs (§7.3.1.10). A more important stem-internal gemination in verb morphology is considered here.

The **long imperfective system** of verbs (§7.2.5) displays either internal gemination or prefixation of -t-, but (with one exception) not both. For example, -vknvs- ‘fight’ (PerfP -əknæs-) has geminated LoImpfP -káñnæs-, while -mvtvllv- ‘be confused’ has LoImpfP -t-ímtəlli- with -t-. There is one stem-shape that requires internal gemination, and optionally adds prefix -t-. This is the -vCvC- type, e.g. -vwvt- ‘hit’ (PerfP -əwæt-), LoImpfP -əwwát- or -t-əwwát- (also -əggát-, -t-əggát-).

One might argue that the -t- prefix, which is used with all heavy verb stems and with those light stems that already have a medial geminate, is the same phonological entity as ablaut-induced medial gemination. One could imagine, for example, a formative consisting of underlying -t- that targets a medial ungeminated C where possible (with /tP/ then realized as geminate PP); if this targeting is unsuccessful, it materializes as a prefix. However, there is no direct support for such an analysis in Tamashek morphology or phonology, and nongeminate surface clusters like tk are common medially in stems. The fact that -t- and medial gemination occasionally co-occur, as in the variant LoImpfP type -t-əwwát- just mentioned, is further evidence against the unifying analysis.

I therefore recognize two consonantal ablaut formatives in long imperfectives, **T** (i.e. -t- prefix) and **Γ-c2** (gemination of second stem C).

As argued in the preceding section, for the stem-shapes -vPQvC- and -vPQv-, i.e. light verb stems whose first C position is filled by a nongeminate cluster, a pre-ablaut reconfiguration to -PvQvC- and -PvQv- (as inputs to long imperfective ablaut) is useful. This will simplify the process whereby Γ-c2 is implemented, converting Q to QQ. Example: stem -vknvs- ‘fight’, long imperfective pre-ablaut reconfiguration -kvnvs-, LoImpfP -káñnæs- (also LoImpfN -kənnəs-, Prohib -kənnəs-).

For some cases of Γ -c2 in plural ablaut of nouns, see the following section and §4.1.2.23.

3.4.2.2 Plain/geminate alternations in nominal Sg/Pl

Phonetically, h and to a lesser extent (tap) r tend to resist audible gemination (i.e. increased duration), though at least in careful speech a morphologically expected gemination can be audible.

Variation between geminated and ungeminated C's occurs in certain nominal **singular/plural** alternations. In some cases it is not clear that stem-wide ablaut is at hand. The following patterns can be distinguished.

First, in the type Sg t-ə-ɖuf-t 'wool', Pl t-ĩ-ɖuff-en, it would seem that the FeSg suffix **-t forces Degemination** of the geminate, which would therefore be present underlyingly even in the Sg (so no ablaut-induced gemination process need be recognized). In the full set of known examples (given in (152) in §4.1.2.8), the degeminated C is from the set {y w r m f}, i.e. sonorants and fricatives. The phonology here is somewhat opaque, and there is some dialectal variation in detail.

Second, there are some masculines with Sg -CVP (V a full high vowel) and Pl ĩ-CaPP-æn, e.g. á-ɣil 'right hand', Pl ĩ-ɣall-æn. This is a rather specialized Sg/Pl pattern with a semi-templatic look. For examples and discussion see (153) in §4.1.2.8.

Third, there are a small number of cases like é-ɣæss 'bone', Pl i-ɣæs-an, where the Sg ends in a geminate, but where the Pl shows an ungeminated C before the MaPl suffix. The MaPl allomorph -an instead of -æn, combined with the accent shift in the Pl and the absence of a Pl ablaut melody, show that the Pl is of the underlying type /-ɣæsV-æn/ with some stem-final V. Therefore we have a phonologically obscure alternation between a geminate PP and PV. For more examples and discussion see (155) in §4.1.2.8.

Fourth, there are some cases where a medial or final geminate in the Sg is degeminated in order to fit the stem into the **templatic shape** -CəCC-, as mentioned in §3.4.1.5, above. Example: a-hájjar 'acacia pod', Pl ĩ-həjr-an. See (180) in §4.1.2.14 for more details.

Finally, there are two unsuffixed ablaut Pl patterns that also involve gemination in the Pl only. These are probably the best candidates for a true ablaut formative Γ -c2 outside of verbal morphology.

One type ((205.a) in §4.1.2.23), applying to Sg type t-ə-CCəC-t (a fairly common deverbal nominalization, but including some underived nouns), is exemplified by t-ə-ftəq-q 'laying out', Pl t-i-fəttar. The vocalism and V-length patterns of the Pl are consistent with Pl ablaut. There are a few similar plurals for nouns of the Sg type t-a/e-C̣C̣C-t with a full vowel u in the final syllable (205.b). Note in particular the short "ṿ" in the position corresponding to the é in the Pl. An example: t-a-jə̀zel-t 'kidney', Pl t-i-jə̀zzal. With cases like 'kidney' in mind, one could argue that t-ə-ftəq-q

has been syncopated from underlying /t-a-fətəɾ-t/ (leaving aside the question of whether the first schwa is lexically accented). If so, the only unusual feature of Pl t-i-fǫttar and t-i-jǫzzal is the gemination. One might venture the guess that the gemination is “designed” to protect the short V from the threat of Syncope, but the forms are highly morphologized, and there are plenty of similar cases among ablaut plurals where Syncope does apply, e.g. a-dářiš ‘track’, ablaut Pl í-draš (but A-grm i-dóraš).

In any event, cases like t-i-fǫttar require a **gemination formative** Γ -c2 as an add-on to the usual nominal Pl ablaut, to account for gemination of the second stem C.

The same seems at first sight to be true of a specifically feminine type, where the Sg is of the type t-à/è-CæPe and the Pl is t-i-CǫPP (§4.1.2.24). Many but not all of these are VblN’s of light V-final stems. Example: t-à-hæla ‘weeping’ with Pl t-i-háll. The Pl vocalism is quite different from that of most ablaut plurals, whose hallmark is a final-syllable a. One can partially reintegrate t-i-háll into the mainstream by assuming that the L part of the Pl <HL> melody targets a deletable stem-final V, and is therefore inaudible on the surface. The Pl would therefore be something like /t-i-hállA/ with deletable low vowel /A/. In this derivation, which I will question in a moment, the type /t-i-hállA/ is roughly parallel in structure to the type t-i-fǫttar (preceding paragraph). Since gemination affects the second stem C, in this case the l of Sg t-à-hæla, one could argue that Γ -c2 is at work in Pl t-i-háll just as in t-i-fǫttar.

However, this won’t work, and it will be necessary to dissociate the Pl types t-i-háll and t-i-fǫttar. To begin with, note that t-i-háll has a marked accent on the surface final syllable (underlying penult), and this **accent is not carried over from the Sg** (unaccented t-àhæla). In regular Pl ablaut, an accent in the Sg is carried over to the Pl, with some exceptions (irrelevant here) where a Sg accent is deleted in the Pl. It may seem as though Pl t-i-fǫttar also shows an unusual accent shift vis-à-vis Sg t-à-ftəq-q, but if we represent the stem here as /-fətəɾ-/ we can account for the accent in both Sg and Pl forms. In Sg t-à-ftəq-q from /t-a-fətəɾ-t/, the accented schwa is deleted by Syncope, and the unattached accent then reattaches on the first syllable to the left. No such phonological analysis will account for the accents in Sg t-à-hæla, Pl t-i-háll.

Secondly, while Pl t-i-fǫttar clearly shows Γ -c2, gemination of C₂, in Pl t-i-háll it is best to recognize a **gemination formative** Γ -f, i.e. gemination of the stem-final C. In t-i-háll itself, “C₂” and “stem-final C” converge on the l, but there are at least three stems of the Sg shape t-a/e-CæPvQ-t that have a Pl t-i-CPǫQQ, where C₂ (i.e. P) is unaffected and gemination applies specifically to the third and final stem C (Q). An example is Sg t-e-fætél-t ‘lamp’, Pl t-i-ftáll. Other plurals of this type are t-i-dbóyy ‘towns’ and t-i-mǫáll ‘sandstorms’ (206.c) (§4.1.2.24).

3.4.3 Melodies

3.4.3.1 Types of melodies

A **melody** is a vocalic element or sequence of such elements that can be mapped onto unspecified vocalic positions in a stem. The concept is relevant to the formation of MAN verb stems (perfective versus imperfective, for example), and to nominal ablaut plural. I use the notation <...> to denote melodies (e.g. <H>, <L>, <HL>).

A string like «ə ə æ», extracting just the V's of a trisyllable, can be spoken of as a **surface vocalic sequence** (SVS). I use «...» (double angled brackets) for SVS's. The formal study of ablaut involves examining multiple SVS's and extrapolating (where appropriate) more basic underlying melodies from them, along with rules for associating melodic components to particular syllables (or vowels). One can disagree about how "deep" we should go, that is, how abstract and morphologically inclusive the melodies should be, particularly with reference to (allegedly) underived stems (Sg of nouns, perhaps the ShImpf of verbs).

The most critical decision is how to combine short {ə æ} with full {u o ə e i} as melodic fragments. There is undeniable evidence for treating {ə u i} as a high-V set, which I label **H**, and for {æ ə} as an opposing low set, which I label **L**.

An argument could be made that in at least some morphological contexts, H should be specified more exactly as rounded or unrounded, i.e. as H^U or H^L. The purpose of this would be to specify u or i as output when the H of a melody is associated with a full V (only ə is possible when the V is short). The usefulness of this division between H^U and H^L is limited, since in some cases the u or i is really part of the basic lexical representation. To avoid making the notation too cumbersome, I will generally use just H but will comment on full-V realization.

In this analysis, V-length is separated analytically from pure melodic elements that can be described in terms of the feature [±high], perhaps secondarily specified as [±round]. The **mid-height vowels** {e o} are somewhat peripheral to the system. As conditioning elements in Short-V Harmony, {e o} behave like L vowels. Thus, in the T-ka dialect, the output of Sg vocalic prefix ə- or e- on nouns after Prefix Reduction is is 'æ- if the following syllable has {e ə æ o}, but 'ə- if the following syllable has {u ə i} (§3.2.6).

There are a few morphological contexts where mid-height e or o seems to result from a "compromise," namely where lexical /i/ or /u/ is overlaid by an L melodic component. See §3.4.7, below, for details.

Especially for an underived noun stem (as seen in the Sg), it is reasonable to take the lexical representation (the "deep" form) as a spelled-out sequence of V's and C's as in English: ídəm 'face', e-dæmi 'light reddish-brown animal', æ-domm 'seeds', dæmbæraku 'inability to see in dim light'. There is no basis for separating the vocalic melody from other aspects of the stem's

form, and it is not uncommon for high, low, and mid-height V's to co-occur within the stem. With inflectable verbs, on the other hand, the vocalic qualities (especially for short V's) can normally be attributed to a melody associated with a given stem (PerfP, ShImpf, LoImpfP, etc.).

H and L behave as the yin and yang of Tamashek morphology. Some verb stems have a **pure melody**, either <L> or <H>. In a pure melody, the L or H links to all V's in the relevant domain, so the SVS consists of either a string of low V's or a string of high V's. There are also some **composite melodies** of the type <H L> or <L H>, though none (in T-ka) with more than two components.

3.4.3.2 *Melodic association*

Melodies are normally limited to the stem. However, there are certain morphological patterns where a melody also takes in a suffix, namely a subject suffix for verbs or a Pl suffix (specifically MaPl) for nouns.

For the composite melodies, we need explicit Melodic Association rules to make sure that the correct attachments are made. The association rules for the major composite melodies are summarized in (82).

(82) Melodic Association rules for Composite Melodies

a. <H L> for nominal Pl

Associate L to the rightmost V, then associate H to the remaining V's of the stem. Outputs are «L», «HL», «HHL», «HHHL», «HHHHL»

b. <H L> for perfective verb

Associate L to the rightmost V, then H to the leftmost two remaining V's, then associate L to the remaining medial V's. Outputs are «L», «HL», «HHL», and «HHLL». For the rare pentasyllabic verb type, I recorded «HHLLL» for the focal dialect T-ka, but «HHHLL» for K-d.

c. <L H> for short imperfective of V-final non-augment stem

Associate H to the stem-final V, then L to the remaining syllables. Outputs are «LH» and «LLH».

The asymmetry between (82.a) and (82.b), for the “same” composite melody <H L>, when there are more than three stem V's, shows once again the futility of attempting to describe Tamashek morphophonology in simple phonological terms.

Examples of the nominal Pl are in (83).

(83) Nominal Ablaut Plural (<H L>)

Sg	Pl	gloss
a. regular unsuffixed ablaut Pl		
á-s-fəl	í-s-fəl	'roof material'
æ-dádis	i-dúdas	'small dune'
t-a-s-əqqə̀sən-t	t-i-s-əqqə́san	'chewstick'
t-a-fæŋkæyðmu-t-t	t-i-fæŋkə̀yuma	'mussel shell'
t-a-s-əggərəyğə̀ri-t-t	t-i-səggərəyğə́ray	'roller (bird)'
b. minor type with final geminate in Pl		
t-è-næde	t-i-nédd	'fever'
c. ablaut includes Pl suffix in domain		
e-lækæt	ì-ləkt-an	'branch'

In (83.a) we see the range of outputs mentioned in (82.a), including pentasyllabic «HHHHL». The type (83.b) is arguably a pattern where the L part of <H L> attaches to a deletable stem-final V and is therefore inaudible (§4.1.2.24). (83.c) illustrates the case where ablaut, including the <H L> melody, takes the combination of core stem plus Pl (here MaPl) suffix in its domain (§4.1.2.14).

The H of <H L> here favors u over i for stem-medial full V. However, when followed by w, the full V appears as i by dissimilation (§4.1.2.17, cf. §3.4.10).

In (84) we see examples of the perfective verb.

(84) Perfective Verb (<H L> Melody)

lexical form	PerfP	gloss
a. surface <H L>		
-(v)jv-	-jà- or -əja-	'do'
-vbsv-	-əbsa-	'vomit'
-nutfvsv-	-ənnutfaes-	'be folded' (√ndfs)
-fuffvrυ- (+ -t)	-əffuffæraet-	'scrub'
-ʒvlbvbbvy-	-əʒʒə̀lbæbbæy-	'be slippery'
-jvrnvnvuvυ- (+ -t)	-əjjə̀rnə̀nnæwæt-	'scrape off'
	[K-d: PerfP -əjjə̀rnə̀nnæwæt]	
b. surface <L>		
-tvrurυ-	-ə̀trara-	'go down'

The gloss ‘scrape off’ in (84.a) is abbreviated from ‘(donkey) scrape off (e.g. tree bark) with teeth’.

In (84.a), we see the overt <HL> pattern, including pentasyllabic «HHHLL» (dialectally «HHLLL»). The perfective in (84.b) shows stem-wide <L>. A case can be made that this perfective type does have an <HL> melody, but undergoes a rule spreading L to the left. See §3.4.6, below, for more examples and discussion

Some (brief) dialectal details. First, in (84.a), ‘do’ is shown as having an optional initial short V, e.g. PerfP -jà- or -əja-. The variation is dialectal, and to some extent depends on the verb.

Second, the initial schwa in PerfP -ənnuʈfæs- and -əffüffæræ-t in (84.a) is valid for T-ka but generally not for the other dialects, which have initial æ when the following syllable has a full high vowel u or i, though they agree with T-ka in the schwa-initial perfective vocalism of superheavy stems like ‘scrape off’ and ‘be slippery’ when the second perfective syllable has a short V. Thus R, K-d, and T-md have PerfP -ənnuʈfæs- and -əffüffæræ-t with initial æ, alongside PerfP -əzzəlbæbbæy- and (K-d) -əjjørnænnewæ-t with initial schwa. One could interpret the T-ka initial ə in -ənnuʈfæs- and -əffüffæræ-t as reflecting /æ/ via Short-V Harmony, but a T-ka speaker would have no evidence (from within the T-ka dialect) that the V was underlying /æ/.

The ShImpf <L H> melody mentioned above in (82.c) is illustrated in (85).

(85) Short Imperfective Verb (<L H> melody)

lexical form	ShImpf	gloss
-vbsu-	-æbs (/æbsi-/)	‘vomit’
-juju-	-æjjajj (/æjjajji-/)	‘load up’

The composite quality of this melody does not strike the ear immediately, since /t/ is deleted word-finally. However, it appears as ə before a C-initial subject suffix, as in Future *ad əbsə-næt* ‘they-Fe will vomit’, and it combines with /æ/ at the beginning of a subject suffix to give ə, as in Futue *ad əbsə-n* ‘they-Ma will vomit’ (for /æbsi-æn/).

In A-grm and to a lesser extent some other non-Timbuktu-area dialects, there are at least some cases of <L H> melody for long imperfectives of unaugmented V-final stems. For example, for -vPQv- verbs T-ka has PerfP -PáQQ-, treated phonologically as /-PáQQA-/ with stem-final deletable L vowel, showing stem-wide <L> melody. In some eastern dialects, this -PáQQ- can at least optionally be treated phonologically as /-PáQQI-/ with stem-final deletable H vowel, so the melody is <L H>. An overt stem-final H vowel occurs in a few A-grm paradigms. For example, the LoImpfP of ‘hear’ (-vslv-) is -sáll- (most dialects), with an optional variant -sállu- in A-grm (-sállu- is also attested dialectally).

All of the composite patterns we have analysed here (<H L> in nominal Pl and perfective, <L H> in short imperfective) are consistent in the pattern of association up to three syllables, but differ with respect to stems of four or more syllables (in the two patterns that allow more than three syllables). The situation can be summarized as (86).

(86) **Summary of Melodic Association Rules**

For a composite melody <XY>, ...

- a. associate Y to the rightmost V in the domain of the melody;
- b. associate X to the leftmost V in the domain of the melody, if there is any such unassociated V after (a);
- c. spread X one further V to the right, if the relevant V remains unassociated after (a) and (b);
- d.
 - i. for perfective verbs: spread Y to the left to any remaining medial unassociated V's
 - ii. for nouns, spread X to the right to any remaining medial unassociated V's

The formulation of (86.c-d) must be revised for K-d dialect given its «HHHLL» instead of «HHLLL» surface melody for the pentasyllabic perfective.

For the ShImpf <L H> pattern, there are no stems with more than three V's, so (86.d) is moot for this pattern.

3.4.4 Local vocalic ablaut formatives ($\check{\chi}$, $\acute{\chi}$, ϵ , α)

Local formatives are the ablaut elements that are expressed as modifications of specific input segments. I mentioned Γ -c2, i.e. gemination of the second C of the stem, in §3.4.2, above. That is the only consonantal formative that is realized within the stem in the course of ablaut.

The local vocalic formatives in major ablaut patterns are given in (87).

(87) **Local Vocalic Ablaut Formatives**

	symbol	category	description
a. accent			
	$\check{\chi}$ -pcl	Reslt, LoImpfP	accent on 1st postconsonantal V
	$\acute{\chi}$ -pen	some VblN's	accent on the stem penult
	arguably also:		
	($\acute{\chi}$ -f	some ablaut Pl's	accent on the stem-final)

b. length (full vowels)

$\bar{\chi}$ -pcl	Reslt, LoImpfP	1st postconsonantal V is lengthened
$\bar{\chi}$ -f	long imperfectives, heavy VblN's, ablaut Pl	final V in stem is lengthened

c. specific vowels

\in -pclf	PerfN	1st postconsonantal V (always æ), if it is also the stem's final V, becomes e
α -f	heavy VblN's	final-syllable short V (always ə) becomes a

Agentives and minor nominalizations are disregarded here. Although one can decompose them to some extent, these nominals have specialized shapes associated with particular input stem types, and have a more templatic look than the more productive morphological patterns referred to in (87).

The **accent** formatives in (87.a) account for the marked, nonlexical accents heard on stem penults or finals. A minimal pair is PerfP $\bar{\imath}$ -bsá 'he vomited' and Reslt i -bsá 'he has (already) vomited'. The formative $\bar{\chi}$ -f may be needed, or may reduce to $\bar{\chi}$ -pen, depending on how such ablaut plurals as t-i-nádd 'fevers' (from Sg t-è-næde) are analysed (§4.1.2.24). Accent formatives, like lexical accents on noun stems, are subject to being submerged by Default Accentuation, when the relevant syllable ceases to be the penult or final (e.g. when suffixes are added). They are also submerged when an accented directional clitic is added, or when (in T-ka) resyllabification of a word-final CC cluster results in final-syllable accent. My practice is to write ablaut (and lexical) accents in underlying representations in such cases

The **length** formatives in (87.b) provide for nonlexical full V's in verbs and (under limited conditions) heavy VblN's. It is possible to have both length formatives on a single LoImpfP verb stem, e.g. -bvlvjbvlvj- , ShImpf -əbləjbələj- , LoImpfP -t-ibləjbəlij- , where both the first and last i vowels have been lengthened.

The **specific-vowel** formatives replace a short V by a particular full V. In the PerfN, we get e replacing æ in such examples as -vhlvk- 'destroy', PerfP -əhlæk- , PerfN -əhlel- with e. In heavy VblN's, we get an optional a replacing schwa in such examples as verb -mvlwlvw- 'shine', VblN a-mləwlaw varying with a-mləwlaw , the latter showing final-syllable a .

3.4.5 Ablaut formative association

In this section I show how the local formatives "target" an input segment.

In addition to these targeting issues, it should be mentioned that there are some asymmetries among the formatives in terms of their distribution, and in

terms of the point in derivations where they apply. These comments apply to verbal morphology only.

In the long imperfective system, a distinction should be made between the ablaut components that apply to all three stems in the system (LoImpfP, LoImpfN, Prohib), and those that apply only to the LoImpfP, namely $\acute{\chi}$ -pc1 and $\bar{\chi}$ -pc1, whose combined effect is to lengthen and accent the first postconsonantal V. These two LoImpfP formatives arguably apply at a later stage than $\bar{\chi}$ -f (lengthening of final V) and the consonantal changes that apply to all long imperfectives. In §8.1.6 I give a derivation of (morphologically causative) LoImpfP -s-ínfu- ‘rest’ from /-s-unfv-/ plus several ablaut components, arguing that $\acute{\chi}$ -pc1 and $\bar{\chi}$ -pc1 follow u-Spreading and Medial V-Shortening (two “phonological” rules that are part of ablaut), while other ablaut components are associated prior to these rules. The formatives $\acute{\chi}$ -pc1 and $\bar{\chi}$ -pc1 also occur in the Reslt stem in the perfective system, and have unusual properties there also. Not coincidentally, these are the formatives that are erased or shifted in specific syntactic constructions. ϵ -pc1f may be another late-applying formative, since it shares with $\bar{\chi}$ -pc1 the ability to apply audibly in cases of rebracketing of (part of) a subject suffix with a -v(C)Cu- verb stem.

3.4.5.1 Summary

The data for targeting of vocalic formatives are summarized in (88).

(88) Local Vocalic Formative Association Rules

a. targets first postconsonantal V

$\acute{\chi}$ -pc1	Reslt, LoImpfP	accent on 1st postconsonantal V
$\bar{\chi}$ -pc1	Reslt, LoImpfP	1st postconsonantal V lengthened

b. targets V of final syllable of stem

$\bar{\chi}$ -f	long imperfectives, Pl of heavy Vb1N	last V in stem is lengthened
α -f	heavy Vb1N	ϵ in final syllable becomes α

arguably also:

($\acute{\chi}$ -f	some ablaut Pl's	accent on the stem-final)
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c. targets first postconsonantal V that is also last V of stem

ϵ -pc1f	PerfN	1st postconsonantal V (always ϵ), if also the stem's last V, becomes e
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d. targets penultimate V

$\acute{\chi}$ -pen	some Vb1N's	accent on the stem penult
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3.4.5.2 First postconsonantal V (“pc1”)

Perhaps the most unusual targeting is that in (88.a). The first postconsonantal V is the V that comes after the -t- prefix of the long imperfectives of heavy (and some light) verb classes, and absent this -t- after the first C position (C or CC cluster) of the stem itself. Examples are Reslt verbs in (89) and LoImpfP verbs in (90).

(89) First Postconsonantal Vowel (Reslt Verbs)

gloss	PerfP	Reslt	formatives
‘get’	-əjræw-	-əjráw-	χ̇-pc1, χ̄-pc1
‘be enough’	-əjdæh-	-əjdæh-	χ̇-pc1
‘hit’	-əwæt-	-əwát-	χ̇-pc1, χ̄-pc1

(90) First Postconsonantal Vowel (LoImpfP Verbs)

gloss	ShImpf	LoImpfP	formatives
‘get’	-əjræw-	-járræw-	χ̇-pc1, χ̄-pc1
‘vomit’	-æbs	-báss	χ̇-pc1, χ̄-pc1
‘be tamed’	-əkufəd-	-t-íkufud-	χ̇-pc1, χ̄-pc1
‘dish out’	-əjəm-	-t-íjəm-	χ̇-pc1, χ̄-pc1

There is a subtle difference between the Reslt and LoImpfP patterns. The Reslt always respects the shape of the PerfP, the most basic form of the perfective system. The χ̇-pc1 and χ̄-pc1 formatives therefore follow a CC cluster in verbs like ‘get’ and ‘be enough’. In the long imperfectives, on the other hand, there is always a V after the first C of the stem, or (if present) after the -t- prefix. This means that the input to some of the long imperfectives must be **reconfigured** (§3.4.1.5, above) from the usual shape seen in the perfectives and short imperfectives. For example, -vjrɔw- ‘get’ is reconfigured as -jvrɔw-, and -vbsu- ‘vomit’ as -bvsu-, in order for the ablaut formatives to apply properly as they are formulated here. For light stems like these, one could also consider a templatic model for the long imperfectives, which might obviate this problem. However, the heavy stems are easily generated by taking the ShImpf as the input to LoImpfP ablaut.

For the most part, χ̇-pc1 and χ̄-pc1 target the same vowel, to the point where one might consider merging them into a single formative. However, cases like the Reslt of ‘be enough’ in (89) show that **χ̇-pc1 can occur in the absence of χ̄-pc1**, in connection with adjectival verbs as illustrated here, but also in definite relative clauses where χ̄-pc1 is erased. See just below on “jurisdictional” issues between “first postconsonantal V” and “V of final syllable of stem.”

3.4.5.3 Final-Syllable V (“f”)

The formatives in (88.b), above, target the V of the final syllable of the stem. This is a simple and unproblematic formulation. The clear cases of $\bar{\chi}$ -f in verbs are illustrated in (91).

(91) Final-Syllable Vowel (Long Imperfectives)

	gloss	ShImpf	LoImpfP	formatives
a.	‘be tamed’	-ðkufəd-	-t-ikufuð-	$\bar{\chi}$ -f (+ $\bar{\chi}$ -pc1)
	‘gallop’	-æddærbæ-t	-t-ðdærba-t	$\bar{\chi}$ -f (+ $\bar{\chi}$ -pc1)
	‘be slippery’	-æzzælbæbbæy-	-t-azælbæbbay-	$\bar{\chi}$ -f (+ $\bar{\chi}$ -pc1)
b.	‘have a scare’	-ærræft	-t-ðræfta-	$\bar{\chi}$ -f (+ $\bar{\chi}$ -pc1)
	‘be implanted’	-ært	-rútt	— (only $\bar{\chi}$ -pc1)
	‘destroy’	-ðhlæk-	-hállæk-	— (only $\bar{\chi}$ -pc1)
	‘make curdle’	-s-ðsløy	-s-úsloy-	$\bar{\chi}$ -f (+ $\bar{\chi}$ -pc1)
	‘be churned’	-ændu-	-níddu-	— (only $\bar{\chi}$ -pc1)
c.	‘hit’	-ðwæt-	-(t)-əwwát-	$\bar{\chi}$ -f

For purposes of (91), we focus on the $\bar{\chi}$ -f that lengthens the last V, not on $\bar{\chi}$ -pc1 applying to the first postconsonantal V. The target location for $\bar{\chi}$ -f is unproblematic in (91.a). However, (91.b-c) bring out some issues involving the relationship between $\bar{\chi}$ -f and the other lengthening formative $\bar{\chi}$ -pc1.

(91.b) show that $\bar{\chi}$ -f cannot apply if $\bar{\chi}$ -pc1 has applied to the V of the immediately preceding syllable, except in causatives. In other words, there is a minor **$\bar{\chi}$ -clash avoidance** principle here. This is vaguely rhythmical (metrical) in nature, but either $\bar{\chi}$ -f and $\bar{\chi}$ -pc1 can apply with no difficulty to short V’s in spite of an adjacent full-V syllable whose full V is lexical, as in ‘be tamed’ in (91.a). Both $\bar{\chi}$ -pc1 and $\bar{\chi}$ -f apply audibly in ‘have a scare’ (91.b), as well as the cases in (91.a), because there is an intervening syllable. In causative ‘make curdle’, both apply even in the absence of the intervening syllable, since causatives do not respect clash avoidance. However, ‘be implanted’ (-vr̥tu-) which like ‘have a scare’ (-rvftu-) is an unaugmented V-final verb, does not allow $\bar{\chi}$ -f, since the final (underlying) syllable is adjacent to that already targeted by $\bar{\chi}$ -pc1. Likewise, ‘destroy’ allows only $\bar{\chi}$ -pc1.

There is a substantive difference between $\bar{\chi}$ -pc1 and $\bar{\chi}$ -f that permits us to identify them in otherwise ambiguous cases. This is that $\bar{\chi}$ -pc1 is observable only in the LoImpfP, while $\bar{\chi}$ -f applies throughout the long imperfective system (LoImpfP, LoImpfN, Prohib). For example, ‘gallop’ in (91.a) has LoImpfP -t-ðdærba-t, LoImpfN (i.e. after Neg wær) -t-ðdærbi-t, and Prohib -t-ædærba-t. All three show the final-syllable full V ($\bar{\chi}$ -f), but only the LoImpfP shows the full V after the first C position (in this case, -t-).

This provides a useful test for the difficult example ‘hit’ in (91.c). Verbs of -vPvC- shape show variation between -t-əPPacuteC- and -əPPacuteC- in the LoImpfP. Especially in the second variant, there is a **jurisdictional** issue since the lengthened V is both the first postconsonantal V and the final-syllable C. Even in -t-əPPacuteC-, it appears that (for the only time) the -t- prefix is not treated as the first C position for purposes of ablaut formative association, since the accent formative $\acute{\chi}$ -pc1 targets the V following the stem-internal geminate PP. Fortunately, the LoImpfN -əwwit- and the Prohib -əwwat- for ‘hit’, by preserving the length of the final-syllable V, demonstrate that the lengthening is due to $\acute{\chi}$ -f (not $\acute{\chi}$ -pc1). The two lengthening formatives here respect $\acute{\chi}$ -clash avoidance, since ‘hit’ is not a causative, but this time $\acute{\chi}$ -f rather than $\acute{\chi}$ -pc1 is dominant.

(92) Final-Syllable Vowel (Heavy Verbal Nouns)

gloss	verb stem	VblN (Sg)	VblN (Pl)	formatives
‘beg’	-jvynvn-	ɑ-jáyɲən ɑ-jáyɲan	i-jàɲnin-æn i-jáyɲan-æn	$\acute{\chi}$ -f (Pl only) ɑ-f

In (92), ‘beg’ illustrates the typical VblN patterns for heavy verb stems. There are two VblN variants. The first has <H> vocalic melody and penultimate accent, hence ɑ-jáyɲən. In the Pl only, the formative $\acute{\chi}$ -f is superimposed, converting the final-syllable schwa to i. The alternative to ɑ-jáyɲən is ɑ-jáyɲan, which I account for using an ad hoc formative ɑ-f that converts schwa to full ɑ. One could, of course, decompose ɑ-f into a L melodic fragment combined with $\acute{\chi}$ -f, but ɑ-f applies to the Sg (as well as to the Pl) and so the parallelism with $\acute{\chi}$ -f in the other VblN variant is not close.

As noted earlier (and elsewhere), one can argue for a $\acute{\chi}$ -f (final-syllable accent) formative as part of such nominal plurals as t-i-nádd from Sg t-è-næde ‘fever’ (§4.1.2.24). However, this could reduce to penultimate accent (see below), or the Pl pattern here could be taken as templatic.

3.4.5.4 “pc1” = “f” (ε-pc1f)

The PerfN (perfective negative) stem is distinguishable from the PerfP only when the former’s unique ablaut formative ε-pc1f is audibly present. This formative changes æ (in the PerfP) to e, provided that the æ is both the first postconsonantal V and the V of the final syllable. Example: PerfP i-hlæk ‘he destroyed’, PerfN wər i-hlek ‘he did not destroy’.

This ablaut formative has no effect on other vowels, including schwa (ùjəj ‘be/go far away’, PerfP = PerfN). It does have an audible effect on the following PerfP shapes: -əCCæC-, -əCæC-, -ùCCæC-, -ùCæC-, -əwwæC-. In other words, it applies to light C-final stems with æ in the final syllable. With

light V-final stems, like (PerfP) -əCCa-, it has an audible effect **only in certain subject-suffix combinations** where we end up (in the PerfP) with an æ in the right position, e.g. 3MaPl -əCC-æn (from /-əCCa-æn/). Thus ð-bsa ‘he vomited’ and wər i-bsa ‘he didn’t vomit’ (PerfP = PerfN), but əbsæ-n ‘they-Ma vomited’ and wər əbse-n ‘they didn’t vomit’ (PerfN distinct from PerfP). Note also wər əbse-næt ‘they-Fe didn’t vomit’ from PerfP əbsæ-næt, where the æt of the 3FePl suffix is disregarded but where **the suffix’s n helps create the shape** [əbsæ-n] that allows ε-pclɪf to appear audibly. With C-final verbs, the addition of a subject suffix such as 3MaPl -æn has no effect on the PerfN stem, so the relevant bracketing is confined to the stem proper.

Allowing for the selective bracketing of subject suffixes (or parts thereof) with V-final stems only, the descriptive analysis on the targeting of ε-pclɪf is now complete. While there is no way to tell, it is reasonable to assume that ε-pclɪf is “present” in all PerfN stems, but can only be realized audibly under the conditions noted. When these conditions are not satisfied (“pcl” does not converge with “f,” or they do converge but the relevant V is not æ), ε-pclɪf misses its target and disappears into empty space.

3.4.5.5 Penultimate V

The penultimate V of the stem is targeted by χ̣-pen, which forms part of the ablaut of VbIN’s of non-augment heavy stems. Consider (93).

(93) Final-Syllable Vowel (Heavy VbIN)

	gloss	stem	VbIN	formative
a.	‘shine’ ‘be rude’	-mvlvwlvw- -budvr-	ɑ-młówləw ɑ-búdər	χ̣-pen χ̣-pen
b.	‘be confused’	-mvtllv-	ɑ-mtáll	χ̣-pen
c.	‘scatter’	-wvšv- (+ -t)	à-wəši	—

The forms in (93.a) show a clear marked accent on the penult. (I omit variants with ɑ rather than ə in the final syllable, like ɑ-młówləw, since this change does not affect accent.)

In (93.b), we have apparent final-syllable accent, but this is due to deletion of a stem-final V, compare LoImpfP -t-ĩmtəlli- and PerfP -ætmtəlla-. If we order the association of χ̣-pen to the stem before Stem-Final /A-Deletion (29), the form will come out correctly.

(93.c) shows that augment verbs, i.e. verbs that take Augment -t in most inflected forms, do not have χ̣-pen in the VbIN, even though the Augment is not part of the VbIN (or any other nominal).

3.4.6 From <H L> to pure <L> melody (PerfP verbs)

In §3.4.3.2, above, we saw that while a great many verbs have <H L> melody in perfectives, another large set of verbs has a stem-wide <L> perfective melody. The issue to be discussed here is whether the <L> melody can be reduced to <H L>. Since the stems in question have at least two syllables, and usually three or more, there is no obvious reason why the H component of <H L> should be unable to associate audibly with at least the stem-initial syllable. However, the <H> melody is in a one-to-one relationship (in T-ka and other dialects, except A-grm). Given this correlation, the possibility of a phonological motivation for the <H> perfective melody should be considered.

I will exclude from this discussion the unusual perfectives of adjectival verbs. These adjectival perfectives are typically C-initial (§7.3.1.11), but nonetheless fail to accept subject prefixes, including 3MaSg *i-*. Many of these adjectival perfectives have stem-wide (usually bisyllabic) <H> vocalism, but others have <L> vocalism. The perfective stems of these adjectival verbs often diverge sharply in shape from imperfectives, and generally behave as lexicalized, idiosyncratic perfective stems. I choose not to decompose them into ablaut components.

With the adjectival stems excluded, we turn to examples like those in (94).

(94) Perfective Verb (Surface <L> Melody, Stem-Initial Syncope)

lexical form	PerfP	gloss
a. underived		
-xvbubu- (+ -t)	-æxbabæ-t	'(hole) gape'
-tvruru-	-ætrara-	'go down'
-jvmvunjvmv- (+ -t)	-æjmænjæmæ-t	'nibble'
b. derived		
-m-ukvr-	-æm-ekær-	'be stolen'
-nvm-vdvd-	-æn-m-ædæd-	'bite each other'
-s-vjvn-	-æs-jæn	'make kneel'
-s-vm-vku- (+ -t)	-æs-m-ækæ-t	'extinguish'
-s-vnvm-vhvl-	-æs-næm-æhæl-	'adjust'

The idea that an underlying <H L> melody would become <L> in connection with Stem-Initial Syncope was sketched in §3.2.7.1, where it helps reconcile the loss, by Stem-Initial Syncope, of the short V following *x* in PerfP -æxbabæ-t with the observation that the syncope rule elsewhere specifically targets *ə* and does not affect *æ*. This ceases to be a problem if the syncopated V is schwa at the point when Stem-Initial Syncope applies, as in the derivation (95).

(95) Derivation of PerfP $-\text{æ}x\text{babæ}-t$ '(hole) gape' (T-ka dialect)

$/-xv\text{bubv}-t/$	underlying
$/-\text{ə}x\text{ə}b\text{abæ}-t/$	various early rules and <H L> melody
$/-\text{ə}x\text{babæ}-t/$	Stem-Initial Syncope
$/-\text{æ}x\text{babæ}-t/$	Leftward L-Spreading
$-\text{æ}x\text{babæ}-t$	surface form

Because Melodic Association for perfective verbs produces sequences of the maximal type «HHLLL», there are never more than two H-vowel syllables at the beginning of the stem. In all relevant cases, the perfective stem begins with a nonlexical initial short V, the first schwa of $/\text{ə}x\text{ə}b\text{abæ}-t/$, which is therefore followed by no more than one other schwa-syllable before the melody switches from H to L. Stem-Initial Syncope deletes this second schwa, giving $/\text{ə}x\text{babæ}-t/$. It remains merely to change the initial $/\text{ə}/$ to æ . If we allowed Short-V Harmony to work in a symmetrical fashion, we could attribute the initial æ of $-\text{æ}x\text{babæ}-t$ to this harmony rule. However, sequences like $\text{əCC}\alpha$ are stable in other contexts, including perfectives of $-v\text{CCv}-$ verbs like $-\text{ə}k\text{š}\alpha-$ 'eat', so I have elsewhere expressed doubts about a symmetrical formulation of Short-V Harmony (§3.2.6). As a result, I recognize Leftward L-Spreading as a morphologically specialized rule converting the initial $/\text{ə}/$ to æ in (95).

There are some alternative options, especially for dialects other than T-ka. In T-ka, the maximal melody for perfectives is «HHLLL», and there is no reason to consider an alternative «LHLLL» which would unproblematically become «LLLL» after Stem-Initial Syncope (deleting the H vowel). However, in the dialects other than T-ka and A-grm, it is much more reasonable to allow «LHLLL» as a maximal melody for perfectives. In particular, in these dialects (K-d, R, T-md), we get surface «LHLLL» when the H syllable is full, i.e. i or u . This applies even to verbs like $-xv\text{bubv}-$ (+ $-t$), namely in the Reslt stem, which appears as $-\text{ə}x\text{ibabæ}-t$ in T-Ka but as $-\text{æ}x\text{ibabæ}-t$ in the other dialects mentioned. In these non-T-ka dialects, it may be best to formulate Stem-Initial V-Insertion (see below) so that the added stem-initial V is specified as æ . This would actually work for T-ka as well, since Short-V Harmony would convert $/\text{æ}/$ to ə under the influence of the H vowel of the following syllable. However, in T-ka there is no direct evidence for initial $/\text{æ}/$ in these perfectives, and since «HHLLL» is a reasonable mapping of <H L> onto perfective verb stems I am inclined to have Stem-Initial V-Insertion just insert an unspecified short V in T-ka.

There is an intriguing similarity between Leftward L-Spreading in (95) on the one hand, and a dialectal alternation of the type $-\text{ə}P\text{ə}Q-$ versus $-\text{æ}PQ-$ in the short imperfective (including Imprt). Examples: Future $\text{əd } t\text{-}\text{ə}w\text{ət}$ 'she will hit' versus, depending on dialect, $\text{əd } \text{ə}w\text{ət-}\text{æ}r$ (e.g. T-ka) or $\text{əd } \text{æ}w\text{t-}\text{æ}r$ (e.g. K-d) 'I will hit'. The variants of type $-\text{æ}w\text{t-}$ occur chiefly in the Kidal area ((49), §3.2.6.2). These variants show the same pattern suggested in the

derivation (95), namely syncope of a second-syllable schwa accompanied by switch of a stem-initial schwa to æ. However, to my knowledge, T-ka does not show this output type in short imperfectives: *ad əwæt-ær* ‘I will hit’.

In A-grm, Stem-Initial Syncope does not apply to the perfectives in (94), but we get stem-wide <L> vocalism anyway. Thus *-xəbabæ-t*, *-tærara-*, *-s-æmm-ækæ-t*, *-s-ænnæm-æhæl-*, and so forth. In A-grm, therefore, there is no connection between Leftward L-Spreading and Syncope, since the spreading rule applies in the absence of Syncope. I will not venture here into the question whether A-grm preserves an archaic, Proto-Tuareg system, or has recently reshaped the perfectives (ultimately on the model of the Imprt, e.g. *xəbubə-t*, *tərrur*).

Aside from the cases where (outside of A-grm) Stem-Initial Syncope and Leftward L-Spreading are correlated, there are a few nonsyncoating verb types that have stem-wide <L> melody in the perfective. These are light stems beginning with a full V (*-vCv-*, *-vCvC-*, *-vCCv-*, etc.), and middleweight stems of shape *-CuCvC-* with a full V after the first C. An example is in (96).

(96) Perfective Verb (Surface <L> Melody, no Syncope)

lexical form	PerfP	gloss
<i>-dubvn-</i>	<i>-ædobæn-</i>	‘marry’

This perfective has a medial mid-height V, here *o*. See §3.4.7, just below, for more data, and an analysis involving V-Height Compromise. The initial *æ* (instead of *ə*) in the PerfP forms of ‘marry’, ‘be open’, and ‘be held in common’ suggest that the <L> melody is stem-wide.

I see no reasonable way to integrate the perfective melody seen in (96) with the surface <L> melody described above for verbs subject to Stem-Initial Syncope. Historically, it is possible that the tripartite perfective <L H L> melody seen in non-T-ka dialects in perfectives whose second V is a full high V, as in Reslt *-æxībəbæ-t* ‘(hole) gape’ with vocalic sequence «LHLL», is archaic. Using “M” for mid-height V, the surface bisyllabic trisyllabic «LML» vocalic sequences seen in *-ædobæn-* (96) might be an additional vestige of a tripartite <L H L> melody.

3.4.7 V-Height Compromise

As just mentioned, there are some full-V-initial light stems (*-vCv-*, *-vCvC-*, *-vCCv-*, etc.) and some *-CuCvC-* stems with full (high) V after the first C, whose perfectives have mid-height V’s. Additional data are in (97).

(97) Perfective Verb (Surface <L> Melody, no Stem-Initial Syncope)

lexical form	PerfP	gloss
a. underived heavy (middleweight)		
-dubvn-	-ædobæn-	'marry'
-šiwvj-	-æšewæj-	'gesture'
b. derived		
-m-irv-	-æm-era-	'be open'
-m-uhvr-/m-ihvr-	-æmm-ohær-	'be held in common'
-s-irvd-	-æss-oræd-	'wash'
c. underived light stems		
-vrv-	-òra-	'open'
-v wv-	-òlwa-	'be spacious'
-všvl-	-òšæl-	'run'

There is an asymmetry between the cases with e and those with o in the perfective. With rare underived exceptions like 'gesture', e is confined to Mediopassive derivatives with -m-. Especially in the causatives, we often get perfective o even when the VblN and other forms point to lexical i. Leaving the choice between e and o aside, the question here is how to account for the mid-height V's in the context of ablaut mechanics.

Synchronically, the most straightforward interpretation is that the mid-height V's reflect a mix of H and L features. The fact that the mid-height V is flanked by two æ's in the trisyllabic perfectives suggests that a stem-wide <L> melody is at hand. This would make sense if we assume a lexical high V.

In other contexts the melodic L or H trumps lexical vocalic features. For example, -bv|ulvɣ- 'gape' with medial u has PerfP -æblalæɣ-, which preserves no trace of the rounding feature. By contrast, the perfectives in (97) combine /u/ with L to give o, and /i/ with L to give e. In other words, the surface mid-height V is a compromise, and rounding and backness values are preserved.

For historical speculations see the end of the preceding section.

(98) V-Height Compromise

After reconfiguration (see below), middleweight verbs of the shape -CuCvC-, and V-initial light verbs (e.g. -vCu-), whose first V is a full high vowel {i u}, combine with an overlaid <L> melody as {e o}, respectively. In other words, they compromise on vowel-height, while preserving the lexical rounding and backness value.

As noted above, we often get perfective o (for expected e) corresponding to lexical i. Moreover, the light stems in (97.c) all have initial o although the related stems (imperfective, VbIN) have a or i vowels, not u. These facts suggest that the input to perfective ablaut, including V-Height Compromise, involves **pre-ablaut reconfiguration**, generally converting /i/ to /u/ or specifying an underspecified full V as /u/. For example, PerfP -òrà- ‘open’ will come out if the input is reconfigured to /-uru-/ with initial /u/.

There is considerable dialectal variation involving o versus e in perfectives. T-ka strongly favors o except in mediopassive derivatives; other dialects have more cases of e in underived and causative as well as mediopassive verbs. For details see §7.3.1.8, §7.3.1.15, and (for causatives) §8.1.5.

3.4.8 Verb-stem-initial rules (gemination, syncope, initial short V)

3.4.8.1 Onsets of underived verbs

In the analysis used here, many verbs that usually appear in inflected forms with a stem-initial short V are considered to lack this V in basic lexical representations. The best guide to the basic form is usually the Imprt.

In the perfectives and inflected ShImpf of heavy C-initial verbs, the onset of the stem undergoes changes, including addition of an initial short V (which appears as ə or æ depending on the ablaut melody). I call this Stem-Initial V-Insertion. This is all that is needed for many middleweight -CuCvC- verbs (note the full vowel “u”), which simply become perfective or ShImpf -vCuCvC-, and for most augmented -CuCv- (+ -t) verbs, which become -vCuCv-t. By contrast, for other stem-shape classes, the inserted initial V is followed on the surface by a CC cluster, which is produced either by Stem-Initial Syncope if syllabically possible, or by C₁-Gemination. Even some -CuCvC- and -CuCv- (+ -t) verbs show C₁-Gemination.

For A-grm and other Gourma dialects that avoid Stem-Initial Syncope, see §3.4.8.3, below.

The V-Insertion rule is given as (99).

(99) **Stem-Initial V-Insertion**

A heavy (§3.4.1.4) C-initial verb grows an initial short v in the stems of the perfective system, and (except for causatives) in the inflectable ShImpf (but not the Imprt).

The rule does not apply to the unprefixable perfective stems of (mostly) adjectival verbs (§7.3.1.11).

For T-ka, there is no reason to pre-specify the incremental short V as æ or ə. The surface æ or ə can be accounted for by assuming that the incremental V

is within the domain of Melodic Association. For other dialects (K-d, R, T-md) the situation is more complex, and once could at least make a case for pre-specifying the incremental V as æ.

Consider the data in (100). The stems are superheavy stems whose basic form (seen in the *Imprt*) begins with *CvCV...* where V is any vowel and *v* is a short vowel. When the extra initial short V is added, the sequence *vCvCV...* is conducive to Stem-Initial Syncope, resulting in *vCCV...*

(100) Stem-Initial V-Insertion and Stem-Initial Syncope

gloss	<i>Imprt</i>	<i>ShImpf</i>	<i>PerfP</i>
a. - <i>CvCvCCvC</i> -			
‘shine’	mələwləw	-əmləwləw-	-əmləwləw-
‘toss & turn’	bələɸwəy	-əbləɸwəy-	-əbləɸwəy-
b. - <i>CvCuCvC</i> -			
‘gape’	bəluləɣ	-əbluləɣ-	-əbluləɣ-
‘rotate’	kərukəɣ	-əkrukəɣ-	-əkrukəɣ-
c. - <i>CvCvCCvCvC</i> -			
‘trim (twigs)’	səɣəmsəɣəm	-əsɣəmsəɣəm-	-əsɣəmsəɣəm-
‘pound’	jəɣəɸjəɣəɸ	-əjɣəɸjəɣəɸ-	-əjɣəɸjəɣəɸ-
d. - <i>CvCvCCv</i> - (unaugmented)			
‘be spicy’	ɣəɣəɣh	-əɣɣəɣh	-əɣɣəɣhə-
‘be fewer’	ləkəns	-əlkəns	-əlkənsə-
e. - <i>CvCvCu</i> - (+ -t)			
‘be dying’	jəɣəɣə-t	-əjɣəɣə-t	-əjɣəɣə-t
f. - <i>CvCuCu</i> - (+ -t)			
‘be freed’	ɣəwɪlə-t	-əɣwɪlə-t	-əɣwɪlə-t
g. - <i>CvCvCCv</i> - (+ -t)			
‘be dipped’	ləbəqqə-t	-əlbəqqə-t	-əlbəqqə-t
h. - <i>CvCvCCvCv</i> - (+ -t)			
‘roll’	bələmbulə-t	-əbləmbulə-t	-əbləmbulə-t

Stem-Initial Syncope also applies to the *VblN* of these superheavy stems. The regular *VblN* of heavy stems begins with *α-* (nominal vocalic prefix). Examples: *α-mləwləw* (variant *α-mləwlaw*) ‘shining’, *α-bluləɣ* (variant *α-bluləɣ*) ‘gaping’. Replacing Sg *α-* by Pl *i-* has no effect on Stem-Initial

Syncope: *i-mləwliw-æn*. Likewise, Prefix Reduction (either of Sg *ɑ-* to *ʔæ-* or *ʔə-*, or of Pl *i-* to *ʔə-*) likewise has no effect: *dæɣ ʔə-mləwlew* ‘in the shining’.

Stem-Initial Syncope does not apply to the VbIN *ɑ-PæQaC* associated with (light) *-vPQvC-* verbs. Thus *ɑ-hælak* ‘destroying’ (§8.6.1.2). The rule also does not apply to nouns.

The issue of whether Stem-Initial Syncope applies to any short V, or specifically to *ə* (and not to *æ*), was raised above (§3.4.6), because the formulation of this syncope rule must be coordinated with the analysis of vocalic melodies and the process of Melodic Association. In the VbIN of heavy verbs, e.g. *ɑ-mləwlew* ‘shining’, the stem-wide melody is *<H>*, so if Melodic Association precedes Stem-Initial Syncope the syncopated V is */ə/*. In (100), Stem-Initial Syncope (seemingly) applies both in connection with stem-wide *<H>* melody (ShImpf) and stem-wide *<L>* melody (PerfP), and therefore applies equally to */ə/* and */æ/*. However, in other morphological contexts, Syncope applies to */ə/* but not to */æ/* (§3.2.7.1), and the perfective *<L>* melody seen in (100) is arguably derived from an underlying *<HL>* melody. One can therefore make a case that the syncopated V in the perfectives in (100) is really */ə/*, so that e.g. *-əmləwlew-* ‘shine’ has the shape */-əmələwlew-/* at the point where Stem-Initial Syncope applies. After Syncope, the resulting */-əmləwlew-/* becomes *-əmləwlew-* by **Leftward L-Spreading** (§3.2.7.2).

This analysis, involving an asymmetrical version of Stem-Initial Syncope combined with Leftward L-Spreading, might be questioned. Though it should not be accepted uncritically by readers, I tend to favor it, since it accounts for the otherwise inexplicable correlation between surface *<L>* melody and Stem-Initial Syncope among perfectives of superheavy verbs. If this analysis is accepted, the Stem-Initial Syncope rule, confined to inflected perfective and ShImpf stems and VbIN’s of superheavy verb stems, is (101).

(101) **Stem-Initial Syncope**

- a) In a superheavy verb stem (§3.4.1.4, above), an initial sequence (after Stem-Initial V-Insertion) of the type *-vPəCV...* (“V” = any vowel, “P” = any consonant) is syncopated to *-vPCV...*
- b) In a VbIN of a superheavy verb, stem-initial *Prf-PvCV...* (Prf = vocalic prefix) is syncopated to *Prf-PCV...*

When a superheavy verb has undergone Stem-Initial V-Insertion but does not have a syllabic structure conducive to Stem-Initial Syncope (with an open short-voweled Cv syllable in the right location), the stem geminates the first stem C. This process is unique to inflected verbs. Consider the data in (102).

(102) Stem-Initial V-Insertion and C₁-Gemination.

gloss	Imprt	ShImpf	PerfP
a. -CvCCvCCvC-			
‘stumble’	jærtættæf	-æjjærtættæf-	-əjjærtættæf-
‘stumble’	jærtæqqæl	-æjjærtæqqæl-	-əjjærtæqqæl-
‘be coarse’	færsæšsæn	-æffærsæšsæn-	-əffærsæšsæn-
‘(hair) stand’	bærjæjjæy	-æbbærjæjjæy-	-əbbærjæjjæy-
‘be slippery’	zælbæbbæy	-æzzælbæbbæy-	-əzzælbæbbæy-
b. -CvCCvC-			
‘shake, dust’	kæykæy	-ækkæykæy-	-əkkæykæy-
‘praise God’	kæbbær	-ækkæbbær-	-əkkæbbær-
c. -CvCvC-			
‘boast’	bæræj	-æbbæræj-	-əbbæræj-
‘be brown’	bænæw	-æbbænæw-	-əbbænæw-
‘be neighbor’	hæræj	-æhhæræj-	-əhhæræj-
‘be present’	hæðær	-æhhæðær-	-əhhæðær-
d. -CvCCvC-			
‘want’	dùrhæn	-əddurhæn-	-əddurhæn-
‘freeze’	rùrhæs	-əqqurhæs-	-əqqurhæs-
e. -CvCCv- (unaugmented)			
‘harm’	lærr	-ællærr-	-əllærra-
‘raise young’	ræbb	-ærræbb-	-ərræbba-
g. -CvCCv- (unaugmented)			
‘carry’	bàbb	-æbbabb-	-əbbubba-
‘be detached’	fùgg	-əffugg-	-əffugga-
h. -CvCv- (+ -t)			
‘be spotted’	bækæ-t	-æbbækæ-t	-əbbækæ-t
‘coil up’	lækæ-t	-ællækæ-t	-əllækæ-t
‘scrub’	fùffærə-t	-əffùffærə-t	-əffùffærə-t
i. -CvCv- (+ -t)			
‘be able’	dübə-t	-əddübə-t	-əddøbæ-t

The gemination rule can be formulated as (103).

(103) **C₁-Gemination**

In a heavy C-initial verb, after Stem-Initial V-Insertion, if Stem-Initial Syncope has failed to apply, in the initial sequence -vPv...- the first consonant (P) is geminated, resulting in -vPPv...-. Exceptions: middleweight verbs of the basic shape -PuCvC-, and most of the shape -PuCv-, with P plus full vowel in an open syllable.

Examples of the stem types that are not affected by C₁-Gemination (or by Stem-Initial Syncope) are given in (104). See §3.4.8.3, below, for A-grm, which applies C₁-Gemination more widely.

(104) Stem-Initial V-Insertion with no C₁-Gemination in -CvCvC- Verbs

gloss	Imprt	ShImpf	PerfP
a. Imprt/ShImpf with u			
'be cousin'	bùbəš	-ə̀bubəš-	-ə̀bobəš-
'marry'	dùbən	-ə̀dubən-	-ə̀dobən-
'have sore feet'	dukəl	-ə̀dùkəl-	-ə̀dokəl-
b. Imprt/ShImpf with i			
'gesture'	šiwəj	-ə̀šiwəj-	-ə̀šewəj-
"	šawəj	-ə̀šawəj-	"
c. Imprt/ShImpf with a, perfectives with o			
'go north'	jùzæy	-ə̀jazæy-	-ə̀jozæy-
d. Imprt/ShImpf with a, perfectives with e			
'be wounded'	bàwæs	-ə̀bawæs-	-ə̀bewæs-
'have cuts'	fādæy	-ə̀fadæy-	-ə̀fedæy-
'flee'	jàwæd	-ə̀jawæd-	-ə̀jewæd-
'be sent on errand'	màšæl	-ə̀mašæl-	-ə̀mešæl-
'be young'	màwæd	-ə̀mawæd-	-ə̀mewæd-

However, compare the augment verb -dùb- (+ -t) 'be able', where C₁-Gemination does in fact occur in the perfectives, and dialectally in the ShImpf: PerfP -ə̀ddobæ-t (all dialects), ShImpf -ə̀ddubə-t (T-ka) and dialectal variants.

The pattern in (104.d) is also found with prefixally derived Mediopassives of the type -m-iCvC- (i.e. from underived -vCvC-) and -m-iCv- (from -vCv-), as in PerfP -ə̀m-ekær- 'be stolen' and -ə̀m-era- 'be open' (§8.3).

3.4.8.2 *Onsets of causative and mediopassive verbs*

Causative verbs (§8.1) have some special features. The perfective stems are fairly normal in T-ka and most other dialects. Here **Stem-Initial Syncope** applies where syllabically possible. Thus PerfP *-æs-n-æs-æjbær-* ‘cause to imitate each other’ from *-s-vn-vs-vjbvr-*. For verbs of shape *-vCvC-*, regardless of whether the dialect prefers *əCæC-* or *CæC-* as unprefixated PerfP of the underived stem, the causative PerfP is likewise consistently *-æs-CæC-* (syncopated from */-s-əCæC-/*), as in *-æs-wæf-* ‘startle’. In this respect, causative verbs apply Stem-Initial Syncope more widely than underived stems, which fail to syncopate *-PəCæC-* perfectives (which then appear as *-əPPəCæC-* after *C₁-Gemination*. In causative perfectives, as with underived stems, when Stem-Initial Syncope is not possible for syllabic reasons (basic stems beginning *-s-vCC...* or *-s-v...*), *C₁-Gemination* applies to the prefixal sibilant, as in PerfP *-əss-əhlæl-* ‘sanction’ and *-əss-otæy-* ‘wrap (tent)’.

However, in causatives there is a divergence between perfectives and (inflected) ShImpf stems. The **causative ShImpf is not subject to Stem-Initial V-Insertion** (which entails the further absence of Stem-Initial Syncope), in all dialects checked. For example, the inflected ShImpf of ‘hawk (wares)’ is *-s-ətəj-* (e.g. 3MaSg Future *ad ɪ-s-ətəj* ‘he will ...’, 3MaPl *ad s-ətəj-æn* ‘they-MaPl ...’), and that of ‘wrap (tent)’ is *-s-ütəy-*, compare PerfP *-æs-tæj-* and *-əss-otæy-* with both Stem-Initial V-Insertion and Stem-Initial Syncope.

If the causative stem is superheavy (in particular, heavier than *-s-vCvC-*), and begins in *-s-vCV...* (i.e. with Causative prefix *-s-* followed by short vowel then intervocalic ungeminated C), then ***C₁-Gemination* applies to the post-prefixal C** (i.e. the initial C of the following morpheme, either the core stem or an inner derivational prefix) rather than to the prefixal *-s-*. This is also the case with the VbIN.

Thus, the augment verb *-s-vtvkuru-* (+ *-t*) ‘make bulge at tip of’ has PerfP *-æs-tækuræ-t* (with Stem-Initial Syncope), but ShImpf *-s-əttəkurə-t* (3MaPl Future *ad s-əttəkuru-n*, cf. Sg Imprt *s-əttəkurə-t*) with the post-prefixal *t* geminated to *tt*. The VbIN is likewise *α-s-əttəkuru*. More examples are given in §3.4.8.3, below, where dialectal variation is also described.

In the **causative VbIN**, Stem-Initial Syncope normally does not apply between the Caus prefix *-s-* (or other sibilant) and the following core stem, even in the pattern *α-s-əCəC* where Stem-Initial Gemination fails to apply. Thus, for T-ka we get syncopated PerfP *-æs-dæw-* ‘arrange’ but unsyncopated VbIN *α-s-ədæw* (compare ShImpf *-s-ədæw-*). For dialectal variation see §3.4.8.3, below.

There are no comparable irregularities with other derivational prefixes on verbs. There are two such prefixes, *-m-* (or *-n-*) in mediopassive and (with heavy stems) reciprocal function (§8.3), and *-nvm-* in reciprocal function, with light and optionally with heavy stems (§8.4). Both prefixes are subject to Stem-Initial V-Insertion in perfective and ShImpf stems.

Reciprocal prefix *-nvm-*, which itself is always followed by a vowel, is always conducive to Stem-Initial Syncope, so the *n* is never geminated by *C₁-Gemination*. Example: *-nvm-vdvd-* 'bite each other', PerfP *-æn̄m-ædæd-*, ShImpf *-ən̄m-ədəd-*.

Mediopassive (or for heavy stems Reciprocal) prefix *-m-* (or allomorph *-n-* if the stem has a labial *C*) occurs in a wider range of syllabic environments, and is subject to Stem-Initial Syncope or to *C₁-Gemination* as syllabic conditions dictate, as with underived *C*-initial stems. An example with Stem-Initial Syncope is *-n-vs-vdubvn-* 'cause each other to get married', PerfP *-æn̄-s-ædabæn-*, ShImpf *-ən̄-s-ədubən-*. One with *C₁-Gemination* is *-m-vkšv-* 'be (all) eaten', PerfP *-ə̄mm-əkš̄ɑ-*, ShImpf *-ə̄mm-əkš̄* (from */ə̄mm-əkš̄A-/*). Finally, just as with underived *-CvCvC-*, mediopassive *-m-vCvC-* and *-m-vCv-* fail to undergo *C₁-Gemination*. Examples: *-m-irv-* 'be open', PerfP *-ə̄m-erɑ-*, ShImpf *-ə̄m-ɑr*; *-m-ilvy-* 'be cut', PerfP *-ə̄m-elæy-*, ShImpf *-ə̄m-ɑlæy-*. Therefore the Mediopassive prefix (whether in mediopassive or reciprocal function) behaves just like the initial *C* of an underived stem. Only Causative *-s-* has atypical behavior.

3.4.8.3 Dialectal idiosyncracies in verb and VbIN onsets

For A-grm (and, I am told, some other dialects of the Gourma from Gao east to Ansongo, and a smaller number of dialects north of the river in the same general area), the onset phonology of the onset of underived and causative perfectives is rather different. In (105), I show the T-ka patterns for underived verbs and the distinctive A-grm counterparts. The T-ka forms are representative, in syllabic structure, of all dialects studied except A-grm. Note particularly the differences in (105.c).

(105) Dialectal Variation in Onsets of Underived Verbs

	T-ka	A-grm
a. 'be proved a liar' (-buggu- + -t)		
PerfP	-ə̄bbuggæ-t	-ə̄bbuggæ-t
Imprt	bùggə-t	bùggə-t
ShImpf	-ə̄bbuggə-t	-ə̄bbuggə-t
VbIN	à-bəggʊ	à-bəggʊ
b. 'be arrogant' (-bvr̄vj-)		
PerfP	-ə̄bbərəj-	-ə̄bbərəg-
Imprt	bərəj	bərəg
ShImpf	-ə̄bbərəj-	-ə̄bbərəg-
VbIN	ɑ-bərəj	ɑ-bərəg

c. 'sag' (-bvkvwkvw-)

PerfP	-ə̀bkæwkæw-	-bəkæwkæw-
Imprt	bəkæwkəw	bəkæwkəw
ShImpf	-ə̀bkæwkəw-	-bəkæwkəw-
VbIN	ɑ-bkə̀wkəw	ɑ-bəkə̀wkəw

The dialects agree in (105.a), where the stem shape -buggu- does not lend itself to Stem-Initial Syncope (#-bggu-). (Other dialects such as K-d have initial æ rather than ə in PerfP -ə̀bbuggə-t, but this is not at issue here.) There is also no difference in (105.b), where the middleweight stem shape -CvCvC- is not superheavy, and is therefore too short to allow Stem-Initial Syncope in T-ka. In (105.a-b), both dialects show C₁-Gemination in the perfectives and in the inflected ShImpf. On the other hand, in (105.c) we have a verb that does allow Stem-Initial Syncope in T-ka, so syncope is observed in the PerfP, inflected ShImpf, and VbIN. By contrast, In A-grm, **Stem-Initial V-Insertion is conspicuously absent** from the entire set of forms in (105.c), so there is no possibility for Stem-Initial Syncope to apply. C₁-Gemination also fails to apply here.

C₁-Gemination does apply, however, to A-grm perfective and ShImpf stems of -CvCvC- verbs that are ungeminated in T-ka and other dialects (§3.1.8.1). For example, 'be wounded' has a basic shape -CvCvC- though the exact form is variable (the Sg Imprt appears as A-grm b̄wəs, T-ka b̄wəs, and K-d and R b̄yəs). Its PerfP with Stem-Initial V-Insertion shows C₁-Gemination in A-grm (-ə̀bbewəs-) but not elsewhere (T-ka -ə̀bewəs-, K and R -ə̀boyəs-). Likewise, -dukvl- 'have sore feet' has PerfP -ə̀ddokæl- (A-grm) versus -ə̀dokæl- (T-ka and others). My lexicographic A-grm data are not completely consistent on this point (the A-grm informant, a government official working in Gao, was also fluent in "standard" Tamashek), but my sense is that gemination is regular with these verbs in true A-grm dialect. Note that A-grm PerfP -ə̀bbewəs- and -ə̀ddokæl- show initial schwa, and therefore do not have stem-wide <L> melody as do the other dialects.

The **causatives** of T-ka and A-grm are compared in (106). Note particularly the PerfP stems in (106.b-c).

(106) Dialectal Variation in Onsets of Causatives

	T-ka	A-grm
a. 'spit' (-s-utvf-)		
PerfP	-ə̀ss-otæf-	-ə̀ss-otæf-
Imprt	s-ùtəf	s-ùtəf
ShImpf	-s-ùtəf-	-s-ùtəf-
VbIN	ɑ-s-ùtəf	ɑ-s-ùtəf

b. 'hawk (wares)' (-s-vtvj-)

PerfP	-æ̃s-tæj-	-ə̃ss-ətæg-
Imprt	s-ətəj	s-ətəg
ShImpf	-s-ətəj-	-s-ətəg-
VblN	ɑ-s-ətəj	ɑ-s-ətəg

c. 'make bulge' (-s-vtvkuv- + -t)

PerfP	-æ̃s-tækuræ-t	-s-ə̃ttækuræ-t
Imprt	s-ə̃ttækurə-t	s-ə̃ttækurə-t
ShImpf	-s-ə̃ttækurə-t	-s-ə̃ttækurə-t
VblN	ɑ-s-ə̃ttækuru	ɑ-s-ə̃ttækuri

The Imprt and ShImpf forms, and the VblN's, are identical in syllabic shape. The differences are in the PerfP of (106.b-c).

In (106.a), there is no difference (other than the initial *æ* versus *ə* in the PerfP). In (106.b-c), however, A-grm fails to allow Stem-Initial Syncope even in the perfective, where it is regular in T-ka and other dialects checked. In (106.b), both dialects shown apply Stem-Initial V-Insertion to the PerfP, which is accompanied by Stem-Initial Syncope in T-ka -*æ̃s-tæj-* but by C₁-Gemination, applied to the prefixal sibilant, in A-grm -*ə̃ss-ətæg-*. The latter resembles causative PerfP -*ə̃ss-ə̃PQæC-* and -*ə̃ss-ə̃PQɑ-*, which are regular in all dialects for causatives based on -*vPQvC-* and -*vPQv-* stems, respectively, where syllabic conditions do not permit syncope, e.g. PerfP -*ə̃ss-ə̃jla-* (T-ka) and -*ə̃ss-ə̃gla-* (A-grm) 'send'. In (106.c), A-grm fails to apply Stem-Initial V-Insertion, but does apply C₁-Gemination to the first C of the core stem, in the PerfP as in the ShImpf.

I have indicated that many inflected causative stems, including the ShImpf in all dialects, plus many perfectives in A-grm, begin with -*s-* unaccompanied by a preceding short V due to Stem-Initial V-Insertion. In reality, I have heard a short V in a few elicited forms of these types, but these instances were infrequent and I suspect they reflect "elicitation-ese." The relevant cases were combinations of Future *əd* with a ShImpf that lacked a pronominal subject prefix. Even here I usually heard no initial V, as in T-ka *əd s-ədəw-æn* 'they-Ma will organize' and R *əd s-ə̃gəd-æn* 'they-Ma will listen'. However, I did transcribe the former as *əd əs-ədəw-æn* for the R informant in direct elicitation. I believe that this pattern is atypical even for this speaker.

In A-grm, I have recorded C₁-Gemination for several -*CvCvC-* verbs that do not geminate in the other dialects (§3.4.8.1, above), e.g. A-grm PerfP -*ə̃ddokæl-* 'have sore feet', -*ə̃ssəwæg-* 'gesture', -*ə̃mməʃæl-* 'be sent on errand'.

Since T-ka does not syncopate the causative VblN type *ɑ-s-ə̃CəC*, we get forms like *ɑ-s-ədəw* 'arranging' in T-ka as well as A-grm (and most other dialects). In this case the divergent dialects in my data are those of the Kidal area, which do syncopate and therefore have *ú-s-dəw* 'arranging'. In T-ka, the pattern *ú-s-CəC* is normally confined to instrumental nominals. The R speaker

vacillated between α -s- $\acute{\alpha}$ C α C and $\acute{\alpha}$ -s-C α C for the VblN's. This speaker gave both $\acute{\alpha}$ -s-d $\acute{\omega}$ (Pl \check{i} -s-diw- $\acute{\alpha}$ n) and α -s- $\acute{\alpha}$ d $\acute{\omega}$ (Pl i-s- $\acute{\alpha}$ diw- $\acute{\alpha}$ n) for 'arranging'.

3.4.9 V-Shortening rules and u-Spreading

V-final verbs shorten their final V before C-initial suffixes. For non-augment V-final verbs, the shortening is limited to α becoming $\acute{\alpha}$ (§3.4.9.1). For augment verbs, the stem-final V (high or low) is shortened before Augment -t-. There are also processes (subject to dialectal variation) involving shortening of a stem-medial full V, and/or spreading of u from medial to final vowels, in certain paradigmatic and derivational forms of heavy verbs (§3.1.9.3). Finally, there are some idiosyncratic V-Shortening processes that occur in connection with the derivation of causatives from other verbs (§3.1.9.4).

3.4.9.1 Presuffixal α -Shortening (Non-Augment Verbs)

To begin with, non-augment V-Final verbs shorten a stem-final α to $\acute{\alpha}$ before C-initial suffixes (but not clitics). This analysis is based on the assumption that the stem-final V's in question (see §7.3.1.3, §7.3.1.5) would otherwise appear as the full vowel α . The full set of C-initial suffixes that can follow an inflectable verb stem are listed in (107).

(107) Suffixes Inducing Presuffixal α -Shortening

- a. C-initial subject suffixes (3FePl -n $\acute{\alpha}$ t, 2FePl -m $\acute{\alpha}$ t)
- b. C-initial Participle suffix (Pl -nen)

I now argue that the same Presuffixal α -Shortening may also apply before some (but not all) V-initial suffixes. Here, however, the phonology is less transparent since VV-Contraction (37) is also involved (§3.2.3.3).

Consider the data in (108), using the light V-final stem -vkšv- 'eat'.

(108) PerfP of Light V-Final Verb ('eat')

- a. \check{i} -kš α 'he ate'
- b. $\acute{\alpha}$ kš $\acute{\alpha}$ -n $\acute{\alpha}$ t 'they-Fe ate'
- c. t- $\acute{\alpha}$ kš $\acute{\alpha}$ -d 'you-Sg ate' (likewise 1Sg $\acute{\alpha}$ kš $\acute{\alpha}$ -r)
- d. $\acute{\alpha}$ kš $\acute{\alpha}$ -n 'they-Ma ate' (likewise 2MaPl t- $\acute{\alpha}$ kš $\acute{\alpha}$ -m)

The stem-final full α is seen when there is no subject suffix (108.a). Before a C-initial suffix, / α / shortens to $\acute{\alpha}$ (108.b). With a - $\acute{\alpha}$ C suffix, VV-Contraction (37.d) applies, but we get either ...e-C (1Sg, 2Sg) or ... $\acute{\alpha}$ -C (2MaPl, 3MaPl) as output. In the {1Sg 2Sg} case (108.c), accent is compatible with late

application of Default Accentuation, so there is no accentual trace of the deleted suffixal /æ/. The output e is the regular contraction of /aæ/ at a stem-suffix boundary (§3.2.3.3).

With 3MaPl -æn, we get the problematic əkšæ-n (108.d). The accent cannot shift farther left, and we see æ rather than e at the morpheme boundary. If we analyse əkšæ-n as due to Presuffixal α-Shortening followed by VV-Contraction (37.b), we have the derivation in (109.a). Here stem-final æ could be identified with deletable /A/. If VV-Contraction (37.d) by itself is posited, we get the derivation in (109.b).

(109) Alternative Derivations of əkšæ-n ‘they-Ma ate’

a. with Presuffixal α-Shortening (preferred)

əkša-æn	underlying
əkšæ-æn	Default Accentuation, Presuffixal α-Shortening
əkšæ-n	VV-Contraction (37.c)

b. without Presuffixal α-Shortening (dispreferred)

əkša-æn	underlying
əkša-æn	Default Accentuation
əkš-æn	VV-Contraction (37.d)

In (109.a), Presuffixal α-Shortening results in a sequence of two /æ/’s, which then contract to a single æ. (It is difficult to decide whether to hyphenate the surface form as əkšæ-n or əkš-æn). In (109.b), the stem-final α abruptly disappears before the suffixal short V. Since this is not the way VV-Contraction works in other stem-suffix combinations, the derivation (109.b) is questionable, and **I prefer (109.a)**.

Presuffixal α-Shortening is blocked (or undone) when the relevant stem-final V is “protected” by an **ablaut lengthening formative** $\bar{\chi}$ -pcl or $\bar{\chi}$ -f. A Reslt example is 3FePl əkšá-næt ‘they-Fe have already eaten’, cf. PerfP əkšæ-næt. A LoImpfP example is t-imtəlli-næt ‘they-Fe are confused’, where stem-final i is not shortened. The apparently exceptional failure to shorten the V visibly can be accounted for in either of two ways. In one version, Presuffixal α-Shortening is simply blocked by this ablaut formative. In the second version, Presuffixal α-Shortening does apply at an early stage, but the shortened V is then **(re-)lengthened** by applying the relevant $\bar{\chi}$ formative. The latter solution is preferable on several grounds, but chiefly because the relengthening of /æ/ is appropriately α, never e.

The same pattern of shortening (i.e. provided that an $\bar{\chi}$ formative does not protect the full V) is observed with the only C-initial Participial suffix, Pl -nen (contrast MaSg -æn and FeSg -æt). Participles are used in subject relatives (§8.5). Participles for -vkšv- ‘eat’ are in (110).

(110) PerfP Participles of 'eat'

- | | | |
|----|----------|-------------------------|
| a. | ĩ-kšæ-n | MaSg (V-initial suffix) |
| b. | t-əkšæ-t | FeSg (V-initial suffix) |
| c. | əkšæ-nen | Pl (C-initial suffix) |

In the MaSg and FeSg participles (110.a-b), stem-final /a/ combines with the initial /æ/ of the suffix to produce æ by VV-Contraction. This is consistent with Presuffixal α-Shortening followed by VV-Contraction (37.c), as in 3MaPl PerfP əkšæ-n (110.a, above). The Pl participle əkšæ-nen (110.c) is a more transparent example of Presuffixal α-Shortening because the suffix is C-initial. In all three cases in (110), Presuffixal α-Shortening is effectively undone when an ablaut lengthening formative is present, so the Result forms of the participles in (110) are MaSg i-kšá-n, FeSg t-əkšá-t, and Pl əkšá-nen.

(108) and (110) show that Presuffixal α-Shortening applies to light V-final verbs before any C-initial suffix, and for most but not all V-initial suffixes. For heavy non-augment V-final stems, Presuffixal α-Shortening applies before all V-initial subject suffixes (1Sg and 2Sg in addition to 2MaPl and 3MaPl). PerfP forms for a heavy non-augment V-final stem are given in (111), in the same format as (108), above.

(111) PerfP of Heavy Non-Augment V-Final Verb ('be searched')

- | | | |
|----|-------------|-------------------------|
| a. | ĩ-ffəyka | 'it-Ma was searched' |
| b. | əffəykæ-næt | 'they-Fe were searched' |
| c. | t-əffəykæ-d | 'you-Sg were searched' |
| d. | əffəykæ-n | 'they-Ma were searched' |

Note that the 2Sg (111.c) has the same stem-suffix phonology as the 3MaPl (111.d). The difference between light and heavy non-augment V-final stems is a further indication that Presuffixal α-Shortening, at least before V-initial suffixes, is morphologized.

I christen the rule Presuffixal α-Shortening (rather than ... V-Shortening) since it applies only to /a/, not to other full V's. There are some verbs with a final u or (in one case) i that can appear before the same C-initial suffixes illustrated above, and shortening does not occur: PerfP əndu-næt 'they-Fe were churned', ShImpf (Future) ad ĩwi-næt 'they-Fe will be born' (contrast PerfP əwæ-næt 'they-Fe were born' with shortened æ from /a/).

In cases like ShImpf (Future) ad əkšə-næt 'they-Fe will eat' from /ækšɪ-næt/, the schwa is not shortened from a full V. Rather, it represents a deletable stem-final /ɪ/ that is dropped word-finally, as in əd Ø-ækš 'he will eat'.

Presuffixal α-Shortening does not apply to V-final verbs when directly followed by a C-initial **object clitic**: ĩ-kša-\\tæt 'he ate it-Fe' with unreduced α. We do get a short æ before **Centripetal clitic** variant -\\ódđ, if no ǰ ablaut

formative is present. Example: Ø-osæ-\dd ‘he came (arrived here)’. However, since the Centripetal clitic begins in a short V, this shortening might be analysed as a direct effect of VV-Contraction, cf. (37.d), without invoking the Presuffixal α -shortening rule needed for the other cases described above.

Presuffixal α -Shortening **does not apply to nouns**. If a noun is V-final, it can take MaPl suffix $-t\text{æn}$, FeSg suffix complex $-t\text{-t}$, or FePl suffix complex $-t\text{-en}$, with no shortening of the stem-final V (§4.1.2.2).

The rule can be stated as (112).

(112) **Presuffixal α -Shortening (Non-Augment Verbs)**

stem-final $\alpha \rightarrow \text{æ}$

- a) before any C-initial suffix (subject or participial)
- b) before any V-initial subject or Participial suffix (heavy non-augment V-final verbs)
- c. before a Plural V-initial subject suffix or a V-initial Participial suffix (light V-final verbs)

The highly irregular impersonal verb-like stem $-\text{æba-}$, which with an object NP X means ‘X was lost’, appears to lose or shorten its α in some combinations (§7.3.2.16).

3.4.9.2 Pre-Augment V-Shortening

Another suffix that induces shortening of a preceding stem-final full V is the Augment $-t-$ that occurs in some but not all forms in the paradigms of “augment verbs” (§7.1). This is the only C-initial suffix that can directly follow an augment verb, since $-t-$ occurs before C-initial subject and Participial suffixes as well as word-finally.

Like non-augment verbs (preceding section), augment verbs shorten α to æ (113).

(113) PerfP of Augment Verb $-\text{furru-}$ ‘fly away’

- | | | |
|----|--------------------------|-------|
| a. | əffurre-n | 3MaPl |
| b. | ǐ-ffurræ-t | 3MaSg |
| c. | t-əffurræ-t-mæt | 2FePl |

In inflected forms, Augment $-t-$ is absent before V-initial subject suffixes like 3MaPl $-\text{æn}$, whereupon stem-final / α / contracts with suffix-initial / æ / to form e (113.a), see §3.2.3.3. However, Augment $-t-$ is present in the absence of a suffix (113.b), and before a C-initial subject suffix (113.c), and we observe shortening of the stem-final / α / to æ in these cases.

Unlike the case with non-augment verbs, with augment verbs the shortening also applies to high V's {i u}, which merge into the only short high vowel ə. This is seen in Imprt and other short imperfective stems. In (114), the LoImpfP shows a stem-final u or i, corresponding to ə in the ShImpf.

(114) Imprt of Augment Verb 'fly away'

	gloss	stem (plus -t-)	LoImpfP	Imprt
a.	'be dying'	-jrvvri-	-t-įjrəri-t	įrərə-t
b.	'ruin'	-s-vmrsu-	-s-įmørsu-t	s-əmørsə-t

There is good evidence that augment stems are V-final, cf. VbIN à-fərru (dialectally æ-fərru) for 'fly away', à-jrəri for 'be dying', and a-s-əmørsu for 'ruin'.

When an **ablaut lengthening** formative "protects" the stem-final V, it appears as a full V. This is seen in all long imperfectives, which have a formative $\tilde{\chi}$ -f in the final stem syllable, e.g. LoImpfP i-t-įfərru-t 'he flies away' and the LoImpfP forms in (114).

There is one other exception to shortening with augment verbs. Some augment verbs belong at least loosely to the category of "**adjectival**" verb. The two diagnostics for adjectival verb are irregular perfectives, and avoidance of the $\tilde{\chi}$ -pc1 ablaut formative in the Reslt stem. Of these diagnostics, irregular perfectives are pertinent here. There are at least seven augment verbs with PerfP CæCa-t- or CðCa-t- (dæma-t- 'be light reddish brown', dæra-t- 'be brown', kæša-t- 'be speckled', mæja-t 'be spotted', dðla-t- 'be green', mðla-t- 'be white on head', fðwa-t- 'be brown'), see (372.d) in §7.3.1.6 an (393) in §7.3.1.13. In these stems, which often keep the -t- even before V-initial suffixes, there is no V-Shortening before -t-. Their MaSg and FeSg participles have either æ or e by VV-Contraction (37.d), e.g. MaSg dæme-n (T-ka) or dæmé-n (A-grm) 'light reddish brown', dðlæ-n (T-ka) or dðle-n (A-grm) 'green'.

The rule can be formulated as (115).

(115) **Pre-Augment V-Shortening** (Augment Verbs)

stem-final $\alpha \rightarrow \text{æ}$ and {i u} $\rightarrow \text{ə}$ before Augment -t-

A similar Stem-Final V-Shortening applies to stem-final α (but not other vowels) before Centripetal -łodd after VV-Contraction; see §10.2.1.1.

With augment verbs, there is no real "jurisdictional" issue between Pre-Augment V-Shortening and VV-Contraction (37). This is because VV-Contraction applies to augment verbs in combination with V-initial suffixes in a manner that preserves the stem-final full V, whereby i and u survive to the surface and /a/ surfaces as e.

3.4.9.3 Medial V-Shortening and u-Spreading

These processes apply to long imperfectives, and in some cases to short imperfectives, of stems with full u in a nonfinal syllable.

It is necessary to distinguish $...CuCvC-$ from $...CuCCvC-$ stems (“v” = short vowel). The u is in an open syllable in the first case, but in a closed syllable in the second. Examples are $-bvlulv\text{r}-$ ‘gape’ (open syllable) and $-huššvl-$ ‘be obligatory’ (closed syllable). The expected **long imperfectives** are $-t-ı̄blulı̄\text{r}-$ and $-t-ı̄huššıl-$. Forms of this type actually occur in A-grm and some other dialects near Gao, but in all other Tamashek dialects checked they are ungrammatical. Instead, u-Spreading applies, copying the features of u onto the (lengthened) final V. If the original medial u is in a closed syllable, it is reduced to ə by Medial V-Shortening (but only after u-Spreading has applied). The output forms and suggested derivations are in (116).

(116) Derivation of Long Imperfectives

‘gape’	‘be obligatory’	comment
$/-bvlulv\text{r}-/$	$/-huššvl-/$	lexical stem
$/-t-ı̄blulı̄\text{r}-/$	$/-t-ı̄huššıl-/$	after LoImpfP ablaut
$/-t-ı̄blulı̄\text{r}-/$	$/-t-ı̄huššul-/$	u-Spreading (119)
—	$/-t-ı̄həššul-/$	Medial V-Shortening (120)
$-t-ı̄blulı̄\text{r}-$	$-t-ı̄həššul-$	attested form

Similarly, the simple VbIN of ‘be obligatory’ is $\alpha-huššəl$. The Pl of such heavy VbIN’s lengthens the final schwa, usually to i. With $\alpha-huššəl$, the resulting Pl appears not at $\#i-huššıl-\text{æn}$, rather (in T-ka at least) as $i-həššul-\text{æn}$. For VbIN $\alpha-blulə\text{r}$, the Pl is $i-blulı̄\text{r}-\text{æn}$ with u-Spreading but no shortening (§8.6.1.4).

u-Spreading and Medial V-Shortening also apply to **V-final stems** that have u in a preceding syllable. For unaugmented V-final verbs (§7.3.1.14), examples are $-tvrurı̄-$ ‘go down’ (PerfP $-\text{æ}trara-$, LoImpfP $-t-ı̄truru-$ with u-Spreading) and $-fı̄ggı̄v-$ ‘be detached’ (PerfP $-\text{ə}ffı̄ggı̄-$, LoImpfP $-t-ı̄fı̄ggı̄v-$ with u-Spreading and Medial V-Shortening). For V-final verbs with Augment $-t-$ (§7.3.1.16), examples are $-bvlvmbulı̄-$ ‘roll’ (PerfP $-\text{æ}bləmbalə-t$, LoImpfP $-t-ı̄bləmbulı̄-t$ with u-Spreading) and $-fı̄ffı̄vrı̄-$ ‘scrub’ (PerfP $-\text{ə}ffı̄ffı̄rə-t$, LoImpfP $-t-ı̄fı̄ffı̄ru-t$ with u-Spreading and Medial V-Shortening). ‘Scrub’ shows that u-Spreading can occur even when the lexical u and the targeted stem-final V are **separated** by an intervening short-voweled syllable ($-fı̄ffı̄vrı̄-$). The correct syllabic shape for the input to the rule is therefore $...CuCC(vC)u(C)-$ with the optional material in parentheses.

Medial V-Shortening in long imperfectives is not limited to u, though u is overwhelmingly the most frequent target. There are no verbs known to me

with *i* in the relevant position. The verb *-jujju-* ‘load’ has PerfP *-əjjujja-* showing an unreduced medial *u*. Its LoImpfP *-t-əjæjja-* with <L> melody has medial *æ*, evidently shortened from /*a*/ (we would expect *#-t-əjajja-*). The other regular verb of this shape is ‘carry (baby) on back’ (LoImpfP *-t-əbæbba-*, VbIN *α-bább*). The dialectally variable verbs *-rv(y)mv-* ‘sit’ (§7.3.2.9) and *-juyh-* ‘testify’ (§7.3.2.10) have full V’s in the short imperfectives in most non-T-ka dialects (length is indeterminate in the perfectives where phonetic *i* could represent /*əy*/ or /*iy*/, but the V is shortened in the long imperfectives: LoImpfP *-t-əvæyma-*, *-t-əjæyha-*). The paradigm of ‘load’ appears to be archaic and isolated. On the other hand, I can cite no verbs with medial *α* in the relevant position that do not shorten it to *æ*. Other verbs with PerfP *-əPPuCCα-* have <H> melody in the (short and long) imperfectives, e.g. *-əjjussa-* ‘go south’, LoImpfP *-t-ijəssu-*.

The long imperfectives that show Medial V-Shortening all have a full V in the final syllable, whose length is either created or reinforced by the ablaut feature $\bar{\chi}$ -f. However, the PerfP type *-əjjujja-* ‘load’ shows that simply having the relevant surface phonological shape ...CvCC(vC)v(C)- is not sufficient to force shortening. There are two ways to formalize the conditions for the shortening rule in long imperfectives. First, one might guess that the first *v* (full V) in e.g. ...CvCC(vC)v(C)- is shortened only when the final *v* is associated with the ablaut formative $\bar{\chi}$ -f (the rule therefore applies only to long imperfectives). We will see in a moment that this will not work for the short imperfectives. Second, we could argue that shortening occurs in ...CvCC(vC)v(C)-, without regard to the formative $\bar{\chi}$ -f, but is blocked when the stem melody is composite, like <HL> in *-əjjujja-* ‘loaded’.

To study u-Spreading in **bisyllabic stems**, we must consider the plural of VbIN *α-CúCəC*, and the LoImpf of causative *-s-uCvC-*. A VbIN example is *α-búdər* ‘being rude’, Pl *i-bùdur-æn* (§8.6.1.4), with *u...u*. However, in the causatives, rounding and backness are **transferred rather than copied**: *-s-umvm-* ‘suck’, LoImpfP *-s-ímum-* with *i...u* (§8.1.5). Conceivably, the VbIN stem might be treated as trisyllabic here, including Pl *i-*.

u-Spreading and Medial V-Shortening have a more limited effect on **short imperfectives**. Since the ShImpf has no ablaut lengthening feature, the ShImpf forms for verbs like ‘gape’ and ‘be obligatory’ (cf. 116, above) have a short V in their final syllable, so they are not candidates for u-Spreading. Interestingly, they do not undergo Medial V-Shortening either, as seen in ShImpf *-əhhuššəl-* ‘be obligatory’. Therefore, if u-Spreading and Medial V-Shortening are to apply at all to ShImpf forms, they must be limited to verbs that are already V-final. As it happens, no unaugmented V-final verb has a medial *u*. Therefore the only attested stems showing u-Spreading and Medial V-Shortening in the ShImpf are augmented V-final stems (§7.3.1.16).

Moreover, even for the augmented V-final stems, the two rules take effect only in the portion of the ShImpf paradigm with V-initial subject pronominal suffixes, all of which happen to have the shape *-æC*, like 3MaPl *-æn*. These are precisely the forms that omit Augment *-t-* (in the rest of the ShImpf

paradigm, the *-t-* shortens the stem-final V). The forms without *-t-* end up with *u*, as the stem-final and suffix-initial V's contract. In (117) I give full ShImpf paradigms for 'groan' (no medial *u*, hence stem-final *i* in the augmentless sub-paradigm), 'be diluted' (medial *u* in open syllable, hence *u*-Spreading in the augmentless sub-paradigm), and 'fly' (medial *u* in closed syllable, hence both *u*-Spreading and Medial V-Shortening in the augmentless sub-paradigm).

(117) ShImpf Paradigms

	subject 'groan'	'be diluted'	'fly'
a. Augment <i>-t-</i> present (subject suffix is zero, or C-initial)			
3MaSg	ĩ-hnəffə-t	ĩ-ɖrurə-t	ĩ-ffurrə-t
3FeSg	t-əhnəffə-t	t-əɖrurə-t	t-əffurrə-t
3FePl	əhnəffə-t-næt	əɖrurə-t-næt	əffurrə-t-næt
2FePl	əhnəffə-t-mæt	əɖrurə-t-mæt	t-əffurrə-t-mæt
1Pl	n-əhnəffə-t	n-əɖrurə-t	n-əffurrə-t
b. Augment <i>-t-</i> absent (subject suffix is V-initial)			
3MaPl	əhnəffi-n	əɖruru-n	əffərru-n
2Sg	t-əhnəffi-d	t-əɖruru-d	t-əffərru-d
2MaPl	t-əhnəffi-m	t-əɖruru-m	t-əffərru-m
1Sg	əhnəffi-ɾ [...eɾ]	əɖruru-ɾ [...oɾ]	əffərru-ɾ [...oɾ]

The forms in (117.b) are valid for T-ka and some other T-area dialects. However, most other Tamashek dialects examined have final-syllable *e* instead of *i* or *u* in (117.b) and do not shorten the medial *u* in the *-CuCCv-* type. Thus 3MaPl *-əbbuffe-n* 'they-Ma abound' for several K- and Gao-area dialects, versus T-ka *əbbəffu-n*.

For the verb *-jujju-* 'load' (PerfP *-əjjujja-*, LoImpfP *-t-àjæjja-*), the ShImpf is *-æjjajj /-æjjajjɪ-/* in most dialects, ending with an underspecified high V /*i*/. The /*i*/ is never realized as a full V, even when it contracts with the (short) V of a V-initial subject pronominal suffix. The medial *ɑ* in the ShImpf stem is not shortened: 3MaSg *Ø-æjjajj*, 3MaPl *Ø-æjjəjjə-n*. The failure of Medial V-Shortening to apply to */-æjjajjɪ-/* could be attributed to the lack of a stem-final (or contracted) full V, or to the composite <L H> melody. However, the paradigm of 'load' is archaic and isolated, and other (newer) verbs of the same syllabic shape have <H> rather than <L> melody in the ShImpf, e.g. Imprt *fūgg* 'be detached' and *jüss* 'go south'. As with many *u*-medial verbs, A-grm has a distinct paradigm for 'load' with medial short V's throughout: PerfP *-əggəggə-*, Imprt *gəgg*, etc.

The verb *-muttvsv-* (*-t*) 'fear' has ShImpf *-əmmüttəsə-t*, with 3MaPl *əmmüttəsi-n* (R dialect) exemplifying the combination with */-æC/* subject suffix; contrast T-ka 3MaPl *əmməttəs-u-n*. The LoImpfP stem is *-t-iməttəs-u-t* (all dialects). The stem-final /*sv*/ sequence has its V rounded in the LoImpfP

(su), but in R it remains unrounded in the 3MaPl ShImpf (si). In -muttvsu-, the lexical u is separated from the stem-final full V by an intervening syllable. I conclude that u-Spreading (which spreads the rounding feature) applies over an intervening syllable only when the original u is shortened to ə.

For more on short imperfectives, see §7.2.3.

There are also some shortenings of expected u to ə in VbIN's and other nominalizations.

(118) Verbal Nouns

gloss	PerfP	LoImpfP	VbIN
a. no shortening in VbIN (-CùCCvC-)			
'be obligatory'	-əhhuššæl-	-t-ihəššul-	a-húššəl
'freeze'	-əqqrhæs-	-t-irərhus-	a-rúrhəs
b. no shortening in VbIN (unaugmented -CùCCv-)			
'go south'	-əjjussa-	-t-ijəssu-	a-júss
'be detached'	-əffugga-	-t-ifəggv-	a-fúgg
c. shortening in VbIN (uinaugmented -CùCCv-)			
'load'	-əjjujja-	-t-àjəjja-	a-jéjj
d. shortening in VbIN (augmented -CùCCv-)			
'gulp'	-əqqubbæ-t	-t-irəbbu-t	à-rəbbu
'scrub'	-əffuffæræ-t	-t-ifəffəru-t	a-fəffəru

Medial V-Shortening occurs reliably in the VbIN for augmented verbs of the stem-shape -CuCCv- (118.d). Note that these VbIN's end in a full V, while the VbIN's in (118.a-c) lack such a final V. There is no shortening in -CuCCvC- stems (118.a), since these C-final verbs have short V's in their final syllables.

The unaugmented type -CuCCv- is divided: (118.b) has a VbIN with unshortened u, while 'load' in (118.c) does shorten /u/ to ə. The verbs in (118.b-c) also have divergent vocalic melodies in the (long and short) imperfective systems, so the variation in vocalism is not confined to the VbIN. 'Load' in (118.c) has a Niger Tamajak cognate, whose VbIN "agəggi" preserves a final i (LTF2:83).

Not shown in (118) are a other types of nominalization, e.g. əjjəjru 'sterility' (cf. PerfP -əjjujra- 'be sterile'), see (563) in §8.6.5.

These rules may also be operative in verbs like 'be churned' (PerfP -əndu-, Imprt əndu, LoImpfP -níddu-). The relevant verbs are the u/u subtype, and perhaps also the a/u subtype, of -vCCv- verbs (§7.3.1.4). Though the analysis is not transparent, the idea is to take the basic form as -undv- with the u initial rather than final, and account for e.g. Imprt əndu as the result of u-Spreading

and Medial V-Shortening. The best evidence for this is causative *-s-undv-* ‘churn’, with the *u* in the hypothesized position (PerfP *-əss-unda-*, etc.). If this idea is accepted, it remains to consider the long imperfectives of the underived stem, e.g. LoImpfP *-níddu-* ‘be churned’. With input *-undv-*, we need a pre-ablaut reconfiguration to *-nuddv-*. We could get this to *-nəddu-* by applying <H> melody and allowing *u*-Spreading and Medial V-Shortening to apply, cf. LoImpfN and Prohib *-nəddu-*. LoImpfP *-níddu-* can be derived from this *-nəddu-* by adding $\check{\chi}$ -pC1 and $\check{\chi}$ -pC1.

The *u*-Spreading rule is formulated as (119).

(119) **u-Spreading** [all dialects except A-grm]

- a. In an inflected verb or VbIN with medial-syllable *u* and a subsequent full V, both of which are within the domain of an <H> melody, the quality features (round, back) of *u* are copied onto this subsequent V if either
 - a) the original *u* is shortened to ə (by Medial V-Shortening),
 - or
 - b) the original *u* is in the syllable immediately preceding that of the targeted full V.
- b. In the bisyllabic causative type *-s-uCvC-*, the LoImpfP *-s-íCuC-*, the back and rounded features of *u* are transferred (not just copied) to the full V of the final syllable, leaving the first V in the form *i* as the unmarked high full V.

In practice, *u*-Spreading can only apply to imperfectives and VbIN’s, since there are no perfectives that have a medial *u*, a subsequent full V, and <H> melody.

A formulation of Medial V-Shortening requiring the $\check{\chi}$ -f ablaut formative will work for the long but not short imperfectives or VbIN’s. A formulation based solely on syllabic shape ...CuCC(vC)v- without direct reference to ablaut can cover both long and short imperfectives, but does not account for the failure of shortening to apply to the *u* of PerfP *-əjjujja-* ‘load’ or *-əjjussa-* ‘go south’. Medial V-Shortening is also often associated with *u*-Spreading in both long and short imperfectives, but cases like LoImpfP *-t-əjæjja-* with medial /a/ shortened to ə demonstrate that Medial V-Shortening can apply in the absence of *u*-Spreading.

(120) **Medial V-Shortening**

In verb stems and VbIN’s ending (after basic ablaut formation and *u*-Spreading) in ...CuCC(vC)v(C)-, i.e. if there is a medial full V followed by a CC cluster and also a full V in the final syllable, if

the two full V's are jointly subject to a stem-level melody <H> or <L>, the first V is shortened (/u/ → ə, /ɑ/ → æ).

If the verb 'load' (and the one other verb of the same type) are disregarded, we could forget about /ɑ/ and formulate the rule to apply only to /u/ in a stem that (perhaps after u-Spreading) has another u in a subsequent stem-syllable.

3.4.9.4 V-Shortening processes confined to causative verbs

In **causative** verbs (derived with -s- prefix, §8.1), we observe a number of vocalic adjustments relative to the corresponding underived stems. One pattern is the shortening of a medial full u (there are no relevant combinations with other full V's), when followed by a CC cluster and at least one further syllable. This V-Shortening resembles (120) just formulated for underived verbs (and VbIN's), but is more general. Data are in (121), followed by a formulation of the rule in (122).

(121) Cases of Causative Medial V-Shortening

	input	gloss	causative	gloss
a.	-huššvl-	'be obligatory'	-š-vhvššvl-	'obligate'
b.	-mussu-	'move'	-s-vmvssu-	'drive'

(122) Causative Medial V-Shortening

A full V (all examples happen to be u) followed by a CC cluster in a noninitial, nonfinal syllable is shortened to v in the basic form of the causative.

See (469.d-e) in §8.1.6-7 for more examples.

Full V's in final closed syllables are also shortened, as in -s-uḍvb- (PerfP) -æss-oḍæb- 'make drip' from -uḍab- 'drip' (or PerfP -əḍub-).

(123) Causative Final-Syllable V-Shortening, repeated later as (459)

A full V in the final syllable of an underived verb with imperfective -i/uC(C)αC- is reduced to a short V in the basic form of the causative.

See (458) in §8.1.5 for more causative examples.

In many cases, stem-initial full V's are also shortened when Causative -s- is prefixed. For example, -s-vstvkv- 'make empty' is the causative of the

adjectival verb whose imperfectives are based on -istak-, e.g. Imprt ĭstak (cf. PerfP -əstik-). Likewise, causative -s-vfvd- ‘make thirsty’ is from an input with imperfectives based on -ĭfad-, dialectally -ùfad- (cf. PerfP -əffud-). There are some difficulties in analysis, the main choice being whether the input to causative formation is the perfective or the imperfective. There are also some exceptions to V-Shortening that cannot be easily explained away. For fuller data, see (458) in §8.1.5. A provisional formulation of the rule is (124).

(124) **Causative Initial V-Shortening** (with exceptions); repeated as (460)

A full V in the first syllable of an underived bisyllabic imperfective -i/uC(C)aC- verb is reduced to a short V in the basic form of the causative. [with exceptions; rule assumes that input is underived imperfective]

Rules (123) and (124) often co-occur, so that both full V’s of e.g. -istak- ‘be empty’ are shortened in Caus -s-vstvk- (e.g. PerfP -əss-əstək-). Rule (124) resembles Medial V-Shortening (120), which applies to imperfective and VbIN forms of underived (i.e. non-causative) stems. However, (124) does not require a medial CC cluster. All of these shortening rules are confined to particular verbal ablaut contexts, and it is not useful to reduce them to a single “general” rule.

Another relevant causative is -s-ùndu- ‘churn’, with stems including PerfP -əss-unda- and LoImpfP -s-ĭndu-. The LoImpfP is derived via /-s-undi-/ and /-s-əndu-/, with u-Spreading and with Causative Medial V-shortening of u to ə. See end of §8.1.6 for the derivation. That these two morphophonological rules are part of the ablaut formation rule is shown by the fact that they apply after the integration of <H> melody and the $\bar{\chi}$ -f formative, but before the attachment of the $\bar{\chi}$ -pc1 and $\acute{\chi}$ -pc1 formatives.

3.4.10 Vowel-semivowel dissimilation (iw for #uw, ew for #ow)

There is evidence in ablaut patterns that expected sequences uw and ow, where the round V is due to an ablaut melody and the w is lexical, are replaced by iw and ew, respectively.

This is seen in the unaffixed ablaut plural of nouns, where a full stem V in the Sg, not in the final syllable, is normally realized as u in the Pl. However, if the following C is w, we get i instead of u. Thus æ-búwæn ‘monitor lizard’, Pl i-bíwan (for expected #i-búwan). See §4.1.2.17 for more examples.

In verb stems with a full medial V, not in the final syllable, there is some dialectal variation between o and e in the perfective system when the VbIN points to lexical i. Here the e output makes more sense phonologically, cf. V-Height Compromise (§3.4.7). However, except in mediopassive derivatives,

T-ka nearly always has o instead of e, as in PerfP -*əss-oræd*- 'bathe' (versus A-grm -*əss-eræd*-, K and R -*əss-eræd*-), cf. VblN *ɑ-s-íræd* or *ɑ-s-íræd* (all dialects). Nevertheless, in T-ka we do get e instead of o when the following lexical C is w, as in PerfP -*əss-ewæd*- 'raise price' and -*əss-ewæl*- 'make noise' (VblN's *ɑ-s-íwæd*, *ɑ-s-íwæl*). See §8.1.5.

Of the two -C₁C₂C- verb stem types, -CuCvC- and -CiCvC-, -CuCvC- is most common in underived stems, but when C₂ is w we get -CiCvC-, as in -*jiwvɸ*- 'flee' (PerfP -*æjewæd*-). Five of seven known underived -CiCvC- stems are in fact -Ci_wvC- verbs, and the other two are an Arabic borrowing and a frozen mediopassive derivative. See §7.3.1.7 for details. The dialectal alternation of -*buyvs*- and -*biwvs*- for the verb 'wound', covered under the rubric of metathesis in §3.2.2.1, is also relevant here.

These dissimilations are internal to the ablaut system, and are not regular phonological rules.

In V-final nouns with suffixal Pl, there is often an extra stem-final w in the Pl, and the stem-final V often mutates before this w. However, a range of Sg/Pl vocalic pairings are found, all highly morphologized, and dissimilation seems to be a minor factor. For the data see §4.1.2.6.

3.5 Syntactically controlled phonological processes

There is a pervasive interaction between "syntax" and "phonology" in Tamashek, which allows us to make a strong case for a **morphological** view of the grammar. That is, instead of a model of grammar that starts with an autonomous abstract syntax, and then allows a phonological module to execute more or less natural phonological adjustments to the outputs of the syntax, Tamashek lends itself to a model where grammatical categories, linear ordering, and phonology (segmental, accentual, and ablaut) are inextricably intertwined.

The common denominator of the phenomena treated in this section is a repeating "figure" of the type [X+Y...], where X is some phrase-initial word or particle, and Y is a word whose phonological form is modified in this syntactic context. The modifications of Y are mostly, but not always, interpretable as reductions. The [X+Y...] groupings do not correspond to phrasal boundaries in current formal syntactic models. For example, the combination [verb + subject] (excluding object) is not recognized as a phrase in any syntactic theory I know of. Therefore even the phrasal bracketings relevant to the morphophonological processes described here are idiosyncratic to Tamashek. On top of this, the phrasal bracketings are not identical to those needed for phrasal accent. For example, [verb + object] counts as a phrase for accentuation, as does [verb + subject], but of the two only [verb + subject] shows Prefix Reduction in the noun. Therefore converting "syntactic" phrases to "prosodic" phrases by rebracketing, as a way of explaining how Tamashek microsyntactic organization diverges from natural syntactic groups, will not

work, at least if “prosodic” phrases are defined in a manner relevant to actual prosody.

3.5.1 Prefix Reduction of nouns (dependent state)

An important morphological process affecting nouns is that associated with **dependent state** (in French usually « état d’annexion »). This “state” is a cover term for the following syntactic positions: a) complement of a preposition (dative, possessive, locative), b) compound final (in a few tight compound constructions like that with èrk ‘bad’, §5.2.4.4); and c) subject immediately following an inflected verb. In all three cases, the noun in question can be said to “depend on” an immediately preceding word or stem.

If a noun that has a vocalic prefix consisting of a full V (i.e. a noun beginning with Sg a-, e-, t-a-, t-e-, or Pl i- or t-i-) occurs in dependent state, directly following the preposition, compound initial, or verb on which it “depends,” the prefix undergoes Prefix Reduction. There is no other morphological indication of dependent state (for example, there is no case-marking of subject or prepositional complement), so Prefix-Reduction itself is as close as we come in this language to structural case-marking. Note that nouns that do not have a full-V prefix undergo no (audible) reduction of the prefix.

I use the diacritic ˘ before a noun to indicate that it has undergone audible Prefix Reduction. I do not use the diacritic for other nouns (e.g. those lacking a full-V vocalic prefix), even when they occur in syntactic positions associated with dependent state.

The relevant shifts are given in (125).

(125) Reduced Forms of Full-V Nominal Prefixes

	category	unreduced form	reduced form
a.	MaSg	a-, e-	˘æ- if next syllable has {æ a e o} ˘æ- if the noun has no other syllable [é-mm ‘mouth’ → ˘æ-mm] ˘ə- if next syllable has {ə i u}
b.	MaPl	i-	˘ə- before CC ˘Ø- before single C
c.	FeSg	t-a-, t-e-	˘t-æ- if next syllable has {æ a e o} ˘t-ə- before CC plus {ə i u} ˘t-ə- (dialectally ˘t-Ø-) before a single C plus {ə i u} [no example of monosyllabic stem]

T-md, R, K, and some Gao-area dialects, we get $\text{'}\emptyset\text{'}$ in the MaPl (for *i*-) as in T-ka, but also get $\text{'}t\text{-}\emptyset\text{'}$ in the FePl. The dialectal difference can be seen in the PP formed by Locative $d\text{æ}\text{r}$ 'in' and the Pl noun $t\text{-}\dot{i}\text{-}\text{r}\text{ubba}$ 'gulps', which appears as T-ka $d\text{æ}\text{r}$ $\text{'}t\text{-}\dot{\text{ə}}\text{-}\text{r}\text{ubba}$ but e.g. T-md $d\text{æ}\text{r}$ $\text{'}t\text{-}\emptyset\text{-}\text{r}\text{ubba}$. Note the accents; the T-ka schwa is capable of taking accent (here, default accent on the antepenult), but the T-md zero is disregarded in accentuation, so phrasal accent falls on the preceding preposition. A further example is $t\text{-}\dot{i}\text{-}\text{h}\text{att}\text{-}\text{en}$ 'sheep-Pl', $d\text{æ}\text{r}$ $t\text{-}\dot{\text{ə}}\text{-}\text{h}\text{att}\text{-}\text{en}$ 'in the sheep' (T-ka, some Gao-area dialects) or $d\text{æ}\text{r}$ $t\text{-}\emptyset\text{-}\text{h}\text{att}\text{-}\text{en}$ (K, other Gao-area dialects).

There is a real question whether the basic Prefix Reduction rule converts Pl *i*- to $\text{'}\text{ə}\text{'}$ (which can then be syncopated in some environments), or to $\emptyset\text{'}$ (with a schwa inserted by a later rule if too many C's have piled up). Within T-ka, MaPl *i*- seems to have a basic reduced form $\text{'}\emptyset\text{'}$, but FePl *t-i*- has a basic reduced form $\text{'}t\text{-}\text{ə}\text{'}$, so the MaPl and FePl diverge in vocalism. In T-md and other dialects that allow FePl $t\text{-}\emptyset\text{'}$, it is reasonable to take $\text{'}\emptyset\text{'}$ as the basic reduced form of Pl 'i- in both MaPl and FePl

I will agonize about this no further, and will formulate the Prefix-Reduction rule as (127), allowing some latitude in the plural.

(127) **Prefix-Reduction** (Nominal Prefixes in Dependent State)

In a "dependent" syntactic position (after preposition, some types of compound final, postverbal subject), reduce full to short V in nominal vocalic prefix, i.e.:

- a. $\{-\text{a- -e-}\} \rightarrow \text{-}\text{æ}\text{-}$
- b. $\text{-i-} \rightarrow \text{-}\text{ə}\text{-}$ or $\text{-}\emptyset\text{-}$ [see above for details]

For those nouns that undergo no audible change in Prefix Reduction contexts (i.e. those with no vocalic prefix and those with a short-voweled prefix), there are occasional parsing difficulties at the sentential level. The two sentences in (128.a-b) are identical in form but have different senses.

- (128) a. $i\text{-}\eta\gamma\alpha\text{-}\emptyset\text{-n}\acute{\alpha}\gamma$ $\acute{e}di$
 3MaSgS-kill.PerfP-**\Dat-1Pl** dog
 ‘He killed the dog for us.’
- b. $i\text{-}\eta\gamma\alpha\text{-}\emptyset\text{-n}\acute{\alpha}\gamma$ $\acute{e}di$
 3MaSgS-kill.PerfP-**\O-1Pl** dog
 ‘The dog killed us.’

The ambiguity is due to the following circumstances, in combination. First, $\acute{e}di$ ‘dog’ does not undergo (audible) Prefix Reduction in the dependent state, and so in postverbal position it can be taken as either object or subject. Second, Tamashek has obligatory subject agreement on the verb, whether or not the coindexed subject NP is also present, so the 3MaSgS prefix $i\text{-}$ could index $\acute{e}di$ as subject, or could index some other 3MaSg entity (‘he’) as subject. Third, 1Pl clitics have identical forms for dative and object function (this is also true for 1Sg). In most cases, transitive sentences are clearer, due to either audible Prefix Reduction (distinguishing subject from other function), pronominal incompatibility of subject affix on verb with postverbal NP, or use of a non-1st person clitic (since 2nd and 3rd person clitics distinguish object from dative function).

In such cases as $i\text{-}\eta\gamma\alpha$ $\acute{e}di$ ‘he killed the dog’ versus $i\text{-}\eta\gamma\text{-}\acute{e}$ $\acute{e}di$ ‘the dog killed him’, the presence of 3MaSg object clitic $\text{-}\acute{e}$ in the latter distinguishes the two, though in allegro speech the difference may be wiped out by contraction of the two adjacent V’s.

3.5.2 Verbs after particles

3.5.2.1 Verbs after Future particles

The (non-imperative) ShImpf (=short imperfective, §7.2.3.1) stem is always a “dependent” form. It is used chiefly after Future particle $\grave{a}d$ (or variant, §9.6.3), whether or not a Negative particle is also present. An example is $\grave{a}d$ $\emptyset\text{-}\acute{\alpha}k\acute{s}$ ‘he will eat’.

The ShImpf is usually just the “basic” (i.e. minimal) form of the verb stem (e.g. -vCCvC-) plus a melody (<L>, <H>, or <L H>). The ShImpf lacks the special ablaut components of the long imperfective (accent and lengthening of V’s, gemination of C’s, addition of prefixal -t-).

Since the ShImpf is not obviously connected to any other specific stem, no (morpho-)phonological derivation will be offered here to “derive” the ShImpf

stem. The use of a stripped-down, minimal verb form after the Future particle is roughly similar to the use of phonologically reduced noun and verb forms in Y position in [X Y...] syntactic combinations. However, the combination of Future particle plus ShImpf does not fit the prototypical [X Y...] pattern, which requires adjacency of X and Y. By contrast, the ShImpf stem need not be adjacent to the Future particle. This is because a combination [Future + ShImpf clause] may be followed by a second ShImpf clause without repeating the Future particle (§13.4).

3.5.2.2 Verbs after Negative particles

The basic Negative preverb is *wær*, used in all MAN combinations (e.g. perfective, imperfective, imperative). In all of the interactions described below, the Neg preverb must be adjacent to the affected verb.

In the **perfective**, if the verb stem is bisyllabic and ends in ...æC-, the æ is converted to e. Bisyllabic V-final verbs, i.e. those of the shape -vC(C)v- or -vC(C)v-, allow this vocalic substitution to apply in combinations where the stem-final full V appears as æ in combination with a subject suffix. The modified stem with e is the PerfN (perfective negative) stem, and is part of the “perfective system.” For other verbs, and for -vC(C)v- or -vC(C)v- verbs with no subject suffix, the PerfN is indistinguishable from the PerfP (perfective positive).

The modification in the PerfN is treated formally here as the effect of an ablaut formative ϵ -pc1f (§3.4.4, §7.2.2.3), where e targets the first postconsonantal short V if this V is also stem-final in the sense indicated. Note that this stem-modification is additive (i.e. it increases phonological markedness) rather than reductive.

In the **imperfective** (indicative), the only stem that can directly follow the Neg particle is the long imperfective. In comparison with the positive form (LoImpfP), the negative counterpart (LoImpfN) is characterized by <H> melody, and by the absence of the ablaut features that lengthen and accent the first postconsonantal V in the LoImpfP, i.e. $\bar{\chi}$ -pc1 and $\acute{\chi}$ -pc1. Since the LoImpfP can have <L> or <H> melody depending on its syllabic shape, the melodic difference between LoImpfP and LoImpfN is audible only for those verbs whose LoImpfP has <L> melody. Example: ‘destroy’, with LoImpfP -hállæk- and LoImpfN -hèllæk-. These two forms differ in having <L> versus <H> melody, and in that -hállæk- has an accented full á while -hèllæk- has no full V and no marked accent. For more on long imperfectives see §7.2.5.

In the **imperative**, there are two options for negation. One is to use the same PerfN form described above, so ‘don’t-Sg eat!’ is identical to ‘you-Sg didn’t eat’. The other is to use a stem of the long imperfective family, with the same vocalic melody as the LoImpfP, but without the formatives $\bar{\chi}$ -pc1 and $\acute{\chi}$ -pc1. I refer to this stem as the Prohib[itive]. Thus ‘don’t-Sg destroy!’ can be

expressed as either wær t-əhlek (with PerfN stem, note the e) or as wær hællæk (with the Prohib). For more on these negative imperatives see §7.2.5.3.

The data are summarized in (129).

(129) Effect of Negative Particle on Verb Form

In the sequence [Neg VERB ...], the verb is adjusted as follows:

- a. perfective: replace æ by e if the æ is first postconsonantal V and is in the stem-final syllable (\in -pc1f)
- b. long imperfective (indicative): superimpose <H> melody, erase $\bar{\chi}$ -pc1 and $\acute{\chi}$ -pc1
- c. long imperfective (imperative): erase $\bar{\chi}$ -pc1 and $\acute{\chi}$ -pc1

The omission of $\bar{\chi}$ -pc1 and $\acute{\chi}$ -pc1 features in (129.b-c) is vaguely similar to the shortening of full V's in Prefix Reduction for nouns (§3.5.1, above). However, the resemblance is weak. Prefix Reduction has no effect on lexical accentuation, while (129.b-c) include erasure of a marked accent. Whereas Prefix Reduction changes Pl prefix i- to 'ə- and has no effect on the noun stem proper, verbs after Neg do not reduce 3MaSg subject prefix i- but do undergo vocalic reductions after the stem's first C position. The other changes in verbs, namely replacement of æ by e (129.a) and the superimposition of <H> melody in (129.b), are idiosyncratic. It is clear that **no general principle** accounts for the details of the phonological modifications of nouns in dependent state and of post-negative verbs. Rather, the ablaut modifications are highly morphologized.

3.5.3 Verbs and participles in definite relative clauses and after Past kæld

In a subject relative clause, the verb takes participial form (§8.6). In nonsubject relatives, we get an ordinary inflected verb.

Definite relative clauses (§12.1.1) are those that begin with a demonstrative like w-à 'this-MaSg'. The demonstrative is optionally preceded by a "head noun" in the form of a noun that belongs syntactically to the higher clause (rather than to the relative clause). If a head noun is present, it has no effect on the form of the verb or participle within the definite relative clause itself. Also treated as definite relatives are those beginning in ère 'whoever ...', à 'what ..., that which ...', and èd 'when ...', while relative clauses beginning in indefinite demonstrative ï or with a noun are treated as indefinite (§12.1.6). Clauses with initial ïket in the sense 'have just (VERB-ed)', which require a Resultative verb, are also treated as definite relatives for this purpose.

Special morphophonological rules apply to Reslt and LoImpfP verbs, and their participial variants, in definite (but not indefinite) relatives. These rules directly modify ablaut formatives on these verb stems. This is a particularly

telling demonstration of the interlacing of “syntax” and “phonology” in this language.

The same processes apply at least dialectally to verbs that follow clause-initial Past morpheme *kældá*.

3.5.3.1 Erasure of ablaut lengthening ($\bar{\chi}$ -pc1 Erasure)

The **Reslt** (Resultative) stem is formed from the PerfP (perfective positive), by adding two further ablaut formatives that lengthen ($\bar{\chi}$ -pc1) and accent ($\acute{\chi}$ -pc1) the first postconsonantal vowel (§3.4.4, §7.2.2.2). In definite relatives, **$\bar{\chi}$ -pc1 is erased**, though $\acute{\chi}$ -pc1 (i.e. marked accent) is unaffected. The erasure does not affect lexical full V's, but it does undo the ablaut-induced lengthening of lexical short V's. It must therefore be formulated as an operation directly affecting the ablaut formative. Contrast main-clause Reslt *əkšú-n* ‘they-Ma have eaten’ with the object-relative counterpart *à əkšæ-n* ‘what they-Ma have eaten’; for *à* see §12.1.6.3. Note that the ablaut accent $\acute{\chi}$ -pc1 is not erased, so there is still audible marking of the Reslt stem; contrast the accents in Reslt relative *à əkšæ-n* ‘what they have eaten’ and PerfP relative *ɑ əkšæ-n* ‘what they ate’. ‘I know’ is normally expressed as Reslt *əssún-ær* (stem -vssvn-), but this becomes *əssæn-ær* in definite relatives. Likewise, from -vzjvr- ‘go out, exit’, Reslt *əzjár-æn* ‘they-Ma have gone out’ combines with *íket* (§13.6.6) to produce *íket əzjár-æn* ‘they have just gone out’. An exception is that a few frozen adjectives in the form of Reslt participles retain $\bar{\chi}$ -pc1 after *à*, see *à Ø-olár-æn* ‘something good’ (740.b) in §12.1.6.3.

The **LoImpfP**, part of the long imperfective system, is characterized by several ablaut components. Aside from a vocalic melody, there is at least one consonantal change, either gemination of the second C (“Γ-c2,” §3.4.2.1) or addition of a LoImpf prefix -t- (§7.2.5.1). The remaining vocalic changes are $\bar{\chi}$ -pc1 and $\acute{\chi}$ -pc1 (as in the Reslt stem), plus $\bar{\chi}$ -f (lengthening of the final-syllable V). In definite relatives, the LoImpfP (like the Reslt) **erases $\bar{\chi}$ -pc1** (but not $\acute{\chi}$ -pc1 or $\bar{\chi}$ -f). Thus main-clause LoImpfP *i-báss* ‘he vomits’, but definite subject (i.e. participial) relative *w-à i-bæssæ-n* ‘he who vomits’.

(130) $\bar{\chi}$ -pc1 Erasure (Reslt and LoImpfP in Definite Relative)

In definite relative clauses and (dialectally) after Past *kældá* (see below), the $\bar{\chi}$ -pc1 ablaut formative is erased (omitted) on the verb (or participle).

The distinction in Malian Tamashek between the ordinary LoImpfP and the shortened version in definite relatives has been observed and commented on by Leguil (2000), who connects the shortened version with the corresponding imperfective in Ghadamès Berber, and proposes a multi-stage historical evolution.

In (131), $\tilde{\chi}$ -pcl Erasure is observed in a prepositional relative (compare LoImpfP -tátt 'eat'). Here the initial demonstrative w-á is followed by the cliticized preposition. The intervening cliticized preposition has no effect on (i.e., does not block) $\tilde{\chi}$ -pcl Erasure.

- (131) æqqím-ær dær `æ-dægg [w-a-\dæ̀r ən-tætt]
 sit.Reslt-1SgS in Sg-place [Ma-Sg.Dem-\in 1PlS-eat.LoImpfP]
 'I am sitting in the place where we eat.' [K-d]

In K-d dialect, I have observed $\tilde{\chi}$ -pcl Erasure in verbs following Past kæló (§9.6.4), thus kæló æssæn-ær 'I knew, used to know', with short accented æ, from Reslt stem -æssán-. See also (645.a,c) in §9.6.4 from the same K-d speaker, again with kæló. The dialectology of this requires further study.

3.5.3.2 Rightward Accent Shift

The LoImpfP also undergoes an accentual shift. In ordinary contexts it has an accent formative $\tilde{\chi}$ -pcl that accents the first postconsonantal V (in trisyllabic or longer stems, this accent is inaudible since it is overridden by default accents). Thus LoImpfP -bóddæd- 'get up' and -tátt- 'eat' have audible accents, but LoImpfP -t-ïdubun- 'marry' (for underlying /-t-ïdubun-/) has an underlying grammatical accent that is made redundant by Default Accentuation, and if a suffix is added the underlying grammatical accent is overridden since a default accent occurs farther to the right: 3MaPl t-ïdubun-æn. In definite relative clauses, if there is no audible subject pronominal prefix (i.e. for all subject categories except 1Pl and 3MaSg), the grammatical accent shifts one syllable to the right (onto a subject suffix if necessary). Thus from LoImpfP -bóddæd- 'stand up' we get definite subject relative t-à Ø-bæddæd-æt 'she who stands' with a FeSg participle, and from LoImpfP -tátt- 'eat' we get definite non-subject relative w-ï tætt-ær 'these that I eat'.

(132) Rightward Accent Shift (LoImpfP in Definite Relative)

In a definite relative clause, if the inflected verb or participle has no audible (and potentially syllabic) pronominal subject prefix, a grammatical accent due to ablaut feature $\tilde{\chi}$ -pcl on the first syllable of the LoImpfP stem is shifted one syllable to the right.

[see below for $\tilde{\chi}$ -Erasure in some 3FeSg subject forms]

Since the most common demonstratives heading definite relatives are (sometimes) accented (e.g. MaSg w-á 'this') when uttered in isolation, one might argue that Rightward Accent Shift is a kind of **clash avoidance** rule. This would account for the fact that Rightward Accent Shift is blocked by the

presence of a pronominal-subject prefix (separating the accented demonstrative from the accented verb stem). For example, 3MaSg /w-á i-bæddæd-æn/ 'he who stands' has no clashing (i.e. adjacent) accented syllables, so it appears straightforwardly as w-á i-bæddæd-æn after accent rules. On the other hand, underlying 3FeSg /t-á t-bæddæd-æt/ becomes /t-á Ø-bæddæd-æt/ after Prefixal t-Deletion (§7.4.1), and so at this stage has adjacent accents. This clash would be resolved by Rightward Accent Shift, producing /t-á bæddæd-æt/ and surface t-à bæddæd-æt.

While clash avoidance might have been a key factor in the historical origin of Rightward Accent Shift, it is a dubious synchronic analysis. To begin with, when a clitic is hosted by the demonstrative at the beginning of a definite relative, the clitic (whether accented or not) has no effect on Rightward Accent Shift on the following verb although the clitic alters the metrical structure of the phrase. In addition, accent within an accentual phrase works right to left, and once a primary accent is established the general pattern is alternating-syllable secondary accents going to the left, so any lexical or grammatical accents to the left of the primary accent are simply overridden. In the normal course of events, /t-á bæddæd-æt/ should therefore appear as #t-á bæddæd-æt (with no overt accent on the demonstrative). This is not the actual output, but it would be perfectly pronounceable and would obviate accent clashes. I conclude that Rightward Accent Shift is now a morphophonological rule with no clear synchronic phonological motivation.

In (133), Rightward Accent Shift occurs (along with \bar{x} -pc1 Erasure) in a prepositional relative (cf. LoImpfP -náss 'lie down'). The initial demonstrative t-á is followed by the cliticized preposition, which has no inherent accent, but gets a secondary accent by the usual right to left secondary accentuation process. Rightward Accent Shift operates on the verb in the same way it would without the intervening cliticized preposition. Therefore a clash-avoidance analysis, by which t-á induces rightward shift of an immediately following accent, cannot work synchronically.

- (133) t-e-sèla-t-t [t-á-\fàl] næss-æʀ
 Fe-Sg-mat-Fe-FeSg [Fe-Dem.Sg-\on] lie.down.LoImpfP-1SgS
 'the mat on which I am lying.' [K-d]

As t-à Ø-bæddæd-æt 'she who stands' shows, a relative with 3FeSg subject is subject to Rightward Accent Shift just like other subject categories as long as there is a syllable for the shifted accent to appear on. The Ø- here represents 3FeSg subject prefix t-, which is audible on FeSg participles (and 3FeSg subject inflected verbs) whose stems begin with a V, but is deleted before a C-initial stem.

3.5.3.3 Lexical Accent Erasure and $\acute{\chi}$ -Erasure

Consider now the (definite) object relatives in (134).

- (134) a. w-à Ø-tætt
 Ma-Sg/Dem 3FeSgS-eat.LoImpfP
 ‘what she eats’
- b. w-à i-tætt
 Ma-Sg/Dem 3MaSgS-eat.LoImpfP
 ‘what he eats’
- c. w-à Ø-tættæ-d
 Ma-Sg/Dem 2SgS-eat.LoImpfP-2SgS
 ‘what you-Sg eat’
- d. w-à tættæ-n
 Ma-Sg/Dem eat.LoImpfP-3MaPlS
 ‘what they-Ma eat’

The accents on the verb in (134.b) for 3MaSg subject, and in (134.c-d) for 2Sg and 3MaPl subject, are those predicted from Rightward Accent Shift. This rule does not apply to (134.b) because of its audible subject prefix, but does apply to (134.c-d) because they have no audible subject prefix (either because there is no prefix, or because a t- prefix for 3FeSg or 2nd person has been deleted before a C). However, the verb in (134.a) has **no accent** at all, resulting in phrasal accent on the demonstrative.

The verb in (134.a) is Ø-tætt, from /t-táttA/ before $\acute{\chi}$ -pcl Erasure and the other rules apply. When the 3FeSg prefix /t-/ is deleted (as usual in verbal morphology before a C-initial stem), resulting in a (surface) unprefix verb, we might have expected Rightward Accent Shift to apply, shifting the accent onto the stem-final /A/. Indeed, there is no prohibition on shifting the accent to a word-final V (135).

- (135) w-à Ø-ræddú
 Ma-Sg/Dem 3FeSgS-expect.LoImpfP
 ‘what she expects’

However, the /A/ of LoImpfP /-táttA/ is one of the underspecified vowels that is deleted word-finally by **Stem-Final \imath /A-Deletion** (29) (§3.1.2.4). Since accentuation is orthogonal to this deletion (and most other segmental phonological rules), being accented after Rightward Accent Shift does not save the /A/ from deletion in (134.a). Having nowhere to land, the ablaut-induced accent of /t-táttA/ simply vanishes, and we end up with unaccented Ø-tætt as seen in w-à Ø-tætt.

The reason why the 3FeSg subject forms are singled out for this special treatment is not hard to see. For a LoImpf like *-tátt-* ‘eat’, the 3FeSg subject form is the only form that (after deletion of 3FeSgS prefix *t-*) has neither an audible (and generally syllabic) subject prefix that would obviate Rightward Accent Shift, nor a syllabic subject suffix that (after a monosyllabic stem) could host a rightward-shifted accent. This applies not only to *-tátt-* but to all LoImpfP stems, since they are overwhelmingly C-initial. Admittedly, there is one verb type, namely *-vPvC-*, that has two alternative LoImpfP stem shapes, C-initial *-t-əPPáC-* and V-initial *-əPPáC-* (§7.3.1.1). In theory, the V-initial variant would allow 3FeSgS prefix *t-* to be audible. However, given that *-t-əPPáC-* and *-əPPáC-* are in free variation, and that 3FeSgS *t-* is zeroed before a C, when we hear a verb form [təP:áC] there is no way to tell whether this represents *t-əPPáC-* with audible 3FeSgS *t-* plus stem *-əPPáC-*, or *Ø-t-əPPáC-* with zeroed 3FeSgS prefix plus stem *-t-əPPáC-*.

Since LoImpfP stems like *-báddæd-* ‘stand up’ retain the ablaut-induced accent (from formative $\acute{\chi}$ -pcl) even while erasing the ablaut-induced lengthening (formative $\bar{\chi}$ -pcl), producing *-bæddæd-* or with Rightward Accent Shift *-bæddæd-* (e.g. in 3MaPl *bæddæd-æn*), this morphological form (i.e. LoImpfP in definite relative) is distinct from the Prohibitive stem, which completely lacks $\acute{\chi}$ -pcl as well as $\bar{\chi}$ -pcl, hence *-bæddæd-* (e.g. *wær bæddæd* ‘don’t stand up!’), arguably with deleted /t-/ prefix).

The cases we have considered represent the only verb stems where Rightward Accent Shift runs afoul of a rule deleting stem V’s. This suggests a derivation for unaccented *Ø-tætt* in (134.a) where Rightward Accent Shift in fact does shift accent onto the stem-final /A/, whereupon Stem-Final *t/A*-Deletion (29) zeroes the /A/, and the ablaut-induced accent on the zeroed V disappears. Technically, we could think of this as a **delinking** of the accent, which ends up with no vowel to attach to.

However, there is another construction involving accent erasure that must also be considered before any rules are formulated. Like the process affecting 3FeSg subject definite relatives, this one involves erasure of a marked accent when a stem-final V disappears. However, this time we are dealing with nouns rather than verbs, the loss of the V is due to **VV-Contraction** (39.b) rather than Stem-Final *t/A*-Deletion (29), and there is no phonological reason why the contracted vowel could not host the accent. Moreover, there is no reason to think that Rightward Accent Shift is involved.

The relevant cases here are **agentives** of the type *e-m-æŋʀ* ‘killer’, Pl $\ddot{\imath}$ -*m-æŋʀ-an* (§8.8.1), including **causative agentives** of the type *e-m-æs-æŋŋ* ‘cook’, Pl *i-m-æs-æŋŋ-an* (§8.8.4), and **VbIN**’s of the type *a-fáyk* ‘being searched’, Pl $\ddot{\imath}$ -*fáyk-an* (§8.6.1.4). In these forms, there is a marked accent in the Sg that disappears in the Pl. These agentives and VbIN’s are based on V-final stems, here *-vŋʀv-* ‘kill’, *-vŋŋv-* ‘be cooked’, and *-fvykv-* ‘be searched’. In the Sg forms, we can assume that Stem-Final *t/A*-Deletion (29) has deleted a final V, so the surface final-syllable accent can be derived from a (marked) penultimate accent (i.e. **with $\acute{\chi}$ -pen**), e.g. underlying agentive

/e-m-æŋʁV/ (where V represents either /ɪ/ or /A/) and VblN /a-fóykɪ/. This underlying penultimate accent is consistent with the surface penultimate accent of C-final agentives and VblN's. In the problematic plurals, it appears that the VV-Contraction (39.b) of /ɪ/ or /A/ with the suffixal vowel (MaPl -æn) forces erasure of the marked accent, **even though this accent is on the preceding syllable**, which is otherwise unaffected by the contraction. There is no comparable erasure in agentives or VblN's based on C-final stems.

In summary, the 3FeSg definite relatives of type Ø-tætt for -vCCv- verbs, and the plurals of agentives and VblN's for V-final verbs including -vCCv-, have the following in common: 1) a V seen in the Sg is zeroed or desyllabified (though by different rules: Stem-Final ɪ/A-Deletion (29), VV-Contraction (39.b), Desyllabification, Syncope), and 2) the marked accent (i.e. an ablaut formative of type $\acute{\chi}$) is simultaneously zeroed, resulting in default (including, if necessary, phrasal) accent. If we interpret the erasure of accent in these two cases as reflecting the same basic process, and seek to unify them into a single rule, we must disregard the suggestion made earlier that (for the 3FeSg subject definite relatives only) the accent erasure may be an unintended consequence of the zeroing of the V that should have carried the accent. Instead, we need a more abstract morphophonological rule (136).

(136) $\acute{\chi}$ -Erasure

An ablaut $\acute{\chi}$ (accent) formative is erased...

- a. ... when a heavy V-final VblN or Agent nominal with $\acute{\chi}$ -pen contracts its stem-final V with a Pl suffix (combinable with Lexical Accent Erasure, below).
- b. ... where an ablaut accent $\acute{\chi}$ -pc1 appears on a stem-final deletable V (/ɪ/ or /A/), as this V is deleted or contracts with a suffixal V (the only relevant cases are 3FeSg LoImpfP verbs and participles in definite relatives)

There are some additional nouns with marked **lexical accent** in the Sg that is erased in the suffixal Pl. This happens in several cases, whose common feature is the deletion of a stem V (not the accented one) in connection with addition of the Pl suffix, either MaPl -æn or FePl -en. Consider (137).

(137) Lexical Accent Erasure in Nominal Plurals

singular	plural	gloss
a. desyllabification of high vowel (only known examples)		
élu	èlw-an	'elephant'
ésu	èsw-an	'bull'

b. Syncope (numerous examples), masculine

éras	èrs-an	'sharp pain'
e-bækær	ĩ-bækr-an	'young ram'

c. Syncope (numerous examples), feminine

t-èlæq-q	t-èlɣ-en	'knife'
t-èffar-t	t-èfr-en	'hobbles (fettters)'

d. VV-Contraction of overt stem-final V, antepenultimate accent (rare)

e-m-æsl-i	ĩ-m-æsl-an	'voice'
t-a-kændə-t-t	t-ĩ-kænd-en	'water lily tuber'

e. VV-Contraction of deletable stem-final V, antepenultimate accent (rare)

æ-fóll	ĩ-foll-an	'Fula man'
e-wælænf	i-wælænf-an	'melon greens'

In (137.a), a stem-final u in the Sg corresponds to a desyllabified w in the Pl. The V is therefore not deleted as such, but it loses its status as syllabic nucleus. These are the only two examples known to me. In (137.b), which is much more productive, Syncope is part of the mix in the Pl. In the feminine cases in (137.c), we cannot tell if the Sg has a lexical penultimate accent, but one can infer from the unaccented plurals that they do not. In (137.d), an audible stem-final V in the Sg undergoes VV-Contraction (39.a) in the Pl with the suffix-initial V. In (137.e), there is no audible stem-final V in the Sg, but we might posit a deletable final V on the grounds that the MaPl takes the form -an with full V (§4.1.2.13). In specific cases there may be additional evidence for a stem-final V, e.g. for 'Fula man' in (137.e), cf. FeSg t-a-fòlli-t-t 'Fula woman' with stem-final i (§4.1.2.4).

The cases in (137.d-e), where VV-Contraction leads to default accent in the Pl, are not typical. More often, VV-Contraction (39) has no apparent effect on a marked lexical accent (138).

(138) No Lexical Accent Erasure with VV-Contraction

singular	plural	gloss
e-dæhi [e.g. R]	i-dæh-an	'sand'
à-læɖa	i-læɖ-an	'fly (insect)'

See §4.1.2.13 for lists of similar examples.

One might argue that χ -Erasure actually has applied in (138). This will generate the correct forms in (138) if the order of rules is χ -Erasure, then Default Accentuation, then VV-Contraction. However, this would decouple χ -Erasure from VV-Contraction, in spite of the evidence in (137) for a

connection between loss (or desyllabification) of a stem V and $\acute{\chi}$ -Erasure. In addition, we would have to recognize a different rule ordering for the cases in (137.d-e), with Default Accentuation following VV-Contraction.

For more examples and discussion of these Sg/Pl pairs, see §4.1.2.13. The erasure rule is formulated as (139).

(139) **Lexical Accent Erasure**

A lexical penultimate accent on a Sg noun is erased if a vowel in the Sg stem is desyllabified or syncopated, and (in some cases) if a stem-final V (overt in the Sg, or deletable) is deleted.

Of course it would be reasonable to combine (136.a) with (139).

To conclude this larger discussion (all of §3.5.3), the most interesting phenomenon is the existence of special rules that apply only in definite relative clauses, where the targeted verb (or participle) directly follows a demonstrative head. These rules have a general similarity to others involving the characteristic Tamashek microsyntactic figure [X+Y...] constructions dealt with throughout §3.5. $\acute{\chi}$ -pcl Erasure is clearly a phonological reduction (in V-length), like Prefix Reduction in nouns and some of the post-particle adjustments in inflected verbs. However, the details do not match. In definite relative clauses, while the length formative $\acute{\chi}$ -pcl is erased, the parallel accent formative $\acute{\chi}$ -pcl is only erased under very limited conditions (involving loss of a V), so the erasures do not work the same way in definite relatives as for the (non-relative) LoImpfN (i.e. LoImpfP following Neg), where $\acute{\chi}$ -pcl is systematically erased. Rightward Accent Shift is likewise confined to verbs or participles in definite relative clauses, and has no parallel in inflected verbs following a particle like Neg or Future.

In conclusion, while there is a recurrent pattern of [X+Y...] phrasal groupings in which the Y word undergoes morphophonological changes not observed in phrase-initial position, the precise changes are different from one specific construction to another.

Chapter 4

Nominal and pronominal morphology

4.1 Noun morphology

4.1.1 Gender and number categories

4.1.1.1 Gender categories

Masculine and feminine are distinguished in singular and plural nouns (see below), and in singular-subject (but not plural-subject) participles (§8.5). With personal pronominals, which occur in independent and several distinct bound (affixal or clitic) series, gender is distinguished in 3Pl and 2Pl forms, in some but not all 3Sg and 2Sg forms, and in independent but not affixal or clitic 1Pl pronouns (1MaPl *nækk-æn-eḡ* versus 1FePl *nækk-æn-æt-eḡ*). 1Sg is the only pronominal category that is never gender-marked.

For inanimate nouns (including plant terms), the choice between masculine and feminine is lexical. However, if the most common form of a noun is masculine, one can use the corresponding feminine as a **diminutive** or for some similar lexically specialized function.

An example of an unmarked/diminutive opposition is masculine *é-hæn* ‘dwelling (e.g. tent)’, and the pejorative feminine *t-e-hænni-t-t* ‘mediocre dwelling (where a guest is poorly received)’. Another gender pair is masculine *á-dmər* ‘(side of) chest; small dune’, versus feminine *t-ǎ-dmər-t* ‘breast (meat cut); small dune’. Another is *á-fərs* ‘cut-off piece’ and diminutive *t-ǎ-fərsi-t-t* ‘small piece’.

Names of animals can generally shift between masculine or feminine forms depending on biological sex, though one gender is unmarked for each species. Given that the majority of adult domestic animals (sheep, goats, cattle, camels) are female, feminine gender predominates in plural and unknown-sex contexts for livestock species. Thus *t-ǎ-hatt-en* ‘ewes’ is widely used in the sense ‘sheep (collective)’ or ‘(herd of) sheep’.

4.1.1.2 Number categories

Number categories are singular and plural; there is no dual.

The common collective noun for ‘people’ is *əddinæt* (variant *æddinæt*, from Arabic). Although the noun lacks plural morphology, agreement is 3MaPl.

For nonhuman nouns, plural is generally specified when denoting count plurals. However, morphologically singular nouns (taking singular agreement) denoting e.g. insects or small plants can be used with collective, generic, or

ambiguous-number reference. For example, *t-æ-das-t* ‘mosquito(es)’ is normally used in singular form with collective reference. The high-frequency noun *ɑ-rázzej* ‘(domestic) animal’ has a plural *i-ràzzej-æn*, but the singular can be used with collective as well as singular reference. ‘Sheep’, ‘cows’, ‘camels’ and other terms for domestic animals have plural forms except when the reference is specifically singular.

4.1.2 Morphology of gender and number marking

The maximal structure of an inflected noun is (140), in the linear order shown.

- (140) Nominal Inflection
1. Fe prefix *t-*
 2. vocalic prefix: Sg (*-æ/-ə-, -ɑ-, or -e-*), Pl *-i-*
(full vowel shortened in dependent state by Prefix Reduction)
 3. noun stem (subject to Pl ablaut for some nouns)
 4. inner Fe suffix *-t-*
 5. outer suffixes: FeSg *-t*, MaPl *-æn* (*-tæn*), FePl *-en* (*-ten*)

This structure is idealized. The following departures occur:

a. Many nouns pluralize by stem ablaut without suffixation, in which case slots 4 and 5 are empty (§4.1.2.15). Some nouns have both ablaut and plural suffixes (§4.1.2.14), and some have suffixes plus phonological modifications of the stem that fall short of normal ablaut (§4.1.2.7 through §4.1.2.12).

b. Some nouns entirely lack vocalic prefixes.

c. Some feminine nouns lack FeSg *-t* (and therefore, even if V-final, also lack inner Fe suffix *-t-*). A very few feminine nouns lack both Fe prefix *t-* and FeSg suffix *-t*, so they have no morphological gender-marking, while requiring feminine agreement: *æddúnya* ‘world’ (variant *æddúnya*, <Arabic), *èlle* ‘daughter’.

Some feminine nouns take a different Fe suffix *-æt* (instead of *-t*). Its plural varies between *-en* and *-æt-en* (§4.1.2.5).

There are some problems involving morphemic segmentation and identification when a *t* appears at the junction between stem and suffix. As we will see, a *t* in this position can be taken as a separate morpheme (Fe inner suffix *-t-*) or as a mere allomorphic increment between stem-final and suffix-initial C’s. I take it as Fe suffix *-t-* for feminine nouns with which it appears before both FeSg *-t* and FePl *-en*, hence singular *-t-t* and plural *-t-en*. Where the *t* appears only with a Pl suffix, I transcribe it as a suffix-initial C (MaPl *-tæn*, FePl *-ten*). The awkwardness of the analysis is that feminine plural suffixal [ten] is transcribed variously as bimorphemic *-t-en* or as monomorphemic *-ten* depending on the form of the corresponding Sg.

4.1.2.1 Number (vocalic) and gender prefixes

As we have just seen, gender and number are marked in nouns by a combination of prefixes and suffixes (or prefixes and ablaut). The productive nominal prefixes are those in (141). Note that there are several, lexically determined variants of the unreduced Sg prefix seen in MaSg and FeSg combinations. The feminine forms are basically identical to the masculine ones with the addition of Fe t-.

(141) Nominal prefixes

	absolute state	dependent state (Prefix Reduction)
MaSg	a- or e- æ-/ə-	ʔæ- or ʔə- æ-/ə-
MaPl	i-	ʔə- (before CC) or zero (before CV)
FeSg	t-a- or t-e- t-æ-/t-ə-	ʔt-æ- or ʔt-ə- t-æ-/t-ə-
FePl	t-i-	ʔt-ə- (dialectally also ʔt-Ø-)

The majority of noun stems either begin with a vowel, or (if C-initial) are preceded by a **vocalic prefix**, which is a lexical choice between -æ-/ə-, -a-, or -e- in the singular, but invariable -i- in the plural. The short allomorph -æ-/ə- of the vocalic prefix probably has a basic pandialectal form -æ-, but in T-ka Short-V Harmony requires -ə- when the following syllable has a high V (§3.2.6). In some other dialects like A-grm the prefix is always -æ-.

For masculine forms, the vocalic prefix is word-initial. For feminines, the vocalic prefix (Sg or Pl) is itself preceded by Fe t-. Nearly all nouns that have both masculine and feminine forms have the same vocalic prefix allomorph (-æ-/ə-, -a-, or -e-) that appears in both gender forms. For example, if the masculine has e- the feminine has t-e-.

Some examples of the different Sg prefix allomorphs follow.

a- prefix: á-dhøj 'aardvark', t-à-dhan-t 'Bossia shrub', à-bækə 'jujube fruit', a-læbæjja 'a fine meal', a-šédəð 'a disease'. a- is also regular in the VbIN of heavy stems, including prefixal derivatives (causative, mediopassive, and reciprocal). Examples: a-bákbək 'shaking off', à-bkəmmi 'lying low', and causative a-s-írəd 'washing'. Overall, a- occurs in a wider range of environments than the other allomorphs.

e- prefix: e-dóhi 'sand', t-e-læbæw-t 'cormorant', t-e-læftes-t 'rib cut of meat', e-tæfær 'sole (of foot)', é-kækk 'spur-winged goose', é-bærj 'floodplain', é-šed 'donkey'. Except for the type é-CeC, one notices that e- is

common when the following syllable has short æ, especially in é-CæCC and e-CæCæC.

æ- prefix: æ-la 'leaf', æ-láblab 'turban', æ-lata 'midriff', æ-koka 'palm-nut segment', t-æ-kærðket-t. A common pattern is æ- before stems beginning in Ca....

ə- prefix: verbal noun ə-m-ukən 'making, doing', ə-lišwəð 'tree twig', ə-jídræš 'hail'. In T-ka, ə- and æ- are distributed based on the basis of Short-V Harmony, i.e. with ə- if the following syllable has a high V.

The full-V prefixes (Sg a- and e-, Pl i-) are subject to **Prefix Reduction** in the dependent state, i.e. in postverbal subject and prepositional complement functions (§3.5.1), as shown on the right in (141). The **symbol** ʾ before a noun is an index of audible Prefix Reduction; I do not use this symbol when the noun has an invariable short vocalic prefix -æ-/ə-, so there is no audible change under Prefix Reduction. For FePl t-i-, T-ka has an invariant reduced form ʾt-ə- with audible schwa, while many other dialects (including T-md and K-d) have ʾt-ə- before a consonant cluster and ʾt-∅- before a single C (the t- is not subject to Prefixal t-Deletion, §3.2.1.5). In other words, these dialects allow Syncope of the schwa when the syllabic conditions are right (§3.2.7.1).

The Sg/Pl prefixal alternations shown in (141) are valid for all types of plural, including unsuffixed ablaut plurals.

A very few nouns (mostly loanwords) have an *unprefixed* masculine and a prefixed feminine; in this case the Fe prefix t- is accompanied by a vocalic prefix -ə- or -æ- that was perhaps originally epenthetic, but functions now as a genuine vocalic prefix and is therefore replaced by -i- in the Pl. Examples of this last type are: bušú 'Capparis shrub' (Pl bušú-tæn) and feminine variant t-ə-büşu-t-t (Pl t-i-büşu-t-en); likewise fòti 'tankard' (A-grm, Pl fòti-tæn) and feminine variant t-æ-fòti-t-t (Pl t-i-fòti-t-en).

Not all nouns have a vocalic prefix, even if they begin with a consonant and could therefore take a vocalic prefix with no phonological problems. Many of these consonant-initial nouns are borrowings (from Arabic, Songhay, or other languages). Examples are deǰé 'Grewia tree', deké 'basket', and dukódda 'bird sp.'. There are also some nominal derivatives that lack a vocalic prefix: rækkon 'halting' (VblN), s-ənto 'beginning'.

There are also many nouns that begin with an **invariant stem-initial vowel** that cannot be segmented as a prefix. If the noun is feminine, Fe prefix t- directly precedes the invariant stem-initial vowel. When the vowel is from the set {i o u} there is no danger of misinterpreting it as a vocalic prefix. Examples: t-ðræf-t 'boat', and VblN's like úðəf 'holding' and t-ibra 'grabbing a handful'.

When the stem-initial vowel is from the set {a æ e ə}, we must test for possible prefixal status (see next paragraph). Examples of nouns whose vowel is invariant and must therefore be assigned to the stem are ælbænna 'mason' (<Arabic), əddinæt (variant æddinæt 'people'; <Arabic), alibunəš 'Pterocarpus tree', and àðu 'wind' (Pl àðu-tæn). Most stems with initial e in the singular shift e to a in the plural, see §4.1.2.7. However, the e is not

reduced after a preposition and is best considered stem-initial: t-èle ‘shade’ (dæɾ t-ele ‘in the shade’), Pl t-ðliw-en.

In theory, a lexical stem-initial *a* or *e* is invariant (i.e. it is not reduced, and is not replaced by Pl *i*-). However, dialectal lexicographic work shows that some noun stems have an initial *a* or *e* that is treated differently by different speakers (or dialects). Moreover, for some nouns an individual speaker may give “mixed signals,” typically allowing initial *a* to undergo Prefix Reduction to *ʔæ-*, but unexpectedly retaining *a* in the Pl instead of replacing it by *i*-. Example (for an R speaker): Sg á-sɾal ‘wild fonio (grains)’ with reduced form *ʔæ-sɾal* (e.g. after a preposition, as in dæɾ *ʔæ-sɾal* ‘in the fonio’), but Pl ðsɾal-æn rather than *#i-sɾæl-æn*. So the Sg alternation points to a segmentable vocalic prefix *a-*, while the invariant Pl points to an unsegmentable stem-initial *a*.

4.1.2.2 MaPl suffix -æn, -tæn and FePl suffix -en, -ten

Nouns with unsuffixed ablaut plural have no MaPl or FePl suffix.

The **MaPl** suffix is normally -æn after a C, and -tæn after a V. Examples: á-xfəf ‘mother’s milk’ with Pl *i-xfəf-æn*, and æxxú ‘monster’, Pl *i-xxú-tæn*. Note that plurality is also marked by the Pl vocalic prefix *i*-. For exceptions with -tæn after a C, see (148.c-d) and (149) in §4.1.2.6.

There are a fair number of cases where the allomorph -tæn is used after a C-final (rather than V-final) stem. These generally involve CVC stems and C-final loanwords with final-syllable lexical accent. See §4.1.2.6 for examples and discussion.

The **FePl** suffix is -en after a C, which may be the stem-final segment or inner Fe suffix -t-. Example: Sg t-e-dæ̀ri-t ‘large antelope’, Pl t-i-dæ̀ra-t-en. In the less common case where the FePl suffix is added directly to a V-final stem, with no modification (such as extending the noun with a *w*), the FePl has the form -ten (here I do not put a hyphen after *t*; see §4.1.2.3). Example: Sg t-àrba ‘trap’, Pl t-àrba-ten.

Many masculine nouns have unsuffixed ablaut plurals, and so of course omit -æn or -tæn (§4.1.2.15).

Some nouns have a slightly extended stem before MaPl -æn or FePl -en. The common extension involves an extra stem-final ...w- if the Sg stem is V-final. This obviates the need for a postvocalic suffixal allomorph in many cases, especially for feminine nouns. There are also some C-final singular nouns that add ...Vw- with some vowel *V* before the Pl suffix. See §4.1.2.7 for examples and discussion.

4.1.2.3 Feminine Singular suffix -t (-t-t)

The normal FeSg suffix for nouns is -t, though as noted above some feminine nouns lack it (the Fe prefix t- is more reliably present).

This suffix **requires an immediately preceding C**. There are three basic ways this constraint can be satisfied. First, the core stem may already end in a C, as in t-è-jer-t ‘cowry’. Second, a few nouns that are V-final in the masculine have a stem variant with an additional stem-final y or w before the FeSg and FePl suffixes (§4.1.2.4, below). An example of this archaic alternation: MaSg à-jæya ‘great-grandson’, (T-md) FeSg t-α-jæyaw-t ‘great-granddaughter’. Third, if the stem is consistently V-final, inner Fe prefix -t- is added before FeSg -t and (if the plural is suffixal) FePl -en. Thus t-æ-jämba-t-t ‘female hippo’, suffixal Pl t-i-jämba-t-en (alongside unsuffixed ablaut Pl t-ǐ-jumba).

Stem-final V’s in nouns are usually full V’s, but there are a modest number of cases involving short V’s. Examples: t-α-kbət-te-t-t ‘pinch (of sth)’, t-æ-šärrə-t-t ‘street’.

Some readers may wish to segment -tt as a postvocalic FeSg suffix, with -ten as the FePl counterpart, rather than identifying the first t as an inner Fe morpheme -t-.

For the less common Fe (sometimes specifically FeSg) suffix -æt, with no inner -t- Fe suffix, see §4.1.2.5, below.

FeSg -t **does not allow antepenultimate accent**. Nearly all feminine nouns with this suffix have penultimate accent (§3.3.1.1). For example, the masculine noun α-bæmbæra ‘Bambara man’ has default antepenultimate accent since the stem lacks a lexical accent. One might expect the feminine counterpart to have the same accent (#t-α-bæmbæra-t-t), but in fact we get t-α-bæmbæra-t-t ‘Bambara woman’ (or ‘Bambara language’) with penultimate accent.

It is rare for an unprefixed masculine noun of more than one syllable with stem-final accent (an index of borrowing from Songhay or other non-Arabic language) to have a feminine counterpart. The attested feminines of this type are not completely uniform in their accentual behavior. The cases known to me are in (142).

(142) Feminine of Noun with Final Accent in Masculine

gloss	masculine	feminine
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a. Feminine with final accent (usually)

‘monster’	æxxú	t-àxxu-t-t (T-ka)
		t-æxxú-t-t (A-grm Gao Im K-d R)

b. Feminine with penultimate accent

'monkey'	kæyá	t-æ-kæya-t-t (Im)
'gas drum'	bærgón	t-æ-bærgon-t (T-ka)
'thorny shrub'	bušú	t-ə-büşu-t-t (T-ka)

The predominance of penultimate accent, in (142.b) and the T-ka variant in (142.a), suggests that -t not only disallows word-antepenultimate accent, but specifically favors penultimate accent even when the lexical accent is on the final. However, the accent in the feminines is somewhat lexicalized, and carries over to the corresponding FePl forms: t-i-kæya-t-en, t-i-gærgon-en, etc., whose suffix -en- (postvocalic -t-en) has no special accentual properties elsewhere in nominal morphology.

FeSg -t undergoes specialized **consonantal assimilations** described in §3.2.1.1. In addition to routine voicing and pharyngealization assimilation within coronal clusters, e.g. /d̥-t/ → t̥-t̥ and /d-t/ → t-t, there are some more specialized progressive assimilations that could disguise the identity of the FeSg suffix: /r-t/ → q-q, /j-t/ → k-k, and /g-t/ → k-k. When FeSg -t is replaced by FePl -en, or is dropped in an ablaut plural, the underlying (lexical) stem-final C appears. Examples: t-æ-mǝšæq-q 'Tamashek woman', Pl t-i-múšar; t-ǝ-ræk-k 'book sack', Pl t-ǝ-ræj-en (T-ka) or t-ǝ-rærg-en (A-grm). In such cases, the plural must be checked in order to determine the correct stem-final C.

In a few nouns, a final geminate that looks as though it might result from such an assimilation with -t is actually lexical, and appears in unreduced form in the plural. For example, phonetic [tæˈlaq:] for the Sg of 'mud' with final geminated [q:] would suggest /t-æ-lar-t/ with the usual assimilation /r-t/ → q-q, like the vast majority of singular feminine nouns ending in [q:]. This would imply a plural #t-ǝ-lar-en, but in fact the plural is t-ǝ-laqq-en, which shows that the geminate qq is part of the stem. I therefore transcribe the stem as t-æ-laqq instead of t-æ-laqq. A similar case is t-ǝdatt 'truth', Pl t-ǝdatt-en, though for this noun the plural is uncommon.

Examples of the less common type with Fe prefix t- and **no FeSg suffix**: t-ǝ-dukra 'ground millet', t-ǝrfa 'entrails', t-èle 'shade', t-ǝrhanna 'disease'. Most of these nouns end in e or a, which may historically have been minor Feminine suffixes (MGT 4.44-45). They cannot be segmented synchronically as such (in the absence of masculine/feminine alternations). The usual Pl is with FePl suffix -en added to a w-extended stem, e.g. t-i-dükraw-en 'ground millets', t-ǝrfiw-en 'guts'.

4.1.1.4 *Extra stem-final semivowel or vowel before FeSg -t*

An additional problem is that some stems that occur in masculine and feminine forms have a slightly longer shape before FeSg suffix -t than in the unsuffixed

masculine form. The feminine stem variant is most likely archaic, preserving a final semivowel or vowel that has disappeared in the masculine (cf. §3.1.1.9, §3.1.2.3). The cases known to me are given in (143).

(143) Masculine and Feminine Stem Variants

masculine	gloss	feminine	gloss or category
a. final y in feminine			
æ-jola	'step-son'	t-æ-jöllay-t	'step-daughter'
æ-koka	'doum-palm nut'	t-æ-kòkay-t-t	'doum palm'
à-wæra	'baby camel' (male)	t-a-wæray-t	(female)
		[FeSg also t-a-wæra-t-t]	
æ-lata	'water lily leaf'	t-æ-lätay-t	'water lily leaf'
b. final w in feminine			
é-bæŋɣ	'floodplain'	t-e-bæŋɣæw-t	(diminutive)
è-bæje	'horse'	t-e-bæjæw-t	'mare'
à-jæya	'great-grandson'	t-a-jæyaw-t	'great-granddaughter'
èkne	'male twin'	t-èknew-t	'female twin'
c. final i in feminine (with final CC cluster)			
e-dægg	'place'	t-e-dæggi-t-t	'small place'
e-hætt	'Songhay man'	t-e-hætti-t-t	'Songhay woman'
á-kært	'male chick'	t-a-kærti-t-t	'female chick'
e-læll	'noble man'	t-e-lælli-t-t	'noble woman'
e-mænn	'fish'	t-e-mænni-t-t	'carp (fish)'
e-m-ærz	'breaker-Ma'	t-e-m-ærzi-t-t	'breaker-Fe'
		(and other agentives of -vC(C)v- verbs)	
d. final i in feminine (with final simple C)			
e-dæm	'male gazelle'	t-e-dæmi-t-t	'gazelle'
e. final i in feminine (with final geminate in Sg, but simple C in Pl)			
e-kæzz	'rooster'	t-e-kæzi-t-t	'hen'

Several further cases involve feminine verbal nouns with w before -t from V-final verbs. Examples (among others): -ə̀nna- 'say' with verbal noun t-̀inaw-t (alongside t-ə̀nna); -ə̀nda- 'collapse' with verbal noun t-a-nə̀ddaw-t.

4.1.1.5 Feminine suffix *-æt*

Perhaps as many as 40 nouns have a distinct Fe suffix *-æt*. These nouns lack Fe prefix *t-* and Fe suffix *-t-*. The suffix *-æt* is most directly comparable to the productive FeSg participial FeSg suffix *-æt* (§8.5). Both differ phonologically from the regular FeSg nominal suffix *-t*, not only in the presence of the short vowel *æ*, but also in allowing default antepenultimate accent. By contrast, the regular nominal FeSg suffix *-t* does not allow antepenultimate accent.

One difference between nominal Fe *-æt* and participial FeSg *-æt* is that the nominal suffix often remains in the plural (*-æt-en*), while the participial suffix is used only in the singular (plural participles have Pl suffix *-nen* regardless of gender). However, some nouns with Fe *-æt* in the Sg optionally drop it before FePl *-en*, thus *t-ɑ-žæbdær-æt* 'python' (note the antepenultimate accent), Pl *t-i-žæbdær-æt-en* or *t-i-žæbdær-en*. The dialects seem to vary in this respect (FePl *-en* versus *-æt-en*).

Many nouns with Fe *-æt* are borrowings from Arabic (which has FeSg suffix *-at-*), and they tend to be terms with Islamic connotations. Those that occur in my data and require FeSg agreement (for at least one informant checked) are *ælmænfæŷ-æt* 'benefit', *ælmærr-æt* 'time', *ælvíbád-æt* 'imploring (God)' (Gao variant), *əlqəbíl-æt* 'clan, (sub-)tribe', *ælfád-æt* 'custom', *ælfælm-æt* 'sign', *ælmænfæŷ-æt* 'benefit', *ælmærtæb-æt* 'value', *ælhál-æt* 'system', *ællæwɾ-æt* 'language', *ældxær-æt* 'Afterlife', *æljæmúr-æt* 'assembly', *æljænn-æt* 'paradise', *ærrúm-æt* 'beneficial effect', *ærræxm-æt* 'blessing', *æssúr-æt* 'hour', *æşşúh-æt* 'strength', *æssór-æt* 'chapter of Koran', and *şéh-æt* 'health'. The *æl...* or *əl...* is the Arabic Definite prefix, which assimilates totally to most coronal consonants (e.g. *r*). The plural in *-æt-en* is exemplified by *ælmærr-æt-en* 'times'.

There are also a few feminine nouns in *-æt* that do not seem to have Arabic sources. Perhaps some of these originated as feminine participles. Those known to me are *t-æ-bæssillæw-æt* 'Salvadora fruit', *t-à-bar-æt* 'road', *t-à-næɾw-æt* 'python', *t-òraw-æt* (variant *t-àrew-æt*) 'honey', *m-ɑsæl-æt* 'listening', *sàlleɾ-æt* 'good behavior', *m-ùsn-æt* 'knowledge', *şælb-æt* 'an intestinal disease of animals', *t-æşşar-æt* (A-grm) 'street' (= *t-æ-şàrrə-t-t* in Timbuktu), *t-àşaw-æt* 'shrub sp.', *wænş-æt* 'rabies', and *əjjəlúy-æt* 'speaking seriously' along with a few other nominals of the same pattern *əPPəCÚC-æt* (545.g-h). An example of the plural is *t-oræw-æt-en* 'honeys'. For 'evil eye, gossip' I have both feminine *t-àgærş-æt* and masculine *gærşɑ* (with slight semantic differences) for K-d.

The ending *-æt* in nouns borrowed from Arabic is not always interpreted as feminine, and I have recorded masculine (or inconsistent feminine and masculine) agreement for some relevant items. For example, *ælqíblæt* 'north' was recorded for A-grm, with masculine agreement. Another example: a noun for 'peace' takes the forms *ælvðfəyæt* and *ælfáfet* in the Timbuktu area, often with masculine agreement and so doubtfully segmentable, but for A-grm I recorded *ælváfy-æt* with feminine agreement. Several of the relevant terms

have Islamic associations, and gender assignment may be influenced by the individual speaker's level of knowledge of Koranic Arabic. The dialect that most systematically interprets nouns ending in ...æt as masculine, with MaPl ...æt-æn, is K-d (e.g. ælxīdmæt 'work', Pl ælxīdmæt-æn). For this dialect there is no basis to segment -æt- as a suffix, and I transcribe it as part of the stem.

Since Hassaniya (and more broadly Maghrebi) Arabic has FeSg -a (for Classical Arabic -at-), it is not surprising that some dialectal doublets occur, e.g. əlfībáda (T-ka) and ælvībád-æt (A-grm) for 'imploring (God)'. In other cases only a form ending in a is recorded: əlkəsíba 'increase in one's flock', ælwælla 'ablutions'.

4.1.1.6 Simple suffixal pluralization and stem extension (w)

Since all nominal plurals involve the same prefixal changes, we may classify plurals into a) simple suffixal (this section and §4.1.2.13), b) mixed ablaut-suffixal (§4.1.2.7-12, §4.1.2.14) where there are some stem-internal changes in addition to Pl suffixation, and c) pure ablaut plurals with no suffixes (§4.1.2.15ff).

As noted earlier, those nouns that have a segmentable Sg prefix (variably -a-, -e-, or -æ-/ə-) replace it with -i- in the plural. Other nouns have invariant onsets that do not mark plurality and are not audibly affected by Prefix Reduction. Among the nouns with invariant onsets are most borrowings from Arabic and Songhay, including (to my knowledge) all nouns with final-syllable accent.

Most masculine nouns have a MaPl suffix whose simplest form is -æn, while most feminine nouns add -en. The exceptions are the nouns that have suffixless ablaut plurals (see below). As noted in previous sections, the allomorphs -æn and -en are regular after a consonant (including, for feminine nouns, inner Fe suffix -t-). Examples in (144). For MaPl -tæn after certain C-final nouns (monosyllables, or borrowings with accent on the final syllable), see discussion of (148-9), below.

(144) Plural Suffixes after C-final noun stem

singular	plural	gloss
a. masculine		
æ-dánan	i-dànan-æn	'Cordia fruit'
e-réhəš	i-rèhəš-æn	'castrated animal'
íder	ïder-æn	'bottom'
érhitt	èrhitt-æn	'will'

b. feminine

t-e-dæwæn-t t-i-dæwæn-en ‘mat’

If the Sg stem is V-final, an **apparently epenthetic consonant** w or t is inserted to make the suffix pronounceable without contracting the vowels. Most V-final masculines take t instead of w, so the effect is that V-final nouns take a MaPl suffix allomorph -tæn. A few examples are given in (145.a). There are, however, a few V-final masculines that take final w before -æn (145.b). I take the w as an extension of the stem rather than as the initial segment of a suffixal allomorph. Some additional examples of w, accompanied by a shift in the preceding V, are given in §4.1.2.8, below. There are also many cases where a C-final masculine adds both a full V and a w before the Pl suffix (§4.1.2.10). In two cases the T-ka dialect has a y instead of w (145.c).

(145) Plural Suffixes after V-final Masculine Noun Stems

singular	plural	gloss
a. with -tæn (productive)		
à-dwənni	i-dwənni-tæn	‘talk’
æ-dəŋki	i-dəŋki-tæn	‘strong donkey’
matəji	matəji-tæn	‘peanuts’
è-kæde	i-kæde-tæn	‘collecting’
æ-kado	i-kado-tæn	‘Kaado man’
b. with w (near-complete list of exx. with no other stem change)		
è-ræse	i-ræsew-æn	‘grain bits’
à-rsənsi	i-rsənsiw-æn	‘shank, shin’
à-hæya	i-hæyaw-æn	‘grandson’
	[Pl also i-hæya-tæn]	
à-jənna	i-jənnaw-æn	‘rain’
à-gæya (A-grm)	i-gæyaw-æn	‘great-grandson’
	[T-ka: Sg à-jæya, Pl i-jæya-tæn]	
è-kæde	i-kædew-æn	‘oven stone’
à-šənnə	i-šənnaw-æn	‘sky’ (usually Pl)
c. MaPl ...y-æn (all known examples)		
ə-lidda	i-lidday-æn (T-ka)	‘saliva’
	[for K-d: ə-lidda, Pl i-liddaw-æn]	
à-krəmma	i-krəmmay-æn (T-ka)	‘small piece’
	[A-grm: a-kərəmma, Pl i-kərəmm-æn]	

Some of the cases with *w* ('oven stone', 'sky') occur chiefly in the Pl, and all of the stems are at least fairly common in the Pl. This is consistent with the view that the ...*w*-*æn* MaPl is unproductive and lexicalized. While the *-tæn* functions as an idiosyntactic epenthetic C associated with the suffix, the *w* of ...*w*-*æn* is best analysed as a (deletable) stem-final segment. For 'grandson', the *w* shows up not only in MaPl *i-hæ̀yaw-æn*, but also in FeSg *t-a-hæ̀yaw-t* 'granddaughter', showing stem-final *w* before FeSg *-t*. 'Great-grandson' likewise has a (dialectal) feminine counterpart *t-a-jæ̀yaw-t*. *ð-rsæ̀nsi* 'shank, shin', may have originated as a compound involving *é-ræ̀ss* 'bone' and *t-ĩnse* (variant *t-ĩnse*) 'toe'.

For **feminines**, if the Sg ends in *-t-t* (with inner suffix Fe *-t-* and outer FeSg *-t*), the suffixal Pl has *-t-en* (146.a). There are a small number of unsuffixed V-final feminine singulars (mostly loanwords) that also take *-ten* (146.b). In this case I take the *t* as part of the suffix allomorph, parallel to the *-tæn* allomorph of the MaPl suffix. A much larger number of unsuffixed V-final feminines have stem-extension ...*w-* before *-en* (146.c). There are also several cases of FePl ...*w-en* with a further shift in the preceding V (§4.1.2.11). There is one attested case (R dialect) with *y* instead of *w* (146.d).

(146) Plural Suffixes after V-final noun stems

singular	plural	gloss
a. FePl <i>-t-en</i> (V-final with Sg <i>-t-t</i> , productive pattern)		
<i>t-e-dæ̀wi-t-t</i>	<i>t-i-dæ̀wi-t-en</i>	'joy'
b. FePl <i>-ten</i> (unsuffixed V-final Sg)		
<i>t-æ̀máti</i>	<i>t-æ̀màti-ten</i>	'tomato'
	[or masculine Pl <i>tæ̀màti-tæn</i>]	
<i>m-æ̀rda</i>	<i>m-æ̀rda-ten</i>	'hope' (A-grm)
<i>mætla</i>	<i>mætla-ten</i>	'mattress'
	[or masculine Pl <i>mætla-tæn</i>]	
<i>t-ændóyba</i>	<i>t-ændóyba-ten</i>	'bird sp.'
<i>t-àrba</i>	<i>t-àrba-ten</i>	'trap'
<i>t-æ̀ŋŋa</i>	<i>t-æ̀ŋŋa-ten</i>	'parallel cousin'
<i>t-æ̀rfó</i>	<i>t-æ̀rfó-ten</i>	'(woman's) wrap'
c. FePl ... <i>w-en</i> (unsuffixed V-final Sg, all known exx. with no vocalic shift)		
<i>t-íbra</i>	<i>t-ĩbraw-en</i>	'grabbing handful'
<i>t-a-fæ̀rjijəmša</i>	<i>t-i-fæ̀rjijəmšaw-en</i>	'gecko'
<i>t-à-frænke</i>	<i>t-i-frèŋkaw-en</i>	'tree bark'
	[Sg also <i>t-a-frèŋka-t-t</i>]	
<i>t-à-ræ̀ya</i>	<i>t-i-ræ̀yaw-en</i>	'hoop, bow'
<i>t-æ̀koba</i>	<i>t-i-kòbaw-en</i>	'sabre'

t-əkma	t-əkma-w-en	'pain'
t-íkra	t-ikraw-en	'theft'
t-ə-lúlya	t-i-lúlyaw-en	'preaching'
t-òrhə̀nna	t-orhə̀nnaw-en	'disease'

d. FePl ...y-en (only example)

t-ə̀-ka ^{na}	t-i-ka ^{na} y-en (R)	'burrgrass'
	[other dialects: t-i-ka ⁿⁱ w-en]	

A fair number of those singular nouns ending in phonetic [i] break into a vowel and **homorganic semivowel** before a vocalic suffix like MaPl -æn or FePl -en (147).

(147) Stem-Final Vowel/Semivowel Alternations

singular	plural	gloss
a. common nouns (Sg i but Pl əy)		
æ-bóri	i-bòrəy-æn	'stick, club'
á-fti	ĩ-ftəy-æn	'bird trap'
t-ùfi-t-t	t-ùfəy-æn	'diarrhoea'
t-a-ɾdeyàdi-t-t	t-i-ɾdeɾədey-en	'wagtail (bird)'
á-ɾri	ĩ-ɾrəy-æn	'miscarried fetus'
á-gli	ĩ-gləy-æn (A-grm)	'cud' (√jl)
e-jéri	i-jèrəy-æn	'gazelle'
a-krámbi	i-krəmbəy-æn	'curve'
t-a-krùri-t-t	t-i-krùrəy-en	'ball'
	[Pl also t-ĩ-krura]	
æ-kórsi	i-kòrsəy-æn	'fennec (fox)'
æ-lóki	i-lòkəy-æn	'calf'
t-à-mdi-t-t	t-ĩ-mdəy-en	'trap'
á-nji	ĩ-njəy-æn	'rivulet'
a-səddi	i-səddəy-æn	'animal rope'
á-zli	ĩ-zləy-æn (A-grm)	'removing bride'
	[Pl also ĩ-zəly-an (T-ka)]	
b. verbal nouns in final əy with Pl iy-		
a-də̀ŋkəy	i-də̀ŋkiy-æn (A-grm)	'bumping'
a-hlə̀yli	i-hlə̀yliy-æn	'joy'
a-m-íləy	i-m-ĩliy-æn	'circumcision'
a-s-úfəy	i-s-ùfiy-æn	'making flow'
a-s-ə̀kkədəy	i-s-ə̀kkədiy-æn	'foraging'
a-zúzəy	i-zùziy-æn	'filing (metal)'

c. verbal nouns in final əw with Pl iw-

ɑ-mənsəw	i-mənsiw-æn	'eating supper'
ɑ-ləwləw	i-ləwliw-æn	'towering'
ɑ-s-ədəw	i-s-əd̥iw-æn	'organizing'
ɑ-s-əlləwləw	i-s-əlləwliw-æn	'raving'

Although the common nouns (147.a) and the VbIN's (147.b) both end in phonetic [i], I take the ending to be /i/ in the former case and to be /əy/ in the latter case. This is based on the allomorphy of the 1Sg possessor suffix, as seen in æ-boŕi-nin 'my stick' and ɑ-dəŋkəy-in 'my bumping' (though for the latter ɑ-dəŋk̥i-nin is also possible). For more on this general issue see §3.1.2.5. For i replacing ə before the stem-final y (or any other C) in the Pl, see §4.1.2.12, below. Actually, I can hear no difference between əy and iy before a V, but the shift ə to i before other stem-final C's is clear.

In (147.c) we have verbal nouns in əw (corresponding to inflected PerfP ...əw). These forms are parallel to those in əy in (147.b), so the Sg frequently takes a postconsonantal allomorph of the 1Sg possessor suffix (ɑ-mənsəw-in 'my ...'). Here the shift ə to i in the Pl is clearly audible.

A few C-final nouns lacking a vocalic prefix show MaPl **-tæn instead of -æn**. For C-final nouns, -tæn is associated with accent on the final stem syllable (not counting any intervening epenthetic schwa). Some of the nouns in question are monosyllabic or bisyllabic nouns borrowed from Songhay; the others are monosyllabic VbIN's that are infrequently pluralized. A stem-final geminated PP can be degeminated before the -t- (one case each of ww, yy, and kk, none involving VbIN's). If the CC cluster is not reduced to C, an ə (rarely æ) may appear. The monosyllabic examples are in (148).

(148) Plural -tæn after Unprefixed C-final Monosyllable

singular	plural	gloss
a. monosyllabic vCC verbal nouns		
íðh	ìðhə-tæn	'folding'
íjj	ìjjə-tæn	'stretch to look'
áyy	àyyə-tæn	'leaving'
ízj	ìzjə-tæn	'being still'
b. ðCC noun (not VbIN)		
àŋɾ	àŋɾə-tæn	'palate'
	[Sg also áŋɾ]	
c. other (C)VCC nouns (accented)		
bəww	bəw-tæn	'monitor lizard' (<Son)
hóyy	hóy-tæn	'green sauce' (<Son)
líns	líns-tæn	'red dye'

d. other (C)VCC nouns (unaccented Sg, accented Pl)		
làz	láz-tæn	'famine'
kòkk	kók-tæn	'vagina'
yèll	yèllə-tæn (A-grm)	'grass'
t-ùff	t-ùffæ-t-en (A-grm)	'being inflated'
èff	èffæ-tæn (A-grm)	'shelter'

In (148.a), I take the ə as the surface output of stem-final underspecified deletable /l/. The verbs in question are of the shape -vCCv-, e.g. PerfP -òðha- 'fold'. It is much harder to establish a stem-final deletable V in noun stems, though at least historically there was probably a stem-final V in 'palate' (148.b), since a variant àŋɾɑ is recorded for Im dialect.

In the other cases in (148.c-d), with the possible exception of the A-grm forms with ə in the Pl, an underlying stem-final V seems unlikely. In these cases, however, the Pl has a marked penultimate accent, though the Sg has a default accent (which shifts onto a preceding preposition). This is seen by adding prepositions, e.g. dæɾ laz 'in the famine', Pl dæɾ láz-tæn 'in the famines' (not #dæɾ laz-tæn). In effect, these plurals are accented as though they had a V between stem and -tæn suffix, as heard audibly in the plurals of 'being inflated', 'palate', and 'grass'. Since no such V is audible, I have no choice but to mark the plural with the acute accent (láz-tæn, kók-tæn).

The plurals in (148.a) and that of 'palate' in (148.c) are dialectally variable. R ìðhi-tæn 'foldings' has a full i. Likewise, T-ka Pl ìjji-tæn 'stretchings to look' corresponds to R ìjji-tæn and A-grm ìggi-tæn. While only Im dialect has bisyllabic Sg àŋɾɑ 'palate', a few other dialects (A-grm, R) have Sg àŋɾ but Pl àŋɾɑ-tæn (K-area dialects have Pl àŋɾiw-en). For T-md I recorded Pl làz-tæn 'hungers' with default accent (hence dæɾ laz-tæn 'in ...').

C-final stems of more than one syllable that take -tæn rather than -æn are shown in (149). Most of them have final accent, and all lack vocalic prefixes (these are typical features of loanwords). The correlation with final accent is seen clearly in T-ka wəšil, Pl wəšil-tæn versus other dialects' wəšil, Pl wəšil-æn.

(149) Plural -tæn after Unprefixed C-final Monosyllable

singular	plural	gloss
a. final accent in Sg		
hægáy	hægáy-tæn (A-grm)	'harvest' (<Son)
	[hægəy, Pl hægəy-tæn (T-ka)]	
kukutáess	kukutás-tæn	'hoopoe (bird)'
kukætél	kukætél-tæn	'hoopoe (bird)'
æɾæbb	æɾæbbə-tæn (A-grm)	'mosquito net' (<Ar.)
ælkáss	ælkás-tæn	'drinking glass' (<Ar.)
	[Sg also ælkás]	

æłšib	æłšib-tæn	'pocket' (<Ar.)
	[also �łšibb, Pl �łšibb-�en]	
�elh�dd	�elh�d-t�en (T-ka)	'Sunday' (<Ar.)
	[Pl �elx�dd�-t�en (A-grm), �elx�dd�-t�en (K-d)]	
�lh�err	�lh�er-t�en	'fury' (<Ar.)
umma�fin	umma�fin-t�en	'tea gear' (<Ar.)
m�ersin	m�ersin-t�en	'machine' (<Fr.)
t�em�eyy	t�em�ey-t�en	'sieve' (<Fr.)
ew�enn	ew�enn�-t�en	'tree sp.'
wa�il	wa�il-t�en	'leopard' (T-ka)
x�er�b	x�er�b-t�en (R)	'marrow'
z�er�ww	z�er�w-t�en	'wild millet' (<Songhay)
z�ew�eyy	z�ew�ey-t�en	'tiger fish' (<Songhay)

b. nonfinal accent in Sg

�elma�k�er	�elma�k�er-t�en	'result' (<Ar.)
kumb�ter	kumb�ter-t�en	'potato' (<Fr.)
	[variant kumb�ter-�en]	
��f��d�en	��f��d�en-t�en	'firefly'

This final-syllable accent pattern is fairly minor, affecting a few stems that fit poorly into Tamashek plural morphology. Borrowed prefixless bisyllabic stems with first-syllable accent have unaugmented - en, like native stems of similar shape; an example is k b kub 'machete blade' (<Fr *coupe-coupe*), Pl k b kub- en. Regular nouns that begin with vocalic prefixes reliably take - en (MaPl) or -en (FePl). Contrast unprefixed b ww above with the regular prefixed noun  -b ww 'straw', Pl  -b ww- en (with - en rather than -t en).

Again note the final degemination before the suffixal t in (149.a), e.g. 'fury' and 'sieve'.

 -na 'Leptadenia bush' has a plural  -na-t en with a less common variant  -natt- en. The former can be taken as a regular affixal plural, but the latter looks like an ablaut plural of type  -CaCC- en. See (§4.1.2.26) for this and a similar plural for  -ja 'waterbag at well'.

4.1.1.7 C-final Sg with aw/iw extension before Pl suffix

Certain VbIN patterns, and a few other nouns, have a C-final singular, but extend the stem with ...aw- before MaPl suffix - en or FePl suffix -en. The a is reminiscent of the stem-final a in unsuffixed ablaut plurals, but it would be difficult to actually combine the two plural types. In several cases,   in the syllable preceding the a is syncopated. Examples in (150).

(150) Extra Stem-Final *a* Before Pl ...w-*æn* (Verbal Nouns)

singular	plural	gloss
a. verbal nouns		
α-dúbən	i-dùbnaw- <i>æn</i>	'marriage'
úðəf	ùðfaw- <i>æn</i>	'holding'
údəh	ùdhaw- <i>æn</i>	'pounding'
éðəs	èðsaw- <i>æn</i>	'sleep' (√ðs)
úrən	ùrnaw- <i>æn</i> (T-ka)	'ornaments'
	[Pl also úrn-an]	
újəš	ùjšaw- <i>æn</i>	'entry'
úkəs	ùksaw- <i>æn</i>	'removal'
úləj	ùljaw- <i>æn</i>	'turning'
úləm	ùlmaw- <i>æn</i>	'tying'
α-s-íkəl	i-s-ìklaw- <i>æn</i> (T-ka)	'traveling'
	[Pl also i-s-ìkil- <i>æn</i> (A-grm)]	
α-s-útər	i-s-ùtraw- <i>æn</i> (T-ka)	'sending to seek'
	[Pl also i-s-ùtir- <i>æn</i> (A-grm)]	
úzəj	ùzjaw- <i>æn</i> (T-ka)	'pulling'
	[Pl ùzəg- <i>æn</i> (A-grm)]	
b. common nouns		
údi	ùdyaw- <i>æn</i>	'butter'
ídəm	ìdmaw- <i>æn</i>	'face'
èff	èffaw- <i>æn</i>	'shelter'
	[Pl also èffæ-tæn (A-grm)]	
gòrr	gòrraw- <i>æn</i>	'anus'
é-ɾæff	i-ɾæfaw- <i>æn</i>	'head'
é-jorh	i-jòrhaw- <i>æn</i>	'castrated animal'
æ-jorš	i-jòršaw- <i>æn</i>	'windpipe'
α-júss	i-jùssaw- <i>æn</i>	'south'
	[Pl rare]	
úlh	ùlhaw- <i>æn</i>	'heart'
é-læm	i-læmaw- <i>æn</i>	'skin'
íləs	ìlsaw- <i>æn</i>	'tongue'
é-mm	ì-maw- <i>æn</i>	'mouth'
	[Pl also ì-mmaw- <i>æn</i>]	
é-mitt	i-mìttaw- <i>æn</i>	'tear(s)'
æ-róri	i-ròryaw- <i>æn</i>	'back'
ísəkk	ìskaw- <i>æn</i>	'horn'
ísəm	ìsmaw- <i>æn</i>	'name'
æ-siŋk	i-siŋkaw- <i>æn</i>	'cooked grain'
á-šərr	ì-šraw- <i>æn</i>	'side, half'

kòkk	kòkkaw-æn	'vagina'
	[Pl also kók-tæn]	
t-ètt	t-èttaw-en	'eye'
t-èzz	t-èzzaw-en	'anus'
á-xx	ì-xxaw-æn	'milk'
úzəf	ùzfaw-æn	'nakedness'
t-ezz	t-èzzaw-en (A-grm)	'anus'

For the R speaker, some cases of ...iw- with extra i were recorded in a feminine VbIN formation that also shows Stem-Initial Syncope (151).

(151) Extra Stem-Final i Before Pl ...w-en (Verbal Nouns)

singular	plural	gloss
t-ɑ-m-ə̀d̪in-t	t-i-m-ɖ̀niw-en	'grazing'
t-ɑ-m-ə̀zil-t	t-i-m-ɖ̀liw-en	'payment'

4.1.1.8 Gemination in singular or suffixal plural

Feminine nouns ending in a single consonant C plus FeSg -t in the singular sometimes geminate the C in the plural. In these cases, it is possible that the geminate is lexical, and is disguised in the Sg by a low-level phonological rule. Examples in (152).

(152) Gemination in Feminine Suffixal Plural but not Singular

	singular	plural	gloss
a.	t-ə̀-boy-t	t-ĩ-boyy-en	'flower (of tree)'
	t-ə̀-ɖuf-t	t-ĩ-ɖuff-en	'wool'
	t-ə̀-sæy-t	t-ĩ-sæyy-en	'winnowing van'
b.	t-ə̀-haw-t	t-ĩ-haww-en	'chameleon'
	t-ə̀-jar-t	t-ĩ-jarr-en	'Maerua or Boscia tree'
	t-ə̀-mar-t	t-ĩ-marr-en	'beard'
c.	t-ə̀-lom-t	t-ĩ-lomm-en (T-ka)	'bran'
		[Pl also t-ĩ-lamm-en A-grm]	

Such plurals tend to be dialectally unstable, and may co-occur with ungeminated variants (t-ĩ-boy-en and t-ĩ-ɖuf-en are attested). A reasonable analysis of the alternations shown in (152) is that the geminate is lexical, and

FeSg suffix *-t* forces **Degemination** of the preceding geminate. Note that the degeminated C is from the set {y w r m f}, i.e. sonorants and one fricative.

There are also some masculine nouns that show (at least dialectally) a simple stem-final C in the Sg that is geminated in the Pl. However, in these cases there is also a stem-medial vocalic change, from high V to *a*, so the Pl is of type *ǐ-CaPP-æn* (153).

(153) Gemination in Masculine Suffixal Plural (-CaPP-) but not Singular

singular	plural	gloss
ǎ-fud (T-ka)	i-fadd-æn [Sg also ǎ-fudd (T-md), æ-fudd (widespread)]	'knee'
ǎ-fus (A-grm)	ǐ-fass-æn [Sg also ǎ-fuss, æ-fuss]	'hand'
ǎ-řil	ǐ-řall-æn	'right hand'
ǎ-mud	ǐ-madd-æn [Pl less often ǐ-mad-æn]	'prayer'
ǎ-řum	ǐ-řamm-æn	'Ramadan'

These *ǐ-CaPP-æn* plurals are a subset of the fuller set described in §4.1.2.9, below, where vocalic changes are reviewed. There is a **templatic look** to these plurals.

Looking back at the feminine cases (152), the Pl type *t-ǐ-CaPP-en* in (152.b) might now be seen in a different light. Since the Sg in those cases already has the *a*, the analysis whereby Sg */-CaPP-t/* with FeSg suffix simplifies to */-CaP-t/* is still viable, but it might also be possible to take *t-ǐ-CaPP-en* as the feminine equivalent of semi-templatic *ǐ-CaPP-æn* in (153), in which case the Sg type *t-ǎ-CaC-t* exemplified by *t-ǎ-haw-t* 'chameleon' need not have an underlying geminate. In (152.c), I noted a feminine case where a Sg/Pl vocalic change did occur (in the A-grm variant), giving further credence to the connection between the feminines in (152.b-c) and the masculines in (153). But note that the masculines may end in an obstruent *d*, while the feminines all end in sonorants or fricatives.

An isolated stem-final alternation in a longer noun stem is given in (154).

(154) Bisyllabic Stem with Final Simple/Geminate Alternation

singular	plural	gloss
e-řærdeš	i-řərdəšš-an [much dialectal variation; A-grm Pl accented i-řərdəšš-an]	'rib'

In (155), the singulars end in a geminate that corresponds to a plain C in the plural. There is some dialectal variation.

(155) Gemination in Singular but not Suffixal Plural

	singular	plural	gloss
a.	e-ḍǣww	i-ḍǣw-an	'gerbil'
		[Sg also e-ḍǣw]	
	é-fæff	i-fǣf-an	'teat'
		[Sg also é-fǣf, Pl also i-fǣff-an]	
	e-hǣtt	i-hǣt-an	'Songhay man'
	e-jǣrr	i-jǣr-an	'frog'
b.	é-ræss	i-rǣs-an	'bone'
	é-zæbb	i-zǣb-an	'large earring'
c.	é-ræff	i-rǣfaw-æn	'head'
		[Sg also é-rǣf]	
	é-mm	ǐ-maw-æn	'mouth'
		[Pl also ǐ-mmaw-æn]	
	ísækk	ǐskaw-æn	'horn'
d.	ǎ-sibb	ǐ-sib-æn	'wild fonio'

(155.a-b), which differ only in the accent of the Sg, show MaPl surface suffix allomorph *-an*, which (because the medial *æ* in the Pl is not compatible with Pl ablaut) should be due to VV-Contraction (39) (§4.1.2.13-14). The plurals are therefore, disregarding accents, underlying /i-CæCV-æn/ with some vowel V. In the case of 'Songhay man' (155.a), note the feminine counterpart *t-e-hüt-i-t-t* 'Songhay woman', Pl *t-i-hüt-a-t-en*. For 'large earring' (155.b) compare *t-ǎ-zæbb-o-t-t* 'ring (on finger)'. Assuming VV-Contraction also explains the surface penultimate (underlying antepenultimate) accent in the plurals in (152.b). However, the Sg/Pl patterns in (155.a-b) are not productive, and there is considerable dialectal variation.

In (155.c) we have a somewhat similar alternation, with a final geminate in the Sg, and an extension *aw-* after ungeminated C in the Pl (for this extension see §4.1.2.7, above). (155.d) is an isolated case; for many speakers only the Pl is in use.

For another stem not shown in (155), 'tail or mane hair', I recorded the Sg as *ǎ-šaw* or (more often) *ǎ-šaww*, Pl *ǐ-šagg-æn* or *ǐ-šaww-æn*.

I also omit from (155) the masculine type *ǎ-hǣjjar* 'acacia pod', Pl *ǐ-hǣjr-an*, and the two feminine types seen in *t-ǎ-fækka* 'body', Pl *t-ǐ-fækw-en*, and *t-ǎ-səlluf-t* 'tick', Pl *t-ǐ-səlf-en*. These mixed ablaut-suffixal plurals appear to have a templatic Pl shape *-CəCC-*. This template entails simplification (degemination) of the medial geminate, and in cases like 'body' it seems to force insertion of a nonlexical *w* to fill the last C position. See §4.1.2.14 for fuller lists and discussion.

Additional simple/geminated alternations occur in certain types of suffixless ablaut plurals. Geminataion of a medial C is observed in cases like t-ǎ-ftǣq-q 'laying out', Pl t-i-fǣttǣ (§4.1.2.23). Geminataion of a final C occurs in cases like t-e-fǣtel-t 'lamp', Pl t-i-ftǣll (§4.1.2.24).

4.1.1.9 Stem-internal vowel alternations

A few stems show alternations between a in the Pl and another vowel from the set {ǣ, ə, o, u, i} in the Sg.

In the first set of examples (156), the Pl is ǐ-CaPP-ǣn, corresponding to a Sg of the type ǘ-CuC or geminated ǘ-CuPP with short-voweled nominal prefix and medial full vowel {i e o u}. The ones with Sg ǘ-CuC were just mentioned in §4.1.2.8, where plain/geminate alternations were discussed.

(156) Pl ǐ-CaPP-ǣn and ǐ-CaC-ǣn

singular	plural	gloss
a. Pl ǐ-CaPP-ǣn for Sg ǘ-CuPP		
ǣ-bozz	ǐ-bazz-ǣn	'emaciated animal'
ǣ-fudd, ǣ-fud	ǐ-fadd-ǣn	'knee'
ǣ-gezz	ǐ-gazz-ǣn (A-grm)	'cheek'
	[T: ǣ-jazz, Pl ǐ-jazz-ǣn]	
ǣ-korr	ǐ-karr-ǣn	'mouse'
ǣ-morr	ǐ-marr-ǣn (A-grm)	'arrow'
ǣ-rojj	ǐ-rajj-ǣn	'wilderness'
ǣ-suff	ǐ-saff-ǣn (A-grm)	'wilderness'
	[T: Sg ǣ-soff, Pl ǐ-soff-ǣn]	
ǣ-sorr	ǐ-sarr-ǣn	'gazelle tendon'
ǣ-zumm	ǐ-zamm-ǣn	'Ramadan'
b. Pl ǐ-CaPP-ǣn for Sg ǘ-CuP		
ǣ-ryl	ǐ-ryll-ǣn	'right hand'
ǣ-fud (T-ka)	i-fadd-ǣn	'knee'
	[Sg also ǣ-fudd (T-md), ǣ-fudd (widespread)]	
ǣ-fus (A-grm)	ǐ-fass-ǣn	'hand'
	[Sg also ǣ-fuss, ǣ-fuss]	
ǣ-ryl	ǐ-ryll-ǣn	'right hand'
ǣ-kos	ǐ-kass-ǣn	'container'
t-ǣ-lom-t	t-ǐ-lamm-en (A-grm)	'bran'
	[Pl also t-ǐ-lomm-en T-ka]	
ǣ-mud	ǐ-madd-ǣn	'prayer'
	[Pl less often ǐ-mad-ǣn]	
ǣ-zum	ǐ-zamm-ǣn	'Ramadan'

- c. Pl \ddot{i} -CaC- \ddot{a} en for Sg \acute{v} -CVC
 \acute{a} - \acute{d} er \ddot{i} - \acute{d} ar- \ddot{a} en 'foot'
 \acute{a} -lil \ddot{i} -lil- \ddot{a} en 'baggage'
- d. Pl \ddot{i} -CCaP- \ddot{a} en for Sg \acute{u} -CCvC
 \acute{a} -dmær \ddot{i} -dmær- \ddot{a} en '(half of) chest'
[Pl also \grave{a} dmær- \ddot{a} en]

All of the stems in (156) have stem-medial α in the Pl. One could generate the plural forms by recognizing a vocalic melody <L> for the stem proper. For the few cases in (156.c-d) where the Sg has a short V, this <L> must be supplemented by an ablaut component $\bar{\chi}$ that attaches to the same medial V. One could achieve the same effect by recognizing an ablaut component α that simply converts the relevant V to α .

There is also another possibility. The fairly common pattern \ddot{i} -CaPP- \ddot{a} en in (156.a-b) corresponds to a fairly wide range of singulars, which have any of several V's and may or may not geminate the final C. This comes close to being a plural **template** of the sort more familiar in Arabic. However, the putative \ddot{i} -CaPP- \ddot{a} en with its geminate and its single stem-initial C would not work for the minority patterns in (156.c-d), which have different consonantal structures.

Another recurrent pattern is MaPl \grave{a} CCaC- \ddot{a} en (FePl counterpart t- \grave{a} CCaC-en). In this type, the corresponding singulars also have a rigid shape, \acute{e} CC \acute{a} C (157), so a templatic analysis is not needed. The shift of stem-initial e to α is discussed in §4.1.2.10, below.

(157) Pl \grave{a} CCaC- \ddot{a} en

singular	plural	gloss
\acute{e} ndæl	\grave{a} ndal- \ddot{a} en	'awl'
\acute{e} jhæn	\grave{a} jhan- \ddot{a} en (T-ka)	'band of raiders'
\acute{e} jmæš	\grave{a} jmaš- \ddot{a} en (T-ka)	'thumb'
	[Pl also \grave{e} gmæš- \ddot{a} en (A-grm)]	
\acute{e} mzæd	\grave{a} mzad- \ddot{a} en	'hair'
t- \acute{e} ndæl-t	t- \grave{a} ndal-en	'branding iron'
\acute{e} nhær	\grave{a} nhær- \ddot{a} en	'eyebrow'
	[Sg also \acute{a} nhær etc.]	
\acute{e} skær	\grave{a} skar- \ddot{a} en (T-ka)	'fingernail'
	[Pl also \grave{e} skær- \ddot{a} en (A-grm)]	
\acute{e} šwæl	\grave{a} šwal- \ddot{a} en	'mark'

There are two stems, which happen to share the Sg shape e-PærPær for some consonant P, that have a plural i-PærPar- \ddot{a} en with both stem V's lengthened (158).

(158) Pl i-CàCCaC-æn

singular	plural	gloss
e-wærwær	i-wàrwar-æn [variant i-wærwær-æn]	'gum acacia tree'
e-rærvær	i-ràrvor-æn	'regg (flat area)'

4.1.1.10 First-stem-syllable Sg/Pl vocalic alternations (e/a, etc.)

While I make a basic distinction between suffixal and ablaut plurals, there are a number of basically suffixal plurals that also involve some modification of the stem that falls short of true ablaut. I begin with cases where the stem undergoes a slight change in the V of the first and/or second syllable (most of the relevant stems are bisyllabic).

There are several types of shift in stem-initial V's in nouns (true stem segments, not vocalic prefixes), from the unmarked Sg to the suffixal Pl (with MaPl -æn or FePl -en). The V-initial stems include some feminines with Fe prefix t- preceding the stem-initial V. The most common shift is stem-initial e to a. There are a few cases of stem-initial a to e and of i to a. The data are given in (159).

(159) Stem-Initial Vowel Shift in Sg/Pl Pairs

singular	plural	gloss
a. e to a (stem-initial)		
éfæḍ	àfæḍ-æn (T-ka) [Pl also efḍ-an]	'thousand'
éjhæn	àjhan-æn (T-ka) [Pl also èghan-æn A-grm]	'band of raiders'
éjmæš	àjmaš-æn	'thumb'
ékrar	àkrar-æn [Pl also èkrar-æn]	'ram'
éndæl	àndal-æn	'branding iron'
énhær	ànhar-æn [Sg also ánhær etc.]	'eyebrow'
éšwæl	àšwal-æn	'mark'
émzæḍ	àmzad-æn	'hair'
t-èrse	t-àrsiw-en	'sheep or goat'
t-èkle	t-àkliw-en	'treading'
t-èmḍe	t-àmḍiw-en	'taste'
t-ènde	t-àndiw-en	'mortar'
t-èšne	t-àšniw-en	'character'

t-èje	t-àjw-en (T-ka)	‘storage area’
t-èle	t-àliw-en	‘shade’
t-èze	t-àziw-en (A-grm)	‘crotch’
b. a to e (stem-initial)		
ákli	èkl-an	‘slave, Bella’
átər	ètr-an	‘star’
c. i to a (stem-initial)		
t-ïde	t-àdiw-en	‘sweat’

Since the stem-initial V in all of these examples is already long, the only change in this V is in its quality features. Formally, we could account for them by assuming that an ablaut component specifying the relevant quality is associated to the first V in the stem (disregarding Fe prefix t- if present). For the nouns in (159.a, c) this component could be represented as α -1, and for the few cases in (159.b) it could be represented as ϵ -1, the “1” in both cases indicating the first stem syllable.

There are a number of cases where the shift e to a (i.e. the ablaut component α -1 applying to lexical e) occurs with a C-initial rather than V-initial stem. The known examples are feminines with Fe prefix t- but no FeSg suffix, unless final e is taken to be a Fe suffix (160).

(160) Vowel Shift e to a in Initial CV Syllable in Sg/Pl Pairs

singular	plural	gloss
t-è-fede	t-i-fàdiw-en	‘cuts on skin’ (A-grm)
t-è-nere	t-i-nàriw-en	‘desert expanse’

The vocalic shifts in the first syllables in (159-60) are accompanied in many cases by another vocalic shift in the second syllable. The stems in (159-60) that show this will therefore recur in later sections.

Rather more common than the full-V alternations in (160) are alternations of short V in the Sg with full a in the Pl, before a CC cluster. The short V is normally æ (161.a), though there is a less common pattern where the Sg has ə at least as a variant (161.b). As in (160), the cases in (161) are feminines with Fe prefix t- but no Fe suffix (unless final e or a is taken to be a Fe suffix), and the basic t- v -CvCCe Sg shape in (161) is similar in accent and in syllabic structure to the t- v -CeCe Sg shape in (160).

(161) Stem-Initial Vowel Shift in Sg/Pl Pairs

singular	plural	gloss
a. æ to ɑ (after stem-initial C)		
t-è-dæyne	t-i-dǎyniw-en	'Bauhinea tree'
t-è-fæŋɣe	t-i-fǎŋɣiw-en	'infection'
t-è-hæyne	t-i-hǎyniw-en	'date (fruit)'
t-è-læmse	t-i-lǎmsiw-en	'plain(s)'
t-è-tæŋɣe	t-i-tǎŋɣiw-en (K-f)	'date pit'
t-à-ɣæɾha	t-i-ɣǎrhiw-en	'manner, stance'
t-à-nædra	t-i-nǎdriw-en	'impossible feat'
b. ə to ɑ (after stem-initial C)		
t-à-nəbre	t-i-nǎbriw-en	'night pasturing'
	[Sg also t-à-nəbrɑ]	
t-ə-səmɖe	t-i-sǎmɖiw-en	'coldness'

4.1.1.11 Stem-final vowel shifts before ...w- and Pl suffix

As noted in §4.1.2.6, w or t commonly appears between a stem-final full vowel and the vowel of MaPl -æn or FePl -en. The t cases generally involve no change in the stem, and I take it to be a quasi-epenthetic suffixal element. On the other hand, the w cases quite often do show changes in the preceding vowel, and the w behaves more like a stem-final than a suffix-initial segment. A generous sample of the w cases is displayed in (162). The shifts e to i, ɑ to i, and e to ɑ , are all common. Leaving aside the prefixes and suffixes, the stems in question are nearly always bisyllabic.

(162) Stem-Final Vowel Shifts Before Epenthetic w

singular	plural	gloss
a. e to i		
t-ide	t-ǎdiw-en	'sweat'
t-ǎdre	t-ǎdriw-en	'co-wife'
t-èkle	t-ǎkliw-en	'going'
t-èmɖe	t-ǎmɖiw-en	'taste'
t-ènde	t-ǎndiw-en	'mortar'
t-èrše	t-èršiw-en	'wealth'
	[Pl also t-ǎršiw-en]	
t-èšne	t-ǎšniw-en	'character'
	[Sg also t-èšnæy (A-grm)]	
t-éšše	t-ǎššiw-en	'grass'

t-èze	t-àziw-en (A-grm)	'crotch'
t-àkše	t-àkšiw-en	'conversation'
t-à-ləqqe	t-i-ləqqiw-en	'pauper'
t-è-nere	t-i-nàriw-en	'desert expanse'
t-è-balle	t-i-bàlliw-en	'excrement pellet'
t-è-barde	t-i-bàrdiw-en	'quilt'
t-è-ɣalje	t-i-ɣàljiw-en	'Egyptian vulture'
t-è-hayne	t-i-hàyniw-en	'gums'
t-è-karđe	t-i-kàrđiw-en	'amulet, letter'
t-è-mašše	t-i-màššiw-en	'pebble'
t-è-dæyne	t-i-dàyniw-en	'Bauhinea tree'
t-è-fæŋɣe	t-i-fæŋɣiw-en	'infection'
t-è-hæyne	t-i-hàyniw-en	'date (fruit)'
t-è-læmse	t-i-làmsiw-en	'plain(s)'
t-à-nəbre	t-i-nàbriw-en	'pasturing at night'

[Sg also t-à-nəbra]

b. a to i

t-ába	t-àbiw-en	'tobacco'
t-àlɣa	t-àlɣiw-en	'private matter'
t-àsna	t-àsniw-en	'outer surface'
t-àzɣa	t-àzɣiw-en	'cheek'
t-àrfa	t-àrfiw-en	'entrails'
t-àɣma	t-àɣmiw-en	'thigh'
t-è-baɖa	t-i-bàɖiw-en	'running'
t-è-daɣa	t-i-dàɣiw-en	'running after'
t-è-fala	t-i-fàliw-en	'makeshift hut'
t-è-kana	t-i-kàniw-en	'burrgrass grains'
t-è-wafa	t-i-wàfiw-en	'fright'
t-è-wana	t-i-wàniw-en (A-grm)	'forked pole'
t-adára	t-adàriw-en	'tea box'

[Sg also t-æ-dára, Pl also t-i-dàriw-en]

t-à-jaša	t-i-jàšiw-en	'pit (hole)'
t-à-hæšša	t-i-hæššiw-en	'ripe acacia pod'
t-à-ɣærha	t-i-ɣàrhiw-en	'manner, stance'

c. e to a

t-ùhe	t-ùhaw-en	'hump'
t-ùkse	t-ùksaw-en	'heat'
t-ĩmme	t-ĩmmaw-en	'forehead'
t-ĩnse	t-ĩnsaw-en	'toe'
t-ĩwse	t-ĩwsaw-en	'tax'
t-à-fore	t-i-fòraw-en	'skin sore'
t-à-huđe	t-i-hùɖaw-en	'oath'
t-à-hure	t-i-hùraw-en	'activity'

t-à-juhe	t-i-jùhaw-en	'witness'
t-à-kute	t-i-kùtaw-en	'alms'
t-à-mätte	t-i-məttaw-en	'crowd'
t-à-wække	t-i-wəkkaw-en	'earthworm'
t-à-yätte	t-i-yəttaw-en	'mind'
	[Pl also t-ïtw-en]	
t-à-zəmme	t-i-zəmmaw-en	'grass sp.'
t-è-gæše	t-i-gæšaw-en (A-grm)	'lower back'
	[Sg also t-è-jæše (T-ka); Pl also t-ï-gəša (A-grm)]	
è-næle	i-nælaw-æn (A-grm)	'millet'
	[Pl also i-næle-tæn (T-ka)]	
t-ə-ɾule	t-i-ɾùlaw-en	'brownness' ($\sqrt{\text{ɾwl}}$)
t-ə-šure	t-i-šùɾaw-en	'redness' ($\sqrt{\text{šwɾ}}$)
t-ə-zude	t-i-zùdaw-en	'sweetness'
t-ə-zune	t-i-zùnaw-en	'half'
t-ə-fərre	t-i-fərraw-en	'empty lot'

d. o to a

t-əkmo	t-əkmaw-en	'illness'
	[Pl also t-əkma-t-en]	

e. a to e [variant of i]

t-ækma	t-æk mew-en	'painful sore' (R)
	[Pl also t-ækmiw-en]	

For t-è-hædde 'reach', the usual Pl is t-i-hádd (for this type see §4.1.2.24, below). For the A-grm speaker I also recorded t-i-həddaw-en, which belongs in (162.c), except for the ablaut-like shift of Sg æ to Pl ə. This shift was not confirmed by other speakers and seems to be parasitic on the genuine ablaut shift in the widespread and common Pl variant t-i-hádd.

Exceptions with no vocalic change before FePl ...w-en (or MaPl ...w-æn) are relatively few in number. They involve stable stem-final a or occasionally e. See §4.1.2.6, above, for the known examples.

A shift of i to a like that in (162.b) above also occurs in some stems before FePl -t-en. Unshifted forms are also attested for some of these stems. The shifted examples known to me are in (163).

(163) Stem-Final i to a before FePl -t-en

singular	plural	gloss
t-a-hæɾi-t-t	t-i-hæɾa-t-en (A-grm)	'oath'
t-e-hæɾri-t-t	t-i-hærra-t-en (A-grm)	'lioness'
	[Pl also t-i-hærrri-t-en]	
t-e-kæbbi-t-t	t-i-kæbba-t-en	'date pit'

t-e-lælli-t-t	t-i-lælla-t-en	'noble woman'
	[Pl also t-i-lælli-t-en]	
t-e-mænni-t-t	t-i-mænna-t-en	'carp (fish)'
t-èzzi-t-t	t-èzza-t-en	'fly (insect)' (√š)
t-e-m-æs-æssækni-t-t	t-i-m-æs-æssækna-t-en	'braiding woman'
t-ä-wse-t-t	t-ĩ-wsa-t-en	'ethnic group'

4.1.1.12 Stem-Final V-Lengthening in plural verbal nouns

Verbal nouns of prefixally derived (e.g. causative) verbs, and of heavy underived verbs, involve a vocalic prefix (Sg *a-*, Pl *i-*), and <H> melody throughout the stem (§8.6). Of interest here is the fact that the corresponding plural, though basically suffixal, also involves lengthening of a schwa in the final syllable to *i*. Some examples are in (164).

(164) V-Lengthening in Final Syllable (mostly Plural Verbal Noun)

singular	plural	gloss
a. underived VbIN with <i>a-</i> prefix		
<i>a-biwæs</i>	<i>i-biwis-æn</i>	'wound'
<i>a-šiwəj</i>	<i>i-šiwij-æn</i>	'gesturing'
<i>a-dərdər</i>	<i>i-dərdir-æn</i>	'being insistent'
<i>a-kərrəw</i>	<i>i-kərriw-æn</i>	'drinking again'
<i>a-məʁrəs</i>	<i>i-məʁris-æn</i> (T-ka)	'feeling bad'
	[also <i>i-məʁras</i>]	
<i>a-ləwləw</i>	<i>i-ləwliw-æn</i>	'towering'
<i>a-škəḍkəḍ</i>	<i>i-škəḍkiḍ-æn</i>	'trembling'
b. mediopassive VbIN		
<i>a-n-iləs</i>	<i>i-n-ilis-æn</i>	'being repeated'
<i>a-n-íməs</i>	<i>i-n-imis-æn</i>	'being tested'
c. reciprocal VbIN		
<i>a-nm-ihəz</i>	<i>i-nm-ihiz-æn</i>	'approach each other'
d. causative VbIN		
<i>a-s-ədəw</i>	<i>i-s-ədiw-æn</i> (T-ka)	'organizing'
<i>a-s-ətəj</i>	<i>i-s-ətij-æn</i>	'street-selling'
<i>a-s-əswəd</i>	<i>i-s-əswid-æn</i> (A-grm)	'duping'
<i>a-s-írəd</i>	<i>i-s-irid-æn</i>	'washing'
<i>a-š-inšər</i>	<i>i-š-inšir-æn</i>	'blowing nose'
<i>a-s-əlləwləw</i>	<i>i-s-əlləwliw-æn</i>	'raving'
<i>a-s-əddərhən</i>	<i>i-s-əddərhin-æn</i>	'desiring'

e. minor types		
e-méɾwəs	i-mèɾwis-æn (A-grm)	'sickly person'
	[Sg e-méɾwas, Pl i-mèɾwas-æn (T-ka)]	
ɑ-ləggəs	i-ləggus-æn (A-grm)	'brother-in-law'
	[i-ləws-an (T-ka)]	
mæjɾəd	məjɾid-æn	'speech, speaking'

Of the "minor types" in (164.e), only 'speech' occurs in my Timbuktu-area data in the forms shown. The Pl məjɾid-æn suggests VblN status, but both Sg and Pl lack vocalic prefixes and the Sg/Pl alternations seems isolated and irregular.

The VblN forms shown in (164.a-d), with ə in the final Sg syllable, have variants with ɑ (§8.6.1.4). The latter variant retains its ɑ in the Pl, as in Sg ɑ-ləwlaw 'towering', Pl i-ləwlaw-æn.

Formally, we can account for the lengthening in (164) as the effect of an ablaut component $\bar{\chi}$ -f (i.e., lengthening of stem-final V). The combination of the length component and the <H> melody applying to the whole stem is i rather than u in this case.

(165) V-Lengthening (Verbal Nouns)

In VblN's of prefixally derived verbs, and of heavy underived stems, if the Sg ends in ...CəC, the suffixal Pl includes an ablaut component $\bar{\chi}$ -f whose effect is to lengthen a short V (always schwa) to a full V in the final stem syllable. Applied to ə (i.e. short vowel with <H> melody), $\bar{\chi}$ -f produces i (except as noted below).

The lengthening applies only to the simple form of the VblN with schwa in the final Sg syllable, not to the variant forms with ɑ replacing this schwa in both Sg and Pl: Sg ɑ-ləwlaw 'towering', Pl i-ləwlaw-æn, etc. On occasion I have elicited Sg/Pl pairs with schwa in the Sg and ɑ in the Pl, particularly from my A-grm informant, who gave e.g. Sg ɑ-š-əkšəl 'shortening' (causative VblN) and Pl ɑ-š-əkšal-æn. Perhaps for some speakers the ɑ is more common in the Pl than in the Sg, the effect being at least the appearance of a morphological rule lengthening ə to ɑ. However, my impression is that these "pairs" may have involved mixing of the simple and ɑ versions of the (Sg and Pl) VblN's.

When the verb stem contains a medial u, the features [+rounded] and [+back] spread from it to the lengthened V of the stem-final V of the Pl VblN, resulting in another u instead of the expected i. This works for T-ka and most other dialects investigated. However, the A-grm dialect fails to apply u-Spreading, and therefore allows the medial u and the final-syllable i to co-exist. Some examples from T-ka area are in (166).

(166) u-Spreading in Plural Verbal Nouns

singular	plural	gloss
α-hrúhəɾ	i-hrùhuɾ-æn	'migration'
α-múɾəd	i-mùrud-æn (T-ka)	'crawling'
	[P also i-mùrid-æn (A-grm)]	
α-s-údəm	i-sùdum-æn (T-ka)	'last drop'
	[Pl also i-sùdim-æn (A-grm)]	
α-s-əddərúɾəm	i-s-əddərùrum-æn	'making liquid run'
α-s-əkkəlúləf	i-s-əkkəlùluf-æn (T-ka)	'stroking'
	[Pl also i-s-əkkəlùlif-æn (A-grm)]	
α-šmúməɾ	i-šmùmux-æn	'dragging self'
α-šnúnəj	i-šnùnuj-æn	'walking softly'

This u-Spreading also occurs in some paradigmatic forms of inflectable verb stems (§3.4.9).

For verbs whose inflectable stems show alternations of the type PerfP -əCuC- and imperfective -ùCuC- (§7.3.1.10), the causative VblN may take the form α-s-úCəC (Sg), but i-s-ìCuC-æn (Pl) in Timbuktu-area dialects. However, informants showed some hesitation about the Pl vocalism (variants of the type i-s-ùCuC-æn were also given).

(167) Plural Verbal Noun with i...u Sequence

singular	plural	gloss
α-s-úḍəb	i-s-ìḍub-æn (T-ka)	'making drip'
	[Pl also i-s-ùḍib-æn (A-grm)]	

4.1.1.13 MaPl -an due to clear VV-Contraction

For nouns there is variation, depending on the stem, between MaPl suffixal allomorphs -æn and -an. The feminine counterparts have uniform -en.

Since -æn is the most basic MaPl suffix (§4.1.2.2), I interpret -an as a phonological modification of -æn. This approach bears fruit, but it turns out that there are two quite different ways to derive -an, each appropriate to a different set of nouns

(168) Derivation of -an from -æn

- a. /...Cu-æn/ contracts to ...C-an (see VV-Contraction (39.a)).
- b. -æn plus ablaut component $\bar{\chi}$ -f (i.e. vowel length) [§4.1.2.14, below]

The clear cases of ablaut derivation are those that audibly show the regular Pl ablaut melody <H L>, i.e., with high vowels {u ə i} in the stem syllables preceding the suffixal -an (which expresses the L component of the melody). “Audibly” in the above formulation presupposes that the H component of the melody has actually changed a mid-height or low V in the Sg; if the Sg already has high V’s in the relevant syllables, the application of a Pl melody may be unprovable.

By contrast, -an derived by VV-Contraction (39) should have no effect on the preceding syllables of the stem. However, identifying contraction cases is made difficult by the fact that the original stem-final *V has disappeared in many cases even from the unsuffixed Sg form.

I begin with the clearest cases of -an derived by VV-Contraction (39.a), namely, those where a stem-final V is indeed audible in the Sg, and where no ablaut change occurs in the stem going from Sg to Pl (169).

(169) MaPl -an Due to Contraction of /-æn/ with Stem-Final Vowel

singular	plural	gloss
a. Sg and Pl have penultimate accent		
e-dæhi	i-dæh-an	‘sand’
e-hæxi [A-grm]	i-hæx-an [A-grm]	‘young bull’
	[elsewhere Sg è-hæxe, Pl i-hæxw-an]	
e-kæši	i-kæš-an (A-grm)	‘speckled one’
e-sæli	i-sæl-an	‘news’
	[Pl in all dialects; Sg used in A-grm but not in T-ka]	
e-tæri	i-tær-an	‘inherited trait’
əzzəmi	əzzəm-an (A-grm)	‘strip of hide’ (√zmy)
b. Sg has default antepenultimate accent, Pl has shifted penultimate accent		
à-ræba	i-ræb-an (A-grm)	‘bridle’
à-kæsa	i-kæs-an	‘fresh vegetation’
à-læða	i-læð-an	‘fly (insect)’
à-wæra	i-wær-an	‘baby camel’
æ-bada	i-bád-an (A-grm)	‘bosom’
	[Sg also à-bæda (T-ka)]	
è-biwa	i-bíw-an	‘animal pen’
æ-rora	i-rór-an	‘call to prayer’
æ-rata	i-rát-an	‘crocodile’
	[Pl also ĩ-ruta (T-ka)]	
æ-hara	i-hár-an	‘saltlick’
æ-jola	i-jól-an	‘step-son’
æ-koka	i-kók-an	‘dourm-palm nut’
æ-loba	i-lób-an	‘arc-ed pole’

æ-lata	i-lát-an	'midriff'
æ-liwa	i-líw-an (A-grm)	'millet porridge'
æ-maka	i-mák-an	'castrated bull'
æ-saka	i-sák-an	'mount camel'
æ-danda	i-dánd-an	'dung pile'
æ-falka	i-fálk-an	'hockey stick'
æ-jamba	i-jámb-an	'hippo'
æ-saqqá	i-sáqq-an	'grass sp.'
æ-salwa	i-sálw-an	'brousse tigrée'
æ-sanna	i-sánn-an	'Maytenus tree'
æ-zarma	i-zárm-an (A-grm)	'Zarma person'
	[T-ka æ-zorma, Pl i-zórm-an]	
a-h ^y ægæla	i-h ^y ægæl-an (K-f)	'crest of rooster' (√šgl)
a-mæljæja	i-mæljæj-an	'Aerva bush'
a-gæljæŋka	i-gæljæŋk-an (A-grm)	'head rag'
a-ɾæljæbba	i-ɾæljæbb-an	'large tom-tom'
a-jæræyya	i-jæræyy-an (T-ka)	'skink'
	[i-gæræyy-an A-grm]	
a-kərəmma	i-kəróm-an (A-grm)	'piece'
a-læbæjja	i-læbæjj-an	'fine meal'
a-læmmæya	i-læmmæy-an (A-grm)	'colon'
a-ræræŋŋa	i-ræræŋŋ-an (A-grm)	'zorilla (fox)'

c. Sg and Pl with default antepenultimate accent (rare)

à-ləggi	ì-ləgg-an (T-md)	'plant sp.'
	[Pl elsewhere i-ləggi-tæn]	
à-læššo	ì-læšš-an	'black turban cloth'
	[verified for T-ka, T-md, and K-d, no other Pl recorded]	
a-fə̀zə̀zə̀	i-fə̀zə̀zə̀-an (A-grm, Gao)	'ratel (mammal)'
	[elsewhere (with k) Sg a-kə̀zə̀zə̀, Pl i-kə̀zə̀zə̀-an]	

In (169.a), the Sg already has marked penultimate accent (which is then carried over in the Pl). This type is rare in my Timbuktu-area data though somewhat more common in A-grm. It is phonologically unproblematic. The pattern in (169.b), where the Sg has default antepenultimate accent while the Pl has (apparently shifted) penultimate accent, is extremely common. Since there is no obvious morphological basis for the accent shift, I conclude that Default Accentuation applies here to a representation prior to the VV-Contraction rule. For example, è-biwa 'animal pen' has a Pl /i-biwa-æn/, which becomes /ə-biwa-æn/ by Default Accentuation, then i-bíw-an by VV-Contraction. Because the Pl has a surface penultimate accent, I use the acute (rather than grave) accent. However, allowing for the rule ordering given, the accent is actually due to Default Accentuation on the (underlying) antepenult.

This rule ordering, though necessary for the very productive type (169.b) and consistent with (169.a), is challenged by the handful of examples in (169.c). Here, Default Accentuation appears to apply to the output of VV-Contraction, so the Pl has a default accent on the surface antepenult (which corresponds to the underlying fourth syllable from the right). The nouns in (169.c) are “cultural” vocabulary, and all are problematic. Only one of the antepenultimate-accented plurals (‘black turban cloth’) is attested outside of a narrow dialect area, and this one has a variant Sg *à-læššæw*.

Some phonologically more complex cases are given in (170).

(170) Additional Contracted -an (or -en) Plurals of V-Final Sg

	singular	plural	gloss
a.	t-a-kə̀ndə-t-t	t-ĩ-kə̀nd-en	‘water lily tuber’
b.	æ-s-áru	i-s-úr-an	‘pretext’

In the feminine noun ‘water lily tuber’ in (170.a), the Pl shows antepenultimate accent while the Sg has penultimate accent. This indicates that the stem has no lexical accent, gets the default antepenultimate accent in the Pl, and in the Sg has penultimate accent conditioned by the FeSg suffix -t (§3.3.1.1, §4.1.2.1).

In (170.b) we see u in different syllables in the Sg and the Pl. One possibility is that this is another case of a shifty u (§3.4.9). However, i-súr-an could also be a mixed suffixal-ablaut Pl with <H L> melody, whose u reflects the amalgamation of the a vowel of the Sg with the H part of the melody. In this view, the u of the Pl has nothing to do with the u of the Sg.

Consider now (171).

(171) *ǰ*-Erasure in Contracted -an Plurals in Nominals from -vCCv- Verbs

	singular	plural	gloss
a. verbal nouns			
	a-tw-əjj	ĩ-tw-əjj-an	‘being done’
		[Sg also a-tw-éggi (A-grm)]	
	a-s-ətf	ĩ-s-ətf-an	‘dumping’ (√s-đf)
	a-s-əkə̀nn	ĩ-s-əkən-an	‘showing’
	a-s-ənt	ĩ-s-ənt-an	‘beginning’
	a-s-ərv	ĩ-s-ərv-an	‘burning’
		[Sg also a-s-ərvri, with Pl i-s-ərvri-tæn (A-grm)]	
	a-š-əňš	ĩ-š-əňš-an	‘sale’
	a-trúr	ĩ-trur-an	‘going down’
	a-z-əlz	ĩ-z-əlz-an (T-ka)	‘shaving’

b. agentives and related nominals

e-m-ært	ĩ-m-ært-an	'tree'
e-m-ækš	ĩ-m-ækš-an	'eater'
e-m-æls	ĩ-m-æls-an	'garment' (T-ka, A-grm)
e-m-æŋr	ĩ-m-æŋr-an	'killer'
e-m-ærz	ĩ-m-ærz-an	'breaker' (T-ka, A-grm)
e-m-æsæww	ĩ-m-æsww-an (T-ka)	'water source'
	[Pl also i-m-æsæww-an (A-grm)]	

c. like (b) but nominals retain stem-final V in Sg

e-m-æslı	ĩ-m-æsl-an	'voice'
e-m-æšlı	ĩ-m-æsl-an (A-grm)	'game, activity'

What is notable about the cases in (171.a-c) is that the Pl has default accent while the Sg has a grammatically marked accent on the final (which corresponds to the penult of the suffixal Pl). In effect, the Sg accent is erased in the Pl, allowing Default Accentuation to apply to the latter. This is quite unusual in Sg/Pl pairs, whether the Pl is suffixal or ablated.

The verb stems associated with the nominalizations in (171.a-c) are of the shape $\text{-}\text{əC(C)}\text{a-}$ in the PerfP and $\text{-}\text{əC(C)}\text{ı-}$ in the ShImpf. The underspecified high V segment /ı/ is deleted word-finally by Stem-Final ı/A-Deletion (29) (§3.1.2.4), and is deleted by VV-Contraction (37.c) when followed by a V-initial suffix or clitic (37, 40). In relative clause contexts, in those positions where Rightward Accent Shift (132) (§3.5.3.2) would be expected to shift accent onto the /ı/, but where the /ı/ is (then) deleted, $\acute{\chi}$ -Erasure (136) applies (§3.5.3.3) and we get a default accent (if necessary, on the preceding word in the accentual phrase).

Something related seems to be happening in (171). The verbal nouns in (171.a) belong to types showing $\langle\text{H}\rangle$ stem melody and with marked penultimate accent, so we can take the Sg forms to have representations like $/\text{a-tw-}\acute{\text{ə}}\text{jjı}/$ 'being done', ending in underspecified high vowel /ı/. In the Pl $/\text{i-tw-}\acute{\text{ə}}\text{jjı-}\text{æn}/$, the /ı/ is lost by VV-Contraction (39.b). Even though the /ı/ is not itself accented, its loss appears to trigger $\acute{\chi}$ -Erasure. This produces unaccented $/\text{i-tw-}\text{ə}\text{jj-an}/$, which surfaces with default accent as $\text{ĩ-tw-}\text{ə}\text{jj-an}$. The remaining cases in (171.a) have similar derivations. However, $\text{a-s-}\text{ək}\acute{\text{ə}}\text{nn}$ 'showing' shows some additional morphophonology in the Sg (resyllabification by Final-CC Schwa-Epenthesis, accompanied by Stem-Final Gemination) that does not apply to the Pl $\text{ĩ-s-}\text{ək}\text{n-an}$.

The agentives and related nominals in (171.b) can likewise be assigned representations of the type $/\text{e-m-}\acute{\text{æ}}\text{rtı}/$ 'tree' ending in /ı/. The plurals are derived in the same way as those of the verbal nouns, as shown in (172).

(172) Derivation of Plural \check{i} -m-ært-an 'trees'

/i-m-ærti-æn/	underlying (after ablaut derivation of stem)
/i-m-ært-an/	VV-Contraction accompanied by $\check{\chi}$ -Erasure
\check{i} -m-ært-an	Default Accentuation

In (171.b), e-m-æsæww 'water source' shows resyllabification (including Stem-Final Gemination) in the Sg.

The cases in (171.c) are survivals of the original V-final Sg stem shapes that were once characteristic of the much more common types (171.a-b). In the Timbuktu area, only a handful of lexicalized nominals (no longer derived by productive ablaut processes) have this Sg shape. On the other hand, A-grm retains many Sg stem-final V's, even in cognates for some of the Timbuktu-area C-final singulars in (171.a-b).

I have argued that -an can be derived by VV-Contraction even where (except in eastern dialects) the Sg no longer shows a stem-final V. The hallmark of contracted -an is retaining the vocalism of the Sg stem, rather than overlaying on it the Pl vocalic melody <H L>. With this background, I am inclined to include other cases where -an appears to be added to the Sg stem without melodic change as belonging in this section. However, if the Sg stem happens to have only high vowels, when MaPl -an or FePl -en is added we cannot tell whether the Pl melody has applied.

In (173), the Sg and Pl stems show a mid-height or low V, so there is clearly no Pl <H L> melody. These are probably cases where an original stem-final V has been lost.

(173) Contracted -an Plurals of C-final Singulars

singular	plural	gloss
a. Sg with penultimate accent, Lexical Accent Erasure in Pl indeterminate		
é-bæŋɾ	\check{i} -bæŋɾ-an	'floodplain'
é-bætt	\check{i} -bætt-an	'lowland'
é-dægg	\check{i} -dægg-an	'place'
é-fæyd	\check{i} -fæyd-an	'drinking trough'
	[Pl also \check{i} -fæyd-æn]	
á-ɾærh	\check{i} -ɾærh-an	'shield'
é-jænš	\check{i} -jænš-an	'river'
á-kært	\check{i} -kært-an	'chick'
	[also á-kært, Pl \check{i} -kært-an]	
é-kækk	\check{i} -kækk-an	'spur-winged goose'
é-tæqq	\check{i} -tæqq-an	'male ostrich'
	[Pl also \check{i} -tæqq-æn]	

b. Sg stem accented, clear Lexical Accent Erasure in Pl

e-bægg	ĩ-bægg-an	'jackal'
æ-fóll	ĩ-foll-an	'Fula man'
	[FeSg t-æ-fólli-t-t]	
e-læll	ĩ-læll-an	'noble'
	[FeSg t-e-lælli-t-t]	
e-tæll	ĩ-tæll-an	'turban'
e-næhæjj	i-næhæjj-an (T-ka)	'what one deserves'
e-wælænf	i-wælænf-an	'melon greens'

c. Sg stem accented, arguably VV-Contraction and Lexical Accent Erasure in Pl

e-dæm	i-dæm-an	'gazelle'
	[FeSg t-e-dæmi-t-t]	
e-ḍæww	i-ḍæw-an	'gerbil'
	[FeSg t-e-ḍæwwi-t-t]	
e-kæzz	i-kæz-an	'rooster'
	[FeSg t-e-kæzi-t-t or t-e-kæzzi-t-t]	
e-mænn	i-mæn-an	'fish'
	[cf. Fe t-e-mænni-t-t 'carp']	
a-wærsákk	i-wærsákk-an (A-grm)	'kindling'

d. Sg with prefixal accent, Pl with stem accent

é-hæḍ	i-hæḍ-an	'night'
é-hæn	i-hæn-an	'home'
é-zæbb	i-zæb-an	'large earring'
	[Sg also e-zæb]	

In (173.a), the Sg has a lexical accent on the vocalic prefix. In the Pl, the accent is again on the vocalic prefix, but since this is now the word antepenult it is now compatible with Default Accentuation. We therefore cannot determine whether Lexical Accent Erasure has applied in the Pl. In (173.b), the Sg has accent on the stem (surface final syllable), but we get a default antepenultimate accent in the Pl. This indicates that Lexical Accent Erasure has applied to the Pl. This makes sense if we assume an underlying stem-final V that is lost by VV-Contraction in the Pl, provided that VV-Contraction precedes Default Accentuation for these plurals. In (173.c), we get non-default stem accent in both Sg and Pl, so it would seem that no Accent Erasure has applied in the Pl. However, there is good reason here to posit an underlying stem-final V that is deleted in the masculine Sg, preserved in related feminines (for some stems), and undergoes VV-Contraction in the masculine Pl, which triggers Lexical Accent Erasure (the surface penultimate accent in e.g. Pl i-dæm-an would then be due to ordering Default Accentuation before VV-Contraction). The few cases in (173.d) show Sg prefixal accent and Pl

stem (word-penultimate) accent. This can be derived from representations like /i-hædɪ-æn/, provided that we allow Default Accentuation to apply before VV-Contraction, cf. (169.a-b), above. For dialects where ‘large earring’ has the variant Sg form e-zæb, this stem belongs in (173.c) rather than (173.d).

Especially for the Sg shape é-CæC(C) or e-CæC(C), there is some dialectal variation between Pl ï-CæC(C)-an (suggesting a covert stem-final V) and Pl ï-CæC(C)-æn (with simple suffixal -æn) in individual cases. Such variants are indicated in (173.a) for é-fæyd and é-tæqq. This variation is understandable, since other Sg nouns with this shape are distributed between the two types, so there is no shortage of models for analogical stem-class shifts.

Some additional -an (and -en) plurals that, like the preceding cases, do not show the Pl ablaut melody <H L> as given in (174). Note the e and (in one case) æ in the Pl stems, where the H part of the Pl melody would normally require a high V.

(174) Non-Ablaut -an (and -en) Plurals with e or æ in Plural Stem

singular	plural	gloss
a. masculine, initial e, stem-final u desyllabified to w		
élu	èlw-an	‘elephant’
	[accents with prep: x élu, x elw-an (A-grm)]	
ésu	èsw-an (A-grm, T-ka)	‘bull’
	[also irregular Pl ðswan-æn (T-ka)]	
b. masculine, initial e		
é-fæd̥	èfd̥-an (A-grm)	‘thousand’
	[Pl also ðfæd̥-æn]	
élær	èlɻ-an	‘shin’
éræs	èrs-an	‘sharp pain’
c. masculine, initial a/e alternation		
á-dær	èdr-an (A-grm)	‘foot bruises’
á-hærr	èhr-an	‘lion’
d. feminine nouns, initial e or a/e alternation		
t-èfæq-q	t-èfɻ-en	‘ganglion’
	[Sg could also be transcribed t-èfæq-q]	
t-èrə-t-t	t-èr-t-en	‘waterskin hoop’
t-èlæq-q	t-èlɻ-en	‘knife’
t-èsəm-t	t-èsm-en	‘salt’
e. feminine nouns, initial e, with Degemination		
t-èffar-t	t-èfr-en	‘hobbles (fettors)’

f. feminine, initial *a/e* alternation

t-ǎ-zǣf-t t-èzf-en (A-grm) ‘axe’

g. feminine, initial *æ*, with Degeminationt-ǣ||ǣm-t t-ǣ|m-en (T-ka) ‘she-camel’
[several regional variants of Sg and Pl]

In the masculine cases (174.a-c), and in the feminine noun in (174.g), the Sg has lexical penultimate accent (hence e.g. *dæʀ* ‘æ-hærr ‘in the lion’) while the Pl has no marked accent (hence e.g. *dæʀ* ehr-an ‘in the lions’ with phrasal accent on the preposition). The feminines in (174.d-f) are compatible with this, although we cannot tell whether the Sg forms have a lexical accent (FeSg suffix -t forces penultimate accent anyway). All forms in (174.b-g) show Syncope of a schwa (less often *æ*, or in ‘hobbles’ *ɑ*), and where applicable Degemination.

The two stems in (174.a) show Desyllabification of *u* (in the Sg) to *w* before the Pl suffix. Since stem-final *u* sometimes functions as the equivalent of *əw*, these alternations are not far removed from the Syncope cases in (174.b-c). Alternatively, one could argue that the *w* is lexical (*/élw/*, */ésww/*) and vocalizes when word-final.

Of interest is the fact that all plurals in (174a-e) are unaccented, even where the Sg has a clear lexical accent (174.a-c). This indicates that Lexical Accent Erasure applies to the plurals. The erasure rule elsewhere accompanies (and appears to be triggered by) the loss of a stem vowel. In (174.b-c), we arguably have not one but two vocalic deletions: the syncopated schwa, and the underlying stem-final */ɪ/* that we might posit in order to account for the -an allomorph in (174.b-c).

In (174.a), we could consider Desyllabification of *u* to *w* to be an effective equivalent of these vocalic deletions, since the desyllabified semivowel is no longer relevant to accentuation (i.e. it is no longer syllabic or moraic). If that doesn’t convince, we could use a Syncope analysis (*/ə w/* syncopates prevocally to *w*) or take *w* as lexical. Furthermore, the MaPl -an allomorph could be taken as evidence for an additional stem-final vocalic segment (hence e.g. */elwɪ/* ‘elephant’).

In fairness, it should be noted that there is an alternative interpretation for most of the Sg/Pl alternations in (174), using ablaut rather than VV-Contraction to account for MaPl -an. The idea would be to have Pl ablaut apply to the combination of the stem and MaPl suffix */-æn/*, as I suggest (with much greater confidence) for the Sg/Pl cases covered in §4.1.2.14, below. This alternative analysis would take Pl *èlw-an* (174.a), *èlɾ-an* (174.b), etc., as mixed ablaut-suffixal plurals, e.g. suffixed */élɾ-æn/* plus Pl melody <H L> plus lengthening formative *χ-f*. The derivation would require the L melodic component and *χ-f* to target the suffixal vowel, the medial schwa to be syncopated, and the stem-initial *e* (like stem-initial *i*, see below) to escape melodic modification to *u*.

I am skeptical of this way of deriving e.g. $\text{\textcircled{e}l\text{r-an}}$, in the absence of any overt sign of Pl ablaut melody in the stem itself. However, such cases are near the borderline between -an due to VV-Contraction (this section) and -an due to application of ablaut to a stem-suffix combination (§4.1.2.14).

In (174), above, we have an e or æ in the Pl stem that can be taken as evidence of the non-application of Pl <H L> melody. In (175), below, we have cases that involve the same Syncope and (if applicable) Degemination as in (174). However, in (175) the stem V is already high {i u} in the Sg, so there is no way to tell whether an H melodic component is at work in the Pl.

(175) Non-Ablaut -an and -en Plurals with High Vowel in Singular and Plural Stems

singular	plural	gloss
a. feminine, initial i		
t- $\text{\textcircled{ij}}$ \text{əm-t}	t- $\text{\textcircled{ij}}$ m-en	‘nose-ring’
t- $\text{\textcircled{ik}}$ \text{əs-t}	t- $\text{\textcircled{ik}}$ s-en	‘piece of fabric’
b. feminine, initial i, with Degemination		
t- $\text{\textcircled{ill}}$ ik-k	t- $\text{\textcircled{il}}$ k-en	‘louse’
	[Sg also t- $\text{\textcircled{il}}$ ik-k]	
t- $\text{\textcircled{iš}}$ \text{əm-t}	t- $\text{\textcircled{iš}}$ m-en	‘foul water’
c. masculine, initial u		
ú $\text{\textcircled{r}}$ \text{ən}	ù $\text{\textcircled{r}}$ n-an	‘ornaments’
	[used chiefly in Pl]	

The Pl accent in $\text{\textcircled{u}r\text{n-an}}$ (175.c) is the effect of Lexical Accent Erasure. However, for many speakers the Sg $\text{\textcircled{u}r\text{ən}}$ is unelicitable, so $\text{\textcircled{u}r\text{n-an}}$ (arguably $\text{\textcircled{ò}r\text{n-an}}$) is the only form in use, and can be learned as such without reference to a derivation.

In (176) I show a few special cases of MaPl -an associated with an additional stem-final C (176.a), or in a stem used only in the plural (176.b). The accent shift in $\text{\textcircled{i-hóh-an}}$ suggests an affiliation with the stems in (174.d), above. This, combined with the absence of Pl <H L> melody, points to an underlying Pl representation /i-hohV-æn/ with some stem-final V (that counts as a syllable in Default Accentuation).

(176) Minor Types with -an

singular	plural	gloss
a. extra stem-final C in plural		
æ-ho	i-hóh-an	‘smoke’

b. Plural -an with no singular

[none]	àm-an	'water'
[none]	ĩ-m-an	'self'

Finally, consider the masculine/feminine pair in (177), already presented in part in (173.c).

(177) Masculine/Feminine Pair

singular	plural	gloss
e-dæm	i-dæm-an	'(male) gazelle'
t-e-dæmi-t-t	t-i-dæma-t-en	'(female) gazelle'

These forms bring out the asymmetry between suffixal MaPl and FePl in cases where a stem-final V undergoes VV-Contraction in the MaPl. The stem-final V is more visible in the feminines, where it is "protected," so to speak, by inner Fe suffix -t-. The latter morpheme is carried over into the FePl, before suffix -en, obviating the need for VV-Contraction.

4.1.1.14 Ablauted MaPl variant -an

Although there are borderline cases and some room for disagreement about optimal analyses, the cases of MaPl -an in §4.1.2.13, above, can be explained by simple suffixation of -æn followed by VV-Contraction, while those in the present section can be taken reflecting suffixation of -æn followed by ablaut. The ablaut components are the usual Pl melody <HL> plus the V-length formative $\tilde{\chi}$ -f (§4.1.2.15, below).

I begin with some Sg/Pl alternations that involve the most dramatic stem changes (178), clearly pointing to ablaut.

(178) Ablauted MaPl -an

singular	plural	gloss
a. Sg -CæCæC, Pl -CəCC-an		
e-bækær	ĩ-bəkr-an	'young ram'
e-dæræf	ĩ-dərf-an	'front tooth'
e-ræšær	ĩ-rəšr-an	'flooded area'
e-jædær	ĩ-jədr-an	'vulture'
e-jædæš	ĩ-jədš-an	'family'
e-jædæl	ĩ-jədl-an	'fall'
e-kæšæm	ĩ-kəšm-an	'mountain pool'
e-lækæt	ĩ-ləkt-an	'branch'

e-mǣjǣl	ǐ-m-ǣjl-an	'snake sp.'
e-nǣfǣd	ǐ-nǣfd-an	'firedrill'
e-rǣkǣf	ǐ-rǣkf-an	'group of donkeys'
e-sǣbǣr	ǐ-sǣbr-an	'grass matting'
e-šǣrǣn	ǐ-šǣrn-an	'pestle'
e-šǣwǣr	ǐ-šǣwr-an	'flat area'
e-tǣfǣr	ǐ-tǣfr-an	'bottom of foot'
e-zǣkǣn	ǐ-zǣkn-an (K)	'rag tent'

b. Sg -CvCvC (mainly -CǣCvC), Pl -CǣCC-an

a-dǣras	ǐ-dǣrs-an	'Commiphora tree'
a-dǣwal	ǐ-dǣwl-an	'young goat'
a-fǣraj	ǐ-fǣrj-an	'tortoise'
a-kǣbar	ǐ-kǣbr-an	'bucket'
a-kǣbar	ǐ-kǣbr-an	'line of camels'
a-sǣfar	ǐ-sǣfr-an	'medication'
e-dǣber	ǐ-dǣbr-an (A-grm)	'dove'
e-fǣkel	ǐ-fǣkl-an	'shoes'
e-hǣket	ǐ-hǣkt-an	'old tent'
	[Pl also ǐ-hkat]	
e-lǣkef	ǐ-lǣkf-an	'horse saddle'
e-sǣmed	ǐ-sǣmǫ-an	'coldness'
a-dǣfor	ǐ-dǣfr-an (K, R)	'pillow'
a-jǣrof	ǐ-jǣrf-an	'croix de malte (plant)'
a-šǣrol	ǐ-šǣrl-an	'young ram'
	[Pl more often ǐ-šrǫl]	
a-bǣrij	ǐ-bǣrj-an	'road'
	[Sg also a-bǣrij]	
a-kǣðil	ǐ-kǣðl-an	'vagina'
	[Sg also a-kǣðil ; Pl more often ǐ-kðal]	

c. Sg -CvPPvC, Pl -CǣPC-an with Degemination (§3.4.2.2)

a-hǣjjar	ǐ-hǣjr-an	'acacia pod'
a-nǣlluj	ǐ-nǣlj-an	'ant'
	[Sg also á-nǣlj]	
a-wǣqqas	ǐ-wǣrs-an	'beast, lion'

The Pl type ǐ-CǣCC-an is extremely productive for Sg nouns of the shapes e-CǣCǣC, as in (178.a), and v-CvCvC, as in (178.b). As usual in such formulae, v is a short vowel and v is a full (=long) vowel. (178.c) shows Degemination of a medial geminate.

The Pl pattern ǐ-CǣCC-an has (disregarding the Pl prefix) a surface vocalic sequence «ə ə» that is compatible with the <H L> melody and the $\bar{\chi}$ -f (final V-length) component of standard, nonsuffixal plural ablaut. We can therefore generate the plurals from the singulars by adding MaPl suffix /-ǣn/ and then

applying nominal plural ablaut to the stem-plus-suffix sequence (i.e. applying the <H L> melody and the formative $\bar{\chi}$ -f to the sequence [stem + -æn]), with the following additional modifications: a) **Degemination** of a medial geminated CC, where applicable (178.c); b) **Full-V Shortening**, reducing a full V in either stem syllable (usually the second, but in a few cases the first, e.g. t-à-màra ‘ten’, Pl t-ì-mər-w-en) to a short V, which can only be /ə/ because of the H melodic component; and c) **Syncope** of this /ə/, with accompanying **Lexical Accent Erasure**.

A derivation using this model (regular componential ablaut plus ad hoc Degemination and Full-V Shortening processes) is given in (179).

(179) Derivation of ì-həjr-an ‘acacia pods’ (from Sg α-hójjar)

/i-hójjar-æn/	affixation
/i-hójjur-an/	Melodic Association (<H L>), $\bar{\chi}$ -f
/i-hójər-an/	Degemination, Full-V Shortening
/i-həjr-an/	Syncope, Lexical Accent Erasure
ì-həjr-an	surface form (after Default Accentuation)

Although I have divided -an plurals into contracted (§4.1.2.13, above) and ablated (this section), the division is blurry at times. The Degemination of the medial geminate observed in (178.c) parallels that seen in a few contracted plurals; examples of the latter are Sg t-èffar-t ‘hobbles (fettors)’, Pl t-èfr-en, and t-æ||æm-t ‘she-camel’, Pl t-æ||m-en (174.e.g). There are also many cases of Lexical Accent Erasure in contracted plurals (171), where the erasure rule is associated with the loss of the underlying stem-final V by VV-Contraction. In (178), Accent Erasure is associated with another V-deleting rule, namely Syncope.

The Degemination, Full-V Shortening, and Syncope rules, in combination with the H element of the <H L> melody, have the effect of producing a uniform -CəCC- sequence from any of three distinct input shapes. When multiple input shapes converge in a single output shape, we can reinterpret the morphological process as ablaut based on a **template -CvCC-**. In this alternative analysis, the input Sg stems are **mapped onto** this template, in a fashion familiar from Arabic derivational ablaut. The derivation in this case would be simpler than that in (179). In effect, the ablaut system would juxtapose a spelled-out Sg stem with the Pl template, and would then extract consonants from the input and map them onto the empty C positions in the template, treating a medial geminate in the input as a single C autosegment. The combination [-CvCC-æn] would then be subject to the productive Pl ablaut processes, i.e. Melodic Association of <H L> and attachment of formative $\bar{\chi}$ -f. There would be no need for Degemination, Full-V Shortening, Syncope, or Lexical Accent Erasure in this derivation.

One characteristic of templatic ablaut, e.g. in Arabic, is that obligatory C positions not filled by transfer from the input are filled either by doubling one

of the lexical C's, or by inserting a nonlexical **default** (filler, expletive) C. With this in mind, consider the examples in (180). Here the plurals have the same -CəCC- shape as in (178), but with a stem-final w (rarely y) in the Pl that is not transparently transferred from the Sg.

(180) Ablauted MaPl -an Preceded by Nonlexical w or y

singular	plural	gloss
a. Sg V-final with single medial C, Pl in ...w-an		
è-bæje	ĩ-bəjw-an	'horse'
à-fæzo	ĩ-fəzw-an	'markouba grass'
	[Pl also ỹ-fəzə (A-grm)]	
è-hære	ĩ-hərw-an	'young bull'
	[Pl also unablauted suffixal i-hǽr-an]	
è-hære	ĩ-hərw-an	'wealth'
a-jéju	ĩ-jəjw-an	'arc-ed pole'
b. Sg V-final with medial geminate, Pl in ...w-an with Degemination		
à-zəkka	ĩ-zəkʷ-an	'tomb'
c. Sg V-final, Pl in ...w-an, stem V shortened		
ǎ-ɖɑɖ	ĩ-ɖɑɖw-an (A-grm)	'finger'
	[different word for 'finger' in T-ka]	
d. Sg C-final, Pl in ...w-an, stem V shortened, with Degemination		
ǎ-hojj	ĩ-həjw-an (K)	'colt'
	[Pl elsewhere ỹ-hojj-æn, ỹ-hagg-an]	
e. Sg C-final, Pl in ...y-an, stem V shortened, with Degemination		
ǎ-mijj	ĩ-məjy-an	'vein'
	[Pl also ỹ-mijj-æn]	

In most of these cases (180.a-b), the Sg is V-final (all full V's except *i* are exemplified). One possibility is to argue that all non-*i* V's map onto the final C position of template -CvCC- as *w* (**V-to-C mapping**). One would assume that an *i*-final Sg stem would map onto the third C of -CvCC- as *y* (hence -CvCy-), but there are no clear examples, since the only instance of -CvCy- (180.e) has no stem-final V in the Sg. The dialectal cases in (180.c-d) and the unique case in (180.e) have C-final Sg stems (in two cases the final C is geminated). Since these patterns are unproductive, their phonology is probably less than transparent to native speakers. For (180.c-d) one could argue that the *w* of the Pl is a true filler *w*, not corresponding to any segment in the Sg. If *w* is the default third C in -CəCC-, this would obviate the need for connecting Pl *w* to Sg stem-final V in (180.a-b). Since most Tamashék ablaut is compositional rather than templatic, there is little supporting evidence from other morphological domains as to the fine points of input to output mapping.

In (181) I present several minor patterns that, like the preceding cases, show clear ablaut vocalism.

(181) Minor Patterns of Ablauted MaPl -an

singular	plural	gloss
a. kin terms [with <i>gg</i> degeminated and lenited to <i>w</i>]		
ɑ-ɖæggal	ĩ-ɖəwl-an	'in-law'
	[also pronounced ỹ-ɖul-an]	
ɑ-lóggəs	ĩ-ləws-an	'brother-in-law'
	[less often i-lóggus-æn, i-lóggəs-æn]	
b. Sg <i>æ</i> , Pl <i>i</i>		
á-šæl	ĩ-šil-an	'day'
c. Sg <i>ɑ</i> , Pl <i>u</i>		
á-ɾan	ĩ-ɾun-an	'well rope'
ánu	ún-an	'well'
d. Sg <i>e</i> , Pl <i>ə</i>		
ǣ-ʒərɥ	ĩ-ʒərɥ-an	'shoulder'
e. Sg -CCvC-		
e-jrėw	ĩ-jərɥw-an	'river'
f. Sg and Pl -CuC-		
á-duf	ĩ-duf-an	'marrow'

'Well rope' and 'well' in (181.c) actually show regular ablaut vocalism, with *ɑ* in the stem becoming *u*. 'Well' shows no Accent Reduction in the Pl

(we can't tell whether this is true of the Pl of 'well rope'). In (181.a) we see that Sg *gg* degeminates to *w*. The noun 'day' in (181.b) is irregular in that the stem *V* is short in the Sg but full (=long) in the Pl. The opposite happens in (181.d), where a full *V* in the Sg appears as schwa in the Pl. In (181.e), the full *V* following stem *C*₂ is syncopated, as usual, and the schwa in the Pl could be explained as due to Schwa Insertion (breaking up a triple CCC cluster).

In (182) I give some cases where the Sg already has a medial schwa.

(182) Plural Ablaut (Singular with Schwa)

singular	plural	gloss
a. Sg <i>á-CCəC</i> , Pl not resyllabified		
<i>á-dhəj</i>	<i>ǐ-dhəj-an</i>	'aardvark'
<i>á-lməʒ</i>	<i>ǐ-lməʒ-an</i>	'twilight'
b. Sg <i>á-CCəC</i> , Pl resyllabified as <i>-CəCC-</i>		
<i>á-zrəf</i>	<i>ǐ-zərʃ-an</i>	'money'
<i>á-ɸrəʒ</i>	<i>ǐ-ɸərʒ-an</i>	'sauce'
<i>á-ʁrəm</i>	<i>ǐ-ʁərʁm-an</i>	'town'
<i>á-šbəj</i>	<i>ǐ-šəbj-an (T-ka)</i>	'bracelet'
	[Pl also <i>ǐ-šbəg-æn (A-grm)</i>]	
c. Sg <i>á-CəC</i>		
<i>á-yəs</i>	<i>ǐ-yəs-an</i>	'horse'
d. Sg <i>á-CəCC</i>		
<i>á-həkš</i>	<i>ǐ-həkš-an</i>	'acacia tree'
<i>á-jətt</i>	<i>ǐ-jətt-an</i>	'tent stake'

Because the Sg and Pl stems (disregarding affixes) are identical in (182.a, c-d) it is indeterminate whether the Pl has undergone ablaut. In some cases there may have been an original stem-final *V* that contracted with **-æn* to produce the attested *-an*. In (182.b), Sg *-CCəC* corresponds to Pl stem *-CəCC-*, so one could argue that transfer onto the template *-CvCC-* has occurred. The fact that the MaPl suffix appears as *-an* with full *ɑ*, and the unlikelihood at least in (182.a-b) of a deletable stem-final *V* (historically or synchronically), suggest that the plurals are of the same type as the ablauted *ǐ-CvCC-an* plurals described earlier in this section.

The forms discussed so far in this section have MaPl *-an* instead of *-æn*. There is no similar audible distinction between FePl suffix allomorphs, the suffix being uniformly *-en*. However, there are some feminine nouns that show the same Sg/Pl stem alternations seen above for masculines. In (183) I give some masculine/feminine pairs that bring out the similarities especially well.

(183) Paired Masculine and Feminine Plurals

	singular	plural	gloss
a.	ɑ-kæ̃bɑr t-ɑ-kæ̃bɑr-t	ĩ-kəbr-ɑn t-ĩ-kəbr-en	'bucket' 'bucket'
b.	e-bækæ̃r t-e-bækæ̃r-t	ĩ-bəkr-ɑn t-ĩ-bəkr-en	'young ram' 'young ewe'
c.	á-ʀrəm t-ǎ-ʀrəm-t	ĩ-ʀərm-ɑn t-ĩ-ʀərm-en	'town' 'town'
d.	á-duf t-ǎ-duf-t	ĩ-duf-ɑn t-ĩ-duf-en	'marrow' 'finger segment'

Most of the feminine stems in (184) lack masculine counterparts.

(184) Feminine Plurals

	singular	plural	gloss
a. Sg t-e-Cæ̃Cæ̃C-t	t-e-mæ̃tæw-t	t-ĩ-mətw-en	'grain (of sand)'
b. Sg t-V-Cæ̃CaC-t	t-ɑ-fæ̃ras-t t-ɑ-kæ̃bɑr-t t-ɑ-mæ̃dɔl-t t-ɑ-ræ̃kɑt-t t-æ-ʀæ̃šam-t	t-ĩ-fərs-en t-ĩ-kəbr-en t-ĩ-məɔl-en (A-grm) t-ĩ-rəjɔ-en (A-grm) t-ĩ-ʀəšm-en	'flint' 'milk bucket' 'sandstorm' 'Grewia tree' 'house'
		[Sg also t-ɑ-ʀæ̃šam-t (K-d)]	
c. Sg t-à-CVCɑ or t-è-CVCe, Pl with w	t-à-mara t-à-fə̃ja t-à-rə̃ja t-è-jæ̃še	t-ĩ-mərw-en t-ĩ-fə̃jw-en t-ĩ-rə̃jw-en t-ĩ-jə̃šw-en	'group of ten' 'tree trunk' 'belly' 'lower back'
d. Sg t-à-CVPPɑ, Pl with w and Degemination	t-à-fækka t-à-ʀəssa t-à-jə̃lla t-à-sə̃tɔ (√sd) t-à-šəkke	t-ĩ-fəkw-en t-ĩ-ʀəsw-en t-ĩ-jəlw-en t-ĩ-səɔw-en t-ĩ-šəkw-en (A-grm)	'body' 'body' 'bread' 'broken-off branch' 'whirlwind'

e. Sg t- α -C $\ddot{\text{a}}$ PP v C-t, with Degemination		
t- α -s $\ddot{\text{a}}$ lluf-t	t- $\check{\text{i}}$ -s $\ddot{\text{e}}$ lf-en	'tick'
f. Sg t- $\ddot{\text{a}}$ -CC α C-t		
t- $\ddot{\text{a}}$ - $\text{r}\ddot{\text{a}}$ k-k	t- $\check{\text{i}}$ - $\text{r}\ddot{\text{a}}$ rj-en	'book sack'

Here we see the same basic -C α CC- stem-shape in the Pl, including -C α Cw- with nonlexical w (184.a, c-d), and the Degemination of medial geminates (184.d-e).

4.1.1.15 Unsuffixed ablaut plurals

Unsuffixed ablaut plurals are common for noun stems that have vocalic prefixes. Nearly all nouns that lack a vocalic prefix have suffixal plurals.

The Pl vocalic prefix is -i- (FePl t-i-), as usual. The -i- reduces to schwa or zero in the dependent state (e.g. as postverbal subject), again as usual. FeSg suffix -t, inner Fe suffix -t-, MaPl - æ n, and FePl -en are absent by definition from unsuffixed ablaut plurals. While the stem-internal modifications are "redundant" in the presence of the Pl vocalic prefix, they can be the most salient expression of plurality when the Pl vocalic prefix -i- is reduced to schwa or zero.

Quite a few nouns are attested with more than one plural, often a simple suffixal plural coexisting with an unsuffixed ablaut plural. Some nouns also have two or more **variant unsuffixed ablaut plurals**, at least when multiple dialects are considered together. An example is Sg t- α -b $\ddot{\text{a}}$ kun-t 'heap', for which the following plurals are attested: t- $\check{\text{i}}$ -bkun-en (T-ka), t-i-b $\acute{\text{a}}$ kkan (K), t-i-b $\acute{\text{u}}$ kan (K).

Normally the unsuffixed ablaut Pl **preserves the syllabic shape** (except for lengthening of the last vowel) **and lexical accent of the Sg**. Some apparent exceptions can be explained by Syncope or Default Accent (§4.1.2.22). Some real exceptions involve gemination and accent shift (§4.1.2.14, §4.1.2.23-4).

The dominant **vocalic melody** in unsuffixed ablaut plurals is <H L>. The L melodic fragment attaches to the final V of the Sg stem, which is also lengthened (if short) by **ablaut formative $\check{\text{x}}$ -f**, while the H fragment fills out the rest of the stem. The final syllable therefore **always has α** . In §4.1.2.14, above, it was suggested that the same ablaut components are at work in one type of plural with (masculine) - an or (feminine) -en. We will see in §4.1.2.24, below, that there is another, less common ablated Pl type with surface melody <H> that may reflect loss of an original stem-final low * α . An alternative analysis would combine a **strict <L> melody with a formative α -f** that directly converts the final-syllable vowel to α . I am dubious about this, since VbIN α -f is elsewhere attested only as an option with heavy verbal nouns, and with VbIN's it only affects ə ; see (551) in §8.6.1.4).

In the primary <HL> Pl melody, the H component is **biased toward u** rather than i when the input Sg has a full V. While a lexical i in the Sg is retained in the Pl if combined with H, any other full, nonprefixal V in a nonfinal syllable within the Sg stem appears as u in the Pl. The exception is that we get i instead of u by dissimilation to an immediately following w (§4.1.2.13 below). Of course, H combines with any short V {æ ə} to give ə, there being no rounded short V.

Intriguingly, the Pl prefix -i- is also a H vowel, and one might take it as the combination of the Sg prefix (e.g. -a-) plus the H of the ablaut melody. I do not favor this analysis, since we get Pl -i- even with otherwise unablauted plurals. Furthermore, we get Pl -i- even when the Sg prefix consists of a short V (-æ-/ə-), so we would need an $\bar{\chi}$ formative in addition to melodic H.

Omitting the Pl prefix -i-, the <HL> melody combines with various Sg shapes to produce the attested surface vocalic sequences (using the «...» notation) in (185). There are others that are phonologically possible (i.e. that respect the melody), but unattested because there happens to be no Sg of the relevant type that takes an unsuffixed ablaut Pl.

(185) Stem-Vowel Sequences in Unsuffixed Ablaut Plurals

stem

a. «L»

«a»

b. «HL»

«u a»

«ə a»

c. «HHL»

«u ə a»

«ə u a»

«ə ə a»

d. «HHHL»

«ə ə u a»

«ə ə ə a»

As noted above, **nouns without vocalic prefixes** (most of which are borrowings) generally do not take unsuffixed ablaut plurals. One exception is *ælžáhil* ‘ignorant one’, Pl *əlžuhál* (T-ka). This is deceptive, however. Although Pl *əlžuhál* has the “correct” <HL> melody, it is actually borrowed directly from Arabic (in parallel with the Sg). Arabic has Sg *al-jaahil-* and ablauted Pl *al-juhhaal-*.

The noun *zærtó* ‘ladle’ (perhaps borrowed from Songhay) has a Pl *ĩ-zærtə* attested once (T-md), alongside a more common suffixal Pl *zærtó-tæn*. The form *ĩ-zærtə* is an unsuffixed ablaut Pl, and it has “grown” a vocalic prefix absent from the Sg. Likewise Sg *s-ænto* ‘beginning’, Pl *ĩ-s-əntə* (T-md, elsewhere Pl *s-ənto-tæn*).

The following sections (§4.1.2.16-19) exemplify these variants of Pl melody <HL>. I begin with bisyllabic Sg nouns (trisyllabic if the vocalic prefix is included), since they illustrate the melody nicely. They are followed by monosyllabic and then trisyllabic or longer stems. All of these patterns involve non-final accent on the plural. In §4.1.2.18 below I discuss the ablaut Pl type with <H> melody.

4.1.1.16 <HL> Pl ablaut melody (bisyllabic stems)

I begin with cases where the Sg has a full V in the penult. The Pl therefore has a surface vocalic sequence «u a». In (186), various types of masculine and feminine plurals involving C-final bisyllabic stems are displayed. The MaPl forms are derived unproblematically from the Sg forms by changing the prefix to Pl *i-*, applying the <HL> melody to the stem proper, and applying $\bar{\chi}$ -f (lengthening a final short V). The feminine counterparts shown here are formed in the same way (retaining Fe prefix *t-* before Pl *-i-*).

The lexical accent on the Sg stem, if there is any, is preserved in the Pl. Some apparent FeSg/FePl accent shifts occur throughout; they are focused on in (191), below, where a straightforward phonological interpretation is offered.

(186) Unsuffixed Plural Ablaut (C-Final Bisyllabic Stem, «u a» Sequence)

singular	plural	gloss
a. Sg vowels full-full, simple medial C, masculine		
<i>æ-dádis</i>	<i>i-dúdas</i>	‘small dune’
<i>ɑ-húlel</i>	<i>i-húlal</i>	‘young donkey’
<i>æ-látum</i>	<i>i-lútam</i>	‘groin’
<i>æ-májar</i>	<i>i-mújar</i>	‘large quadruped’
<i>æ-másor</i>	<i>i-músar</i>	‘forearm’
<i>æ-mátuj</i>	<i>i-mútaj</i>	‘work gear’
<i>e-šéɣer</i>	<i>i-šúɣar</i>	‘bustard’
<i>æ-šólax</i>	<i>i-šúlax</i>	‘stud goat’
b. feminine counterparts of (a)		
<i>t-æ-háhis-t</i>	<i>t-i-húhas</i>	‘Cadaba shrub’
<i>t-æ-s-ǎnan-t</i>	<i>t-i-s-únan</i>	‘oxpecker (bird)’
<i>t-æ-s-ùtef-t</i>	<i>t-i-s-útaf</i>	‘(a) spit’
<i>t-ɑ-zùzem-t</i>	<i>t-i-zúzam</i>	‘charcoal’

c. Sg vowels full-short, simple medial C, masculine

æ-bájən	i-bújan	'monitor lizard'
æ-jáyəs	i-júyas	'bustard'
æ-káfər	i-kúfar	'non-Muslim'
æ-kámən	i-kúman	'Ammodaucus spice'
æ-mádəl	i-múdal	'jaw'
æ-mášæɾ	i-múšæɾ	'Tuareg'
æ-s-ádəd	i-s-údad	'prop'
æ-s-ádək	i-s-údak	'camp spot'
æ-s-ádər	i-s-údar	'staple food'
æ-s-áðəf	i-s-úðaf	'knife handle'
æ-súhəɾ	i-súhəɾ	'song'
[perhaps still segmentable æ-s-áhəɾ, cf. verb -uhvɾ- 'snatch']		
æ-s-ájəð	i-s-újad	'strap'
æ-s-ákəl	i-s-úkəl	'leg, paw'
æ-s-ákəs	i-s-úkas	'replacement'
æ-s-ánəs	i-s-únas	'hobble rope'
æ-šásəf	i-šúšaf	'belly strap'
æ-zárəz	i-zúraz	'dust'

d. feminine counterparts of (c)

t-æ-hänin-t	t-i-húnan	'mercy'
t-æ-s-äsəs-t	t-i-s-úsas	'tying cord'
t-æ-s-ätit-t	t-i-s-útay	'tent wrap'
t-æ-šäsəb-t	t-i-šušab	'miracle'
[also variants with -ž...ž]		
t-a-zùzem-t	t-i-zúzam	'charcoal'
t-æ-zäyək-k	t-i-zúyqj	'pied crow'

e. stem-medial cluster, masculine

e-rérdəm	i-rúrdam	'large scorpion'
æ-s-áltəf	i-s-últaf	'shovel'
æ-n-ázmay	i-n-úzmay	'needle'

f. feminine counterparts of (e)

t-æ-bänjer-t	t-i-búnjar	'tree sp.'
t-ə-kùrris-t	t-i-kúrras	'trickery'
t-e-zèrdəm-t	t-i-zúrdam	'scorpion'
[Pl also t-i-zérđam (A-grm)]		

g. stem-initial cluster, masculine

e-bdəbəd	i-bdúbad	'Gisekia (herb)'
[Sg also e-bədəbəd]		
e-mšéləl	i-mšúlal	'neck tendon'

h. feminine counterparts of (g)		
t-a-blülæq-q	t-i-blúlar	'lump, ball'
i. stem-final cluster, masculine		
æ-fáræqq	i-fúraqq	'Chrozophora bush'
j. final i treated as /əy/, masculine		
æ-máli	i-múlay	'stud camel' (√mly)
æ-s-áli	i-s-úlay	'hook'

Because of the $\bar{\chi}$ -f ablaut element, the plurals of both Sg -CvCvC- (186.a-b) and Sg -CvCvC- (186.c-d) stems appear as -CuCaC- (186.b). The examples in (186.e-i) show that consonant clusters (including geminates) in any of the three intervocalic positions have no effect on the Pl vocalism. Final i is treated as /əy/ in (186.j), so the Pl ends in ...ay.

For cases with Pl i instead of u, see §4.1.2.13, below.

The «u a» Pl vowel sequence can also occur with plurals of V-final stems (187). Most unsuffixed V-final Sg bisyllabic nouns (i.e. masculines, and the few feminines not ending in -t-t), have a suffixal plural involving MaPl -an or FePl -en (§4.1.2.1) and so do not appear here, but a few instances are attested (187.a-b). A much larger set of V-final stems with unsuffixed «u a» ablaut plural are feminines whose Sg ends in i or e plus suffix complex -t-t (187.c). Interestingly, all of the V-final stems in (187.a-c) have no lexical accent, so the Pl has default antepenultimate accent.

(187) Unsuffixed Plural Ablaut (V-Final Bisyllabic Stem, «u a» Sequence)

singular	plural	gloss
a. Sg vowels full-full, masculine		
æ-rata	ĩ-ruta	'crocodile'
	[Pl also i-rát-an]	
æ-jamba	ĩ-jumba	'hippo'
	[Pl more often i-jámb-an]	
æ-karfu	ĩ-kurfa	'rope' (<Songhay)
b. feminine counterparts of (a), unsuffixed Sg		
t-ə-suyya	t-ĩ-suyya	'alfa grass'
c. feminine counterparts of (a), with Sg -t-t		
t-ə-dùqqi-t-t	t-ĩ-duqqa	'(a) poke'
t-ə-fùqqi-t-t	t-ĩ-fuqqa	'sprout'
t-ə-rùbbe-t-t	t-ĩ-rubba	'gulp'
t-ə-hùrji-t-t	t-ĩ-hurja	'dream'
t-a-krùri-t-t	t-ĩ-krura (A-grm)	'ball'

t-ə-küsse-t-t	t-ĩ-kussa	'whistling'
t-æ-tũhmi-t-t	t-ĩ-tuhma	'suspecting'
t-ə-tũbbe-t-t	t-ĩ-tubba	'(a) whack' (VbIN)
t-ə-zũgge-t-t	t-ĩ-zugga	'punch'

[Pl also t-ĩ-zəgga (A-grm)]

Note that the stem-final *i* in several Sg forms in (187.c) is treated as /i/ rather than as /əy/, so the Pl ends in ...a.

With Sg stems of syllabic shape -CvCCVC-, where "V" is a short or long vowel, the regular output of an unsuffixed ablaut plural has «ə ə» vowel sequence (188.a-j). The medial CC cluster protects the short *v* from being syncopated, so the vocalic melody is well preserved on the surface. In at least one case, a stem-initial CC has the same Syncope-blocking effect: This vocalic sequence is also attested with Sg -CvCvC- stems, i.e. with two short V's (188.k). However, except for A-grm, Sg -CvCvC- or -CvCvC- stems (except -CæCaC-) undergo Syncope and Accent Reattachment, where Syncope deletes the schwa and reduces the stem vowel sequence to «ə»; these cases are treated separately in §4.1.2.22.

(188) Unsuffixed Plural Ablaut (C-Final Bisyllabic Stem, «ə ə» Sequence)

singular	plural	gloss
a. C-final, Sg vowels short-full, medial cluster, masculine		
ə-zəmboy	i-zómbay	'penis'
ə-bəɪlboɖ	i-bálbaɖ	'cloth bag'
ə-bərkot	i-bárkat	'stomach'
ə-hákkum	i-hákkam	'tent'
ə-háttin	i-háttan	'calabash'
ə-lákkin	i-lákkam	'pot'
ə-ləmmuz (or ...oz)	i-lómmaz	'Aristida grass'
ə-məknuɖ	i-méknad	'dwarf'
ə-réssuɖ (or ...oɖ)	i-réssaɖ	'pus'
ə-z-əlmaɖ	i-z-élmaz	'throat'
b. feminine counterparts of (a)		
t-a-ɖəkkel-t	t-i-ɖákkal	'handful'
t-a-bəɖɖer-t	t-i-báɖɖar	'traveler's gift'
t-a-ɖəkkel-t	t-i-ɖákkal	'handful'
t-a-fəssor-t	t-i-fəssar	'Fagonia bush'
t-a-gəgget-t	t-i-gəggar	'insult'
t-a-rəbbber-t	t-i-rəbbbar	'kick'
t-a-hənjam-t	t-i-hénjam	'Tetrapogon grass'
t-a-jəɾjis-t	t-i-jérjas	'shoulder blade'
t-a-jəyyes-t	t-i-jéyyas	'vaccination'

t-a-kəmbaw-t	t-i-kám̥baw (A-grm)	'hornless animal'
t-a-kærkor-t	t-i-kárkar	'stubbornness'
t-a-kærkaš-t	t-i-kárkaš	'dove sp.'
t-e-kærres-t	t-i-kárras	'knot'
t-a-m-əkres-t	t-i-m-ákras (A-grm)	'knot'
t-ə-kærres-t	t-i-kárras (A-grm)	'trickery'
t-a-m-ækšoy-t	t-i-m-ákšay	'ochre'
t-e-læftes-t	t-i-láftas	'rib cut'
t-a-lækkot-ʔ	t-i-lákkad	'reception'
t-a-læŋgot-ʔ	t-i-ləŋgad (A-grm)	'nape'
t-æ-læyyeq-q	t-i-láyyar (A-grm)	'fatigue'
[T-ka: Sg t-æ-läyyæq-q, Pl t-i-lúyyar]		
t-a-məŋket-ʔ	t-i-məŋkad	'piece of meat'
t-a-məskoy-t	t-i-máskay	'the poor woman!'
t-a-nəffal-t	t-i-náffal	'butting'
t-a-nəkkaf-t	t-i-nákkaf	'head butt'
t-æ-rəkken-t	t-i-rékkan	'halting' (VbIN)
t-æ-rəmmeq-q	t-i-rəmmar	'fright' (VbIN)
t-a-sərret-ʔ	t-i-sərrad	'stripe'
t-a-s-əskar-t	t-i-s-əskar	'grass sp.'
t-a-šəkkot-ʔ	t-i-šákkad	'hair tuft'
t-a-šəmbot-ʔ	t-i-šəmbad	'bird's tail'
t-a-zəyder-t	t-i-záydar	'patience'

c. C-final, Sg vowels short-full, initial and medial clusters, masculine
 a-gdálšet i-gdálšat (A-grm) 'morning'

d. C-final, Sg vowels short-full, no clusters, feminine
 t-a-s-ærar-t t-i-s-ərar (A-grm) 'non-milk cow'
 [Pl elsewhere t-i-særar-en]

e. C-final, Sg vowels short-short, masculine

a-dərdər	i-dərdar (A-grm)	'sewing up'
a-ɣəlləm	i-ɣəllam	'cud stomach'
a-jəlləd	i-jəllad	'Ijellad clan'
e-kəŋkæn	i-kəŋkan	'saltlick'
a-s-əlɣəm	i-s-əlɣam	'soldering metal'
a-məɣrəs	i-məɣras (A-grm)	'feeling bad'
[also suffixal i-məɣris-æn]		
a-s-əd̥ləj	i-s-əd̥ləj	'ornaments'
a-s-əfrəd̥	i-s-əfrad̥	'broom'
a-s-əftər	i-s-əftar	'bedding'
a-s-əgrəs	i-s-əgras	'tobacco cloth'
a-s-ərnəs	i-s-ərnas	'veil'
a-s-ək̥məs	i-s-ək̥mas	'cloth bag'

a-s-ékrəm	i-s-ékram	'livestock area'
a-s-énjəḍ	i-s-énjaḍ	'turban'
	[for T-md also: Sg a-s-ínjəḍ, Pl i-s-ínjaḍ]	
a-s-érjəj	i-s-érjaḍ	'handle'
a-s-érsəm	i-s-érsam	'slipknot'
a-s-étwər	i-s-étwar	'grain storage area'
a-š-ékrəš	i-š-ékraš	'field'
a-šənkəḍ	i-šəŋkaḍ	'dorcass gazelle'

f. feminine counterparts of (e)

t-a-jəltəm-t	t-i-jəltam	'forearm'
t-e-kætkæt-t	t-i-kətkaḍ	'boubou' (√kḍkḍ)
t-a-s-əkraf-t	t-i-s-əkraf	'awl'
t-a-s-əstək-k	t-i-s-əstaj	'padding'
t-a-s-əbḍær-t	t-i-s-əbḍar	'sacrificial ram'
t-a-s-əggət-t	t-i-s-əggad (A-grm)	'feather'
	[Sg also t-ə-s-əggi-t-t]	
t-a-s-ərrəs-t	t-i-s-ərras	'chisel'
t-a-s-əjbəs-t	t-i-s-əjbas	'wrap (garment)'
t-e-təmbəy-t	t-i-təmbay	'trap disk'
t-a-ḗmbəy-t	t-i-ḗmbay	'(small) penis'
	[Pl also t-i-ḗmba]	
t-a-ḗmbəḗ-t	t-i-ḗmbaḗ	'neolithic site'

g. C-final, Sg vowels short-short with final i = /əy/, masculine; cf. (j) below

a-s-érwi	i-s-érway	'kneading stick'
a-s-əsli	i-s-əslay	'curdled milk'

h. C-final, Sg vowels short-short with final i = /əy/, feminine

t-ə-m-əzzi-t	t-i-məzzay (A-grm)	'getting well' (VbIN)
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i. C-final, Sg vowels short-short, initial and medial clusters, masculine

a-tkəlkal	i-tkəlkal (A-grm)	'skull'
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j. like (g) but with stem-initial cluster and medial unclustered C

ə-zḗmi	i-zḗməy (T-ka)	'strip of hide' (√zmy)
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k. C-final, Sg vowels short-short, no stem-internal clusters, feminine

t-a-səḍək-k	t-i-səḍag	'direction' (A-grm)
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[K-d: Sg t-ə-s-ḍək-k, Pl t-i-s-ḍaj]

t-a-səkət-t	t-i-səkəḍ (T)	'finger'
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[masculine in other dialects: Im dialect ə-ssəkəḍ with Pl i-ssəkəḍ, also R/K Sg a-səkəḍ with Pl i-səkəḍ]

Here, all Sg stems have a short V in the first stem syllable. (188.a-d) have a full V in the second stem syllable, while (188.e-k) have a short V in the second stem syllable. In the masculine Sg forms, and in both masculine and feminine plurals, we observe lexical penultimate accent. The bulk of stems with this unsuffixed «ə ə» Pl have a medial CC cluster (188.a-c, e-i), though a handful have just a single C in this position (188.d, j -k). The stem may also have an initial CC cluster (188.c, i-j). Clusters have no effect on accent or ablaut vocalism. Several Sg stems (188.g, i) end in *i*, which behaves like /əy/, so the ablaut Pl ends in ...əy.

The cases in (188.k) are exceptions to Syncope. ‘Direction’ is not really exceptional, since the only unsyncopated forms are from A-grm, which generally fails to syncopate. However, ‘finger’ is an authentic exception in R, K, and T dialects, but the Im dialect variant ə-ssəkəɖ with geminate *ss* suggests a possible historical reason why Syncope does not apply to this stem, since Syncope is incompatible with a CC cluster on either side of the targeted schwa, as seen in ə-zzəmi ‘strip of hide’ (188.j). Foucauld (DTF 4.1813) likewise gives “essekedɖ” (presumably əssəkəɖ) for the Adrar (i.e. K-f) dialect, though Tuareg varieties of Algeria and Niger have a distinct word for ‘finger’ (root √ɖɖ)

We now turn to cases where the Sg is V-final as in (187) but has a short V in the first stem syllable (189).

(189) Unsuffixed Plural Ablaut (V-Final Bisyllabic noun, «ə ə» Sequence)

singular	plural	gloss
a. V-final, first Sg stem vowel short, masculine, unaccented		
à-fəʃko	ǐ-fəʃka	‘early hot season’
à-s-əɾmo	ǐ-s-əɾma	‘dye’
à-s-əkto	ǐ-s-əkta	‘remembrance’
à-s-əlso	ǐ-s-əlsa	‘garment’
à-s-ənso	ǐ-s-ənsa	‘tomb’
à-s-ærko	ǐ-s-ərka	‘Bozo man’
à-š-əkšo	ǐ-š-əkša	‘fodder’
à-š-ənjo	ǐ-š-ənja	‘enemy’
è-š-əyhe	ǐ-š-əyha	‘fonio’
b. V-final, first Sg stem vowel short, masculine, Sg with no prefix		
s-ənto	ǐ-s-ənta	‘beginning’
	[also s-ənto-tæn]	
c. like (b) but Sg with final accent		
zæɾtó	ǐ-zæɾta	‘ladle’

- d. V-final, first Sg stem vowel short, feminine, no Sg suffix
- | | | |
|-----------|-------------------|----------------|
| t-è-læmse | t-ǐ-ləmsa | 'plain(s)' |
| t-è-tæŋre | t-ǐ-təŋga (A-grm) | 'date pit' |
| t-è-zærhe | t-ǐ-zərha | 'jet (liquid)' |
- e. V-final, first Sg stem vowel short, feminine, Sg with -t-t
- | | | |
|-----------------|--------------------|-----------------|
| t-a-s-æ̀rto-t-t | t-ǐ-s-ə̀rta | 'spot for pole' |
| t-a-s-æ̀rto-t-t | t-ǐ-s-ə̀rta | 'herb' |
| t-a-sæ̀yko-t-t | t-ǐ-sæ̀yka (A-grm) | 'grass sp.' |
- [Pl perhaps an error for t-ǐ-sæ̀yka]
- f. like (e), but Pl with penultimate accent, final i treated as /əy/
- | | | |
|-----------------|--------------|-----------|
| t-a-s-ə̀nji-t-t | t-i-s-ə̀njay | 'channel' |
|-----------------|--------------|-----------|
- g. like (e), but with stem-initial CC cluster
- | | | |
|-----------------|---------------------|------------------|
| t-a-srə̀mme-t-t | t-ǐ-sremma | 'meat broth' |
| t-a-tbə̀qqi-t-t | t-ǐ-tbə̀qqa | 'dot' |
| t-a-twə̀qqe-t-t | t-ǐ-twə̀qqa (A-grm) | 'small quantity' |
- h. unclustered medial C, masculine
- | | | |
|---------|---------|-----------------|
| à-sæ̀ko | ǐ-sə̀ka | 'grain measure' |
|---------|---------|-----------------|
- i. V-final, with stem-final w in Pl
- | | | |
|------------|-----------|----------|
| t-è-næ̀lle | t-ǐ-nəlwa | 'thread' |
|------------|-----------|----------|

As in (187), the V-final Pl stems in (189) nearly all have default accents (hence antepenultimate Pl accent), the exception being t-i-s-ə̀njay 'channels' (189.f). The minor patterns in (189.b-c) have a Sg without prefix, but the Pl does show the Pl prefix i-. In (189.i), we observe an alternation of ll in the Sg with lw in the Pl; this is reminiscent of Pl stem-final w before MaPl -an or FePl -en, corresponding to Sg stem-final V (§4.1.2.14).

As the above data show, in stem-medial position, u in ablaut plurals correlates overwhelmingly with a full V in the Sg, and stem-medial ə correlates overwhelmingly with a short V in the Sg. However, in the course of eliciting plurals for hundreds of nouns during lexicographic fieldwork, I did find a few exceptions where Pl u corresponded to a Sg short V, or where Pl ə corresponded to a Sg full V. Most of these cases I regard as informant slip-ups, or at best as local dialectal mutations, and follow-up checks (either with the same informant or with others) generally produced the expected regular Pl. The one case that was verified with multiple informants is 'inter-dune interval' (190).

(190) Unaffixed Plural Ablaut (Medial Full V in Sg, Short V in Pl)

singular	plural	gloss
t-ə-yərə-t-t	t-ǐ-yəra	'inter-dune interval'

This noun is used as a measure of distance (roughly 1-2 kilometers), and is therefore frequently quantified, a situation that lends itself to lexicalization of the plural.

For the record, the other (marginal) cases recorded from single informants, in all cases T-md or A-grm, were: Sg. a-rælas 'fresh burrgrass', Pl i-rúlas (T-md); æ-gásən 'broom', Pl i-gúsan (A-grm); e-lækef 'horse saddle', Pl i-lúkaf (T-md, more often ǐ-lækf-an); á-stəj 'padded saddle', Pl i-s-útəj (T-md, more often ǐ-stəj); t-e-zèrdəm-t 'scorpion', Pl t-i-zǎrdam (A-grm, versus T-ka t-i-zúrdam); t-a-s-üdmær-t 'question', Pl t-i-s-édmar (A-grm); t-æ-zügge-t-t 'punch', Pl t-ǐ-zəgga (A-grm, versus T-ka Sg t-ə-zügge-t-t, Pl t-ǐ-zugga). I suspect that, had I been able to recheck these data with the T-md informant (who passed away) or the A-grm informant, I may have been able to resolve the irregularities. For T-ka and K-d, where I have better data, I was able to re-check apparent exceptions and was able to correct mistaken transcriptions.

With feminine nouns whose singular ends in -t (or -t-t), we very often get a surface **FeSg/FePl accent shift**. The FeSg has penultimate accent, while the FePl has antepenultimate accent (for bisyllabic stems, this means that the FePl has prefixal accent). These apparent accent shifts are phonologically predictable, if we assume that these stems have no lexical accent. This is because FeSg -t belongs to the set of suffixes (and clitics) that are incompatible with antepenultimate accent, so for these FeSg stems penultimate accent is the default (§3.3.1.1). Some examples are scattered through the lists given earlier in this section. Further examples are in (191).

(191) Predictable Singular/Plural Accent Shift (Feminine Nouns)

singular	plural	gloss
a. regular cases		
t-æ-kàla-t-t	t-ǐ-kula	'dragging rope'
t-a-dǎrnu-t-t	t-ǐ-dǎrna	'millet beverage'
t-a-dǎmbu-t-t	t-ǐ-dǎmba	'penis'
t-a-m-ǎrsøy-t	t-ǐ-mǎrsa	'dead animal'
t-a-kǎmbu-t-t	t-ǐ-kǎmba	'hat'
t-a-lǎggi-t-t	t-ǐ-lǎgga	'sedge sp.'
t-a-ǐbǎbi-t-t	t-ǐ-ǐbǎba	'wailing'
t-æ-rǐləle-t-t	t-ǐ-rǐləla	'ululation'
t-a-flǎnši-t-t	t-ǐ-flǎnša (A-grm)	'hoof'

t-a-kbət̪te-t-t	t-ĩ-kbət̪ta	'pinch (of sth)'
t-a-kmət̪te-t-t	t-ĩ-kmət̪ta	'pinch (of sth)'
t-a-ksən̪ni-t-t	t-ĩ-ksən̪na	'vaccination'

b. like preceding but with Sg stem-final semivowel absent in Pl

t-a-məs̪roy-t	t-ĩ-məs̪ra	'carrion'
---------------	------------	-----------

The Songhay borrowing æ-jášu 'calabash' (masculine) has an irregular accent shift in Pl ĩ-juša. This may be parasitic on (analogical to) the surface accent shift in the corresponding feminines: Sg t-æ-jäšu-t-t, Pl t-ĩ-juša.

4.1.1.17 Conditions for Plural «i a» instead of «u a»

As just seen in §4.1.2.16, above, the unsuffixed ablaut plural has a <HL> melody that results in such surface vowel sequences as bisyllabic «u a» when the Sg has a full V in the penultimate syllable. However, there are certain cases where we get i instead of u.

First, if the singular stem **already has an i in a nonfinal syllable**, such as the penult, the plural retains i. In the lists of stems with «u a», «ə u a», and similar plural vowel sequences (§4.1.2.12, §4.1.2.15), I find no examples where singular i has been converted to u.

(192) Sg i = Pl i in Stem

singular	plural	gloss
t-a-x̣imi-t-t	t-ĩ-x̣ima (A-grm)	'sitting' (√xym)
a-s-ínjəḍ	i-s-ínjəḍ (T-md)	'turban'
	[Sg more often a-s-ənjəḍ]	
t-ə-ṣisək-k	t-i-ṣisak (A-grm)	'Bergia herb'
	[non-ablaut affixal Pl in T-ka]	
t-itter-t	t-ittar	'invocation'
	[Sg more often t-ètter-t]	
t-a-ẉinəs-t	t-i-ẉinas	'belly-strap ring'

In (192), the forms for 'sitting' are problematic, since the irregular verb 'sit' appears to fluctuate (paradigm-internally and dialectally) between lexical -x̣imv- and -x̣əymv- (§7.3.2.9). If t-ĩ-x̣ima is really t-ĩ-x̣əyma, we should not expect u anyway. This would not apply to the other cases in (192.a). None of the plurals in (192) is widely attested. The plurals shown for 'sitting' and 'Bergia herb' were recorded for Ansongo-Gourma. The stem for 'turban' has medial i in T-md, but not in other dialects.

The full V's {a o u} in nonfinal syllables of the Sg correspond to Pl u due to the H part of the <HL> melody; many examples in §4.1.2.11-12. Those

sections also have several examples of Sg e corresponding to Pl u. However, when the e is stem-initial, it normally corresponds to i (not u) in the Pl. This is seen in (193.a), while (193.b) shows an isolated case of the same e/i alternation in stem-medial position.

(193) Sg e = Pl i in Stem

singular	plural	gloss
a. stem-initial e/i alternation		
t-ëddæm-t	t-íddam	'drop'
t-ëddes-t	t-íddas	'move (in game)'
t-ëjjam-t	t-íjjam	'trip to well'
t-ëgget-t	t-íggad	'jump'
t-ëqqit-t	t-íqqad	'cauterizing mark'
t-ëqqes-t	t-íqqas	'applause'
t-ëkkel-t	t-íkkal	'footprint, track'
b. stem-medial e/i alternation		
t-e-šëji-t-t	t-ĩ-šija	'bed'

A more systematic case where we get i rather than u in an unsuffixed ablaut plural is when the full vowel affected by the high melody is **followed by w**. I know of no exceptions to this dissimilation. The known examples are in (194).

(194) «i a» Instead of «u a» Before w

singular	plural	gloss
æ-báwæn	i-bíwan	'monitor lizard'
e-réwəd	i-ríwad	'turban'
t-e-rëwi-t-t	t-ĩ-riwa	'cord'
æ-sráwil	i-sríwal	'pants' (<Ar.)
t-a-s-æss-äwi-t-t	t-i-s-æss-íway	'package' (A-grm)
t-æ-χäwi-t-t	t-ĩ-xiwa	'padding'
t-æ-yäwæn-t	t-i-yíwan	'(river) ford'

4.1.1.18 <HL> melody realized as «a» (monosyllabic stems)

I now turn to monosyllabic stems, which have only one open vocalic position excluding the Pl prefix -i-. Given a forced reduction of <HL> to one syllable, the obligatory L is realized while the H has no effect. Specifically, L combines

with $\bar{\chi}$ -f to produce α in the final syllable. Examples involving a true vocalic prefix, which happens to be accented in all cases, are given in (195).

(195) Unaffixed Ablaut Plural of Monosyllabic Stem

singular	plural	gloss
a. Sg stem has full vowel, true vocalic prefix		
t-ä-bhaw-t	t-î-bhaw	'herb sp.'
	[this Pl is marginal]	
t-ä-dhon-t	t-î-dhan (A-grm)	'animal fat'
t-ä-m-juṭ-t	t-î-mjaḍ	'band of warriors'
t-ä-s-ni-t-t	t-î-s-nay	'mount' (√s-ny)
		[this Pl marginal]
b. Sg has full vowel (and drops stem-final vowel in plural)		
t-è-meḍe	t-î-maḍ	'hundred'
c. Sg has short vowel, true vocalic prefix		
t-ä-ṛhəl-t	t-î-ṛhal	'euphorbia (shrub)'
á-htəs	î-htas	'Faidherbia tree'
	[once î-htəs-an]	
t-è-hæq-q	t-î-har (A-grm)	'handful'
	[Sg also t-è-heq-q (T)]	
á-mnəs	î-mnas	'camel'
t-ä-s-dəs-t	t-î-s-das	'tent stake'
á-s-fəl	î-s-fal	'roof material'
t-ä-s-həṭ-t	t-î-s-haḍ	'bellows (tool)'
á-s-hər	î-s-har	'lid'
á-s-jən	î-s-jan	'animal area'
t-äššəl-t	t-î-ššal	'viper'
d. other C-final		
α-šərik	î-šrak	'evil spell'
	[Sg also α-šərik, æššærík (<Ar.)]	
e. V-final		
à-šəko	î-šəka (A-grm)	'herb sp.'
	[A-grm î-CəCa usually = î-CCα elsewhere]	

The only cases where u or i instead of α characterizes the plural of a monosyllabic stem are those also involving shift to final-syllable accent in the plural, see (206.f-h) in (§4.1.2.24).

4.1.1.19 <HL> melody expanded for heavy stems

While monosyllabic stems reduce the vocalic melody <HL> to just «a» in a monosyllable, stems of three or more syllables subject to suffixless plural ablaut attach the L component to the stem-final vowel (which is lengthened if short), and spread the H over the remaining syllables (keeping their underlying length). The resulting vocalic sequences are trisyllabic «ə ə a», «ə u a», and «u ə a». Quadrisyllabic sequences of the same type are possible, but some such stems are subject to Syncope and therefore surface as trisyllables; see (203), below. Simple examples of multisyllabic ablaut plurals are in (196).

(196) Unsuffixed Ablaut Plural of Multisyllabic Stem

Sg	Pl	gloss
a. Plural «ə ə a» (C-final)		
a-hərgəggəm	i-hərgəggam	'Senna plant'
a-kəllækol	i-kəlləkəl	'butter skin'
e-n-əbəlæl	i-n-əbələl (A-grm)	'favored child'
t-a-fəllədət-t	t-i-fəllədəd	'padded saddle'
	[Pl also t-i-fəlləda (A-grm)]	
t-a-kədəbdəb-t	t-i-kədəbdab (A-grm)	'large frog sp.'
t-a-m-əssədək-k	t-i-m-əssədək	'zakat (tithe)'
t-a-rjəyrəji-t-t	t-i-rjəyrəjay	'central location'
t-a-s-əqqəsən-t	t-i-s-əqqəsən	'chewstick'
t-a-wəzəzi-t-t	t-i-wəzəzay (A-grm)	'ankle'
b. Plural «ə ə a» (V-final)		
a-zəmməzro	i-zəmməzra	'roller (bird)'
e-n-əddərfe	i-n-əddərfa	'freed slave'
a-s-əggəfi	i-s-əggəfa (A-grm)	'funnel'
a-s-əhhəsku	i-s-əhhəska	'decorating'
a-s-əjjərhu	i-s-əjjərha	'future status'
s-əggəyfo	i-s-əggəyfa (A-grm)	'scarecrow'
	[Pl usually suffixal s-əggəyfo-tæn]	
t-a-færɸəru-t-t	t-i-fərfəra	'carp (fish)'
t-a-məgəlla	t-i-məgəlla	'cowry-shell'
c. Pl «ə u a»		
æ-m-əddérɸəl	i-m-əddúrɸəl	'blind man'
æ-m-əhhayyu	i-m-əhhuyya	'hunter'
æ-m-əttúnkul	i-m-əttúnkul	'invisible one'
e-məjjéjjær	i-məjjújjær	'collarbone'
a-s-əggamu	i-s-əgguma	'body cover'

a-s-ækkákəl	i-s-ækkúkal	'sole (of foot)'
a-s-æmm-úləy	i-s-æmm-úləy	'joint'
əs-əss-únjær	i-s-əss-únjar	'obstacle'
ə-hən-s-ádək	i-hən-s-údak	'camping spot'
ə-hən-z-ázəɾ	i-hən-z-úzəɾ	'inhabited area'
æ-hæn-zabbu	i-hən-zubba	'host'
t-a-fəŋgora	t-i-fəŋgura	'baobab fruit'
t-e-m-æjjējərə-t-t	t-i-m-əjjujra	'sterile female'
d. Pl «ə ə ə ə ə» (C-final)		
t-a-s-əggəɾəyğəri-t-t	t-i-səggəɾəyğəray	'roller (bird)'
e. Pl «ə ə u ə»		
t-a-fəŋkæyðmu-t-t	t-i-fəŋkəyuma	'mussel shell'

I have no example of surface «ə u ə ə», but such a sequence underlies surface «u ə ə» observed after Syncope in Pl t-i-fdùfəda (for Sg t-a-fədofædo-t-t 'Tragus grass', §4.1.2.22).

4.1.1.20 Carryover of stem vowels from singular to plural

A few stems have marginal ablaut plurals, recorded for the A-grm dialect, that retain the singular vocalism in the first syllable(s) of the plural stem, but end in one or two syllables consistent with the basic plural melody. In these cases, the melody <H L> does not attach to all vocalic positions in the stem. All examples do have the usual full a in the final vocalic position. Data in (197).

(197) Carryover of Singular Vocalism in Onset of Ablaut Plural

singular	plural	gloss
t-æ-koyñžəmin-t	t-i-koyñžúma (A-grm)	'Egyptian goose'
e-bélbel	i-bélbal (A-grm)	'egret'

There are other cases included in various sets of ablaut forms where some or all of the Sg/Pl vocalism converges. In a case like Sg a-húlel 'young donkey', Pl i-húlal, the Sg already has u, so the only change in stem vocalism from Sg to Pl is in the final syllable.

In a few cases (198), the Sg and Pl have identical vowel sequences. I interpret this as accidental, in that the Sg already happens to have a lexical vocalism compatible with the Pl <H L> melody. The absence of a plural suffix strongly suggests that an ablaut plural is at hand.

(198) Accidental Identity of Sg/Pl Vowel Sequences

singular	plural	gloss
t-a-mə̀gə̀lla	t-i-mə̀gə̀lla (A-grm)	'cowry-shell'
t-ə̀-suyya	t-ĩ-suyya	'alfa grass'
a-mə̀llal	i-mə̀llal	'addax (antelope)'

4.1.1.21 Sg «ə u» (or «æ u»), Pl «u a»

There are a number of bisyllabic verb stems that have «ə u» (dialectally «æ u») vocalism in the perfectives versus (in some dialects) «u a» in the (short and long) imperfectives (§7.3.1.9). Within verbal morphology, it appears that a lexical u moves from one syllable to the other. (There are also some similar cases involving i instead of u.)

One verb stem of this type, 'to share' (PerfP -ə̀ẓun-, ShImpf ùẓan, disregarding dialectal variants), also occurs in a feminine noun with the same stem alternation (199).

(199) Singular «ə u», Plural «u a»

singular	plural	gloss
t-ə̀-ẓun-t	t-ùẓan-en	'(a) share, division'

4.1.1.22 Syncope, Accent Reattachment, and apparent FePl accent shift in unaffixed ablaut plurals

In this section I consider Syncope and Accent Reattachment (from the deleted V to the preceding V) in plurals of the melodic type <HL> described in the preceding sections.

Syncope and Accent Reattachment are illustrated in (200).

(200) Sg -V-CVCuC-, Pl -i-CCaC (T-ka, etc.) or -i-CáCaC (A-grm)

singular	plural	gloss
a. masculine (regular)		
a-bærom	ĩ-bram	'Vetiveria grass'
a-bætoł	ĩ-btal	'ground depression'
a-bæyoɾ	ĩ-byɾ	'waterskin'
e-dærem	ĩ-dram	'cool wind'
a-dæloy	ĩ-dlay	'lip'

a-m-æḏon	í-m-ḏan	'fodder (grass)'
a-fæḏis	í-fḏas	'hammer'
	[Pl also i-fḏas (A-grm)]	
a-fæḏrot	í-fḏat	'tree stump'
a-ræḏbob	í-rḏab	'tree hole'
a-rḏnib	í-rḏab	'(writing) pen'
a-ræsis	í-rsas	'water jug'
	[Pl also i-rsas (A-grm)]	
a-jæḏod	í-jḏad	'waterskin'
e-jæḏeḏ	í-jḏaḏ	'bird'
a-jæšol	í-jšal	'eagle-owl'
	[Sg also a-jæššol]	
a-kæbor	í-kbar	'sparrow'
a-kæḏil	í-kḏal	'vagina'
	[Pl also i-kḏal (A-grm)]	
a-kæwat	í-kwat	'mistletoe'
a-kæyon	í-kyan	'tortoise'
a-læjoḏ	í-ljaḏ	'baby camel'
	[Sg also a-lægoḏ with Pl i-lḡgaḏ (A-grm)]	
a-læmom	í-lmam	'dama gazelle'
a-mérid	í-mḏad	'vassal (caste)'
a-méhis	í-mhas	'riposte'
æ-mæjon	í-mjan	'small dune'
a-mæros	í-mras	'curse'
a-néhil	í-nhal	'ostrich'
	[Pl also i-néhal (A-grm)]	
a-sækok	i-sékak (A-grm)	'nest'
a-sækor	í-skar	'reprimand'
a-šærol	í-šḏal	'young ram'
	[Pl also i-šḏal (A-grm), i-šḏal-an]	
a-šæmol	í-šmal	'sign'
	[Pl also i-šmal (A-grm)]	
a-tækor	í-tkar	'silver bracelet'
	[Pl also i-tékar (A-grm)]	

b. feminine

t-e-bærem-t	t-í-bram	'lemon grass'
t-a-rækaḏ-t	t-í-rkaḏ (T-ka)	'Grewia tree'
t-a-wāgos-t	t-í-wgas	'field'
t-a-tæmik-k	t-í-tmak	'tent side'
	[A-grm: Sg t-a-tæmik-k, Pl t-i-támak]	
t-a-m-æḏin-t	t-í-m-ḏan	'grazing'
t-a-m-æḡin-t	t-i-m-égan (A-grm)	'(camel) kneeling'
t-a-m-æzil-t	t-í-m-ḏal	'payment'
	[Pl also t-i-m-éḏal (A-grm)]	

In (200.a), $-C\acute{v}CvC-$ stems with one short accented stem V and one final-syllable full V, excluding $-C\acute{e}CaC-$ with stem-wide $\langle L \rangle$ vocalism, have unsuffixed ablaut plurals of the form $\acute{i}-CCaC$. This $\acute{i}-CCaC$ is syncopated from underlying $/i-C\acute{s}CaC/$ with $\langle HL \rangle$ Pl melody. The A-grm dialect alone preserves the unsyncopated $i-C\acute{s}CaC$. The corresponding feminines (200.b) have Pl $t\acute{i}-CCaC$ (A-grm $t\acute{i}-C\acute{s}CaC$). All of the stems in (200) have a vocalic prefix, generally $-a-$ or $-e-$ in the Sg.

As elsewhere (e.g. verbal nouns of long verb stems), Syncope applies to the schwa of a stem-initial $/-C\grave{e}CV.../$ sequence ("V" = short or full vowel) after a nominal prefix. Syncope does not normally apply to \acute{a} , the other short V. Interestingly, Syncope is not blocked by accent. When Syncope causes the lexical accent to become unattached, it simply re-attaches to the prefixal syllable to the left. Since the syllable in question is penultimate (not antepenultimate), the **accent is marked** (i.e. is not due to Default Accentuation). Consistent with this, the accents in the Pl (as well as in the Sg) remain in place when a preposition is added: \acute{i} -btal 'ground depressions', with preposition $d\acute{a}r$ 'á-btal 'in the depressions'.

As noted briefly above, Sg nouns of type $-C\acute{e}CaC-$ with $\langle L \rangle$ vocalism rarely take this (or any other) ablaut plural in any dialect. These nouns generally have simple affixal plurals, but a few have a suffixed ablaut MaPl $\grave{i}-C\grave{e}CC-an$ or FePl $t\grave{i}-C\grave{e}CC-en$, see (178.b) and (184.b) in §4.1.2.14. Verbal nouns of type $a-C\acute{e}CaC$ take affixal plurals without ablaut, i.e. $i-C\grave{a}CaC-\acute{a}n$.

A handful of Sg stems with all-low V's have irregular Pl forms involving Syncope along with various other stem changes (201). For 'hole', the regular suffixal Pl $i-n\grave{a}bj-\acute{a}n$ is also common.

(201) Sg with Low Vowels, Pl (t)- \grave{i} -CCuPPa

singular	plural	gloss
$a-n\acute{a}bj$	$\grave{i}-mbujja$	'hole'
$t-\acute{a}-n\acute{a}b\grave{a}jju-t-t$	$t\grave{i}-mbujja$	'hole'
$a-n-\acute{a}k\acute{a}bba$	$\grave{i}-\eta kubba$	'large boubou'

Masculine V-final stems with Sg $\grave{a}-CvCv$ have a syncopated Pl $\grave{i}-CCa$ (e.g. T-ka), or unsyncopated $\grave{i}-C\grave{e}Ca$ (A-grm). As in (200), Syncope applies to the schwa of $/i-C\grave{e}Ca/$ except in A-grm dialect. Examples are in (202). Accent Reattachment is not applicable to these cases since the deleted (syncopated) V does not bear a marked accent. All of the examples have default accents in both Sg and Pl.

(202) Sg -CvCu-, Pl (t-)i-CCa or A-grm (t)-i-CəCa

	singular	plural	gloss
a. masculine			
	à-bæjo	ï-bja	'udder covering'
	à-fæzo	ï-fəza (A-grm)	'markouba grass'
		[Pl also ï-fəzw-an]	
b. feminine			
	t-a-bæka-t-t	t-ï-bka	'jujube tree'
	t-a-kæbo-t-t	t-ï-kəba (A-grm)	'basket'

Cases of Syncope (applying to Pl-stem-initial /-CəCV.../) with three or four syllables in the Sg stem are given in (203).

(203) Sg -CvCúCvC-, Pl (t-)i-CCúCaC

	singular	plural	gloss
a. masculine, C-final, with «u a» surface vocalism			
	æ-rærárad	i-rúrad	'thick-knee (bird)'
	α-zæłálam	i-zúlám	'lizard'
b. feminine, C-final, with «u a» surface vocalism			
	t-æ-kæràkeɽ-t	t-i-krúkaɽ	'shame'
	t-æ-mæɽàter-t	t-i-mɽútar	'need'
	t-æ-mækàrkez-t	t-i-mkúrkaz (T-ka)	'Aerva bush'
c. feminine, V-final, with «u a» surface vocalism			
	t-æ-dæmàmu-t-t	t-ï-dmuma	'nipple'
	t-æ-xæbàbu-t-t	t-ï-xbuba	'gaping hole'
d. feminine, V-final, with «ə ə a» surface vocalism			
	t-a-kæfæŋkæfo-t-t	t-i-kfəŋkəfa	'3rd stomach (of cow)'
	t-a-kæyæŋkæyo-t-t	t-i-kəyəŋkəya	'oxpecker' (A-grm)
e. feminine, V-final, with «u ə a» surface vocalism			
	t-a-fædofædo-t-t	t-i-fdùfəda	'Tragus grass'

For 'young billygoat' the Sg is α-dæwal. Alongside the common suffixal Pl i-dəwal-æn, I recorded syncopated ï-dwal-æn as a variant for the T-md speaker.

The basic rules at work in the plurals in (200-3) can be formalized as (204).

(204) Syncope and Accent Reattachment in Plural (except A-grm)

a. **Syncope (onset of plural noun)**

In unsuffixed ablaut Pl /-CəCV.../, with a preceding vocalic prefix (i- or reduced ʾə-), the schwa is syncopeated.

b. **Accent Reattachment**

A marked accent (lexical or grammatical) that is unattached following Syncope re-attaches to the first V to the left.

Many Sg noun stems have dialectal alternations of the type T-ka -CəCV... versus other dialects' -CəCV..., where V is a high vowel {u ə i}. These T-ka Sg stems do not syncopeate, hence T-ka e-dáhi 'sand' versus other dialects' e-dǎhi. The failure of the T-ka nouns to syncopeate poses a problem for the view that Syncope is a straightforward phonological (as opposed to morphophonological) rule. To salvage the straight phonological analysis, one could argue that T-ka has underlying /æ/ in these stems, and (after Syncope fails to apply) raises /æ/ to ə by Short-V Harmony.

A noun meaning 'finger' has the form α-sákəḍ in R and K (K-d and K-f) dialects, with Pl i-sákəḍ that fails to undergo Syncope. This pattern is replicated in the feminine variant t-α-səkət-ḥ used in the Timbuktu area (T-k, T-md) and attested as a variant in K-d, with Pl t-i-sákəḍ. The failure of Syncope to apply in these dialects is unusual, but the Im dialect has geminated ss in ə-ssákəḍ, and geminated ss is reported for the Algerian Tuareg cognate. Since Syncope is blocked by a preceding (as well as by a following) CC cluster, the variant with ss explains (at least historically) why Syncope fails to apply to the Pl of this stem.

There are some **apparent accent shifts in FeSg/FePl** pairs, of the type Sg t-α-dəɾnu-t-t 'millet beverage', Pl t-ǐ-dəɾna. However, these do not require a special accent shift rule. FeSg suffix -t is incompatible with antepenultimate accent (§3.3.1.1), so in t-α-dəɾnu-t-t the schwa will be accented by Default Accentuation whether or not it has an underlying lexical accent. The fact that we get antepenultimate (i.e. default) accent in the Pl t-ǐ-dəɾna tells us that the stem has no lexical accent. The Sg stem is therefore unaccented /-dəɾnu-/, and both Sg and Pl acquire their surface accent by regular rules. See (187.c) and (189.e,g) in §4.1.2.16 for more examples.

4.1.1.23 Ablaut Pl with medial gemination (t-i-CáPPaC, etc.)

In (205), we see a number of cases where a medial ungeminated C in the Sg is geminated in the unsuffixed ablaut plural. This plural is productive with t-ǎ-CCəC-t VbIN forms (205.a), and sporadic with Sg stems (nearly all feminine) of the basic shape -C'VCuC- (205.b-c). Most -C'VCuC- Sg stems have

a syncopated plural (§4.1.2.22, above); the gemination in (205.b-c) pre-empts Syncope.

(205) Plurals with Medial Gemination

singular	plural	gloss
a. Sg is VbIN of type t-ä-CCəC-t		
t-ä-ftəq-q	t-i-fóttar	'laying out'
t-ä-ʀdər-t	t-i-ʀóddar	'betrayal'
t-ä-ʀləf-t	t-i-ʀóllaf	'entrusting'
t-ä-ʀmər-t	t-i-ʀémmar	'elbow'
t-ä-ʀrəf-t	t-i-ʀórraf	'dry grazing'
	[Pl also t-ï-ʀrəf-en]	
t-ä-ʀyəl-t	t-i-ʀýyyal	'courting'
t-ä-mbər-t	t-i-nóbbar	'night pasturing'
t-ä-rti-t-t	t-i-réttay	'mixing'
	[Sg equivalent to t-ä-rtəy-t-t]	
b. Sg t-v-CÿCvC-t		
t-a-bəkun-t	t-i-bókkan (K)	'heap'
t-a-jəzəl-t	t-i-jézʒal	'kidney'
t-e-kæwen-t	t-i-kówwan	'response'
c. Sg V-CýCvC		
æ-hæyog	i-háyyag (A-grm)	'wound'
d. irregular		
t-æ-bbīlæn-t	t-i-bóllan (A-grm)	'wrestling'
	[T-ka: Sg t-əbbīlæn-t, suffixal Pl t-əbbīlæn-en]	

Except for the irregular (and dialectal) form for 'wrestling' (205.d), the plurals given in (205) are basically consistent with the normal Pl ablaut rules, including the <HL> melody. However, we must add some other wrinkles. Assuming that the Sg reveals the lexical form of the stem, we need to account for the gemination of the medial C, the insertion of schwa, and the penultimate accent seen in the plurals.

Since Schwa-Insertion here is epenthetic (breaking up triple clusters created by gemination), it can piggyback on the gemination process. The gemination and accent processes could be handled by ablaut components (of the Γ and $\check{\chi}$ types), though it must be quickly added that these components are not part of the productive, overall ablaut plural pattern. Since the Γ and $\check{\chi}$ features are limited to the particular subtype of ablaut plural covered in this section, it is best to add them to the normal plural ablaut components by rules that depend on a prior scan of the input (i.e. Sg) stem, recognizing its basic

shape and its lexical features, and identifying the stem as suitable for this subtype of plural ablaut.

The medial gemination is taken care of by including the **gemination formative** Γ -c2 in the ablaut mix for these plurals (§3.4.2.1-2).

In (205.b-c), the targeted C_2 is already intervocalic, occupying the second C-position in the stem. In the one A-grm dialect case in (205.d), C_1 is geminated and the targeted C_2 is again in the second C-position. In (205.a), C_1 and C_2 form a cluster, but it is possible to assume an underlying short V that separates them in underlying representations, before being deleted by Syncope. Note the similarity in syllabic structure between e.g. t- \ddot{a} - $\text{rd}\ddot{a}$ r-t ‘betrayal’ in (205.a) and instrumental nominals like \acute{a} -s-f \ddot{a} l ‘roof material’ (§8.9), cf. causative verb -s-vfv- ‘put a roof on’ (Imprt s- \ddot{a} f \ddot{a} l, PerfP - \ddot{a} s-f \ddot{a} l-). If we take ‘betrayal’ to be /...- $\text{r}\acute{a}\ddot{d}\ddot{a}$ r-t/ before Syncope, the Pl t-i- $\text{r}\acute{a}\ddot{d}\ddot{a}$ r can be taken as a regular ablaut Pl with the sole addition of Γ -c2.

The accents in e.g. t-a-j \ddot{a} z \ddot{e} l-t ‘kidney’, Pl t-i-j \acute{a} z \ddot{z} al in (205.b) do not require a special ablaut-sensitive accent shift. We can take the stem here as /-j \acute{a} z \ddot{e} l-/ with a lexical accent that appears most clearly in the Pl. In the (205.a) cases, e.g. t- \ddot{a} - $\text{rd}\ddot{a}$ r-t ‘betrayal’, Pl t-i- $\text{r}\acute{a}\ddot{d}\ddot{a}$ r, we do have an apparent accent shift. However, if we accept the suggestion made above that the lexical form of the stem is /- $\text{r}\acute{a}\ddot{d}\ddot{a}$ r-/, the only shift is Accent Reattachment (204.b) in the Sg following the syncope of the accented schwa.

For possible connections of the medial-geminated plurals of this section to final-accent ablaut plurals (some with final gemination), see §4.1.2.24, just below.

4.1.1.24 Ablaut plurals with final accent (t-i-C(C) \acute{a} CC, etc.)

On the fringe of the ablaut patterns described above, which involve a basic <HL> melody, is a set of ablaut plurals characterized by a straight <H> melody and final-syllable accent. If there is a final V in the Sg, this V is generally deleted in the Pl. Final Gemination is also common. Syncope and V-Shortening may also apply. One could argue for a target template -C(C) \acute{a} CC, but the “templatic” character is not perfect, since there is the option of having a stem-initial cluster instead of a single C, and a further option of having a full high V instead of schwa.

Consider the data in (206).

(206) Plurals with Final Accent

singular	plural	gloss
a. schwa, Final Gemination, Syncope inapplicable		
\ddot{e} -g \ddot{a} \ddot{s} \ddot{e}	i-g \acute{a} zz (A-grm)	‘nephew’
t- \ddot{a} -h \ddot{a} la	t-i-h \acute{a} ll	‘weeping’ (VblN)

- | | | |
|--------------|--|-------------------|
| t-è-jæʃe | t-i-gózz | 'nephew, niece' |
| | [with unusual j/g alternation in T-ka] | |
| t-è-næde | t-i-nódd | 'fever' |
| t-è-næŋe | t-i-nónŋ | 'ripeness' |
| t-è-sæle | t-i-sóll | 'eardrum' |
| t-è-sæse | t-i-sáss | 'drinking' (VblN) |
| t-è-tæte | t-i-tátt | 'eating' (VblN) |
| t-è-zæte | t-i-zótt | 'braiding' (VblN) |
| t-ìgæm-t | t-i-gómm (A-grm) | 'nose-ring' |
| | [T: Sg t-ìjæm-t, Pl t-ìjm-en] | |
| t-æ-nægo-t-t | t-i-nógg (A-grm) | 'mooing' (VblN) |
- b. schwa, final geminated CC of Pl already present in Sg, Syncope inapplicable
- | | | |
|---------------|-----------|-------------------|
| t-è-dæffe | t-i-dáff | 'floodwaters' |
| t-è-hædde | t-i-hádd | 'reach' |
| t-è-ræzze | t-i-rózze | 'breaking' (VblN) |
| t-α-rəssi-t-t | t-i-rəss | 'wild beast' |
| t-α-jəjji-t-t | t-i-jójj | '(a) load' (K-d) |
- c. schwa, Final Gemination, Syncope, V-Shortening
- | | | |
|--------------|-----------|-------------|
| t-α-dæbay-t | t-i-dbáyy | 'town' |
| t-e-fætel-t | t-i-ftáll | 'lamp' |
| t-α-mæðdal-t | t-i-mðáll | 'sandstorm' |
- d. schwa, final C already geminated, Syncope
- | | | |
|-------------|-----------|--------------|
| t-e-ræfædde | t-i-rfódd | 'first-born' |
|-------------|-----------|--------------|
- e. schwa, nongeminate cluster, Syncope inapplicable
- | | | |
|---------------|---------------------|--------------|
| t-è-zærhe | t-i-zórh (A-grm) | 'squirt' |
| | [Pl also t-ì-zərha] | |
| t-α-færki-t-t | t-i-férk | 'dried meat' |
- f. full vowel i (in A-grm often u), no final gemination
- | | | |
|-----------|----------------------------------|-------------------|
| t-è-fir-t | t-i-fir | 'word' |
| t-è-dede | t-i-díd | 'biting' (VblN) |
| | [A-grm: Pl t-i-dúd] | |
| t-è-deje | t-i-díj | 'jab' |
| t-è-jere | t-i-jír | 'throwing' (VblN) |
| | [A-grm: Sg t-è-gere, Pl t-i-gúr] | |
| t-è-wete | t-i-wít | '(a) blow' |
- g. full vowel u, with or without gemination
- | | | |
|-----------|---------|--------------|
| t-à-duje | t-i-dúj | 'jab' |
| t-à-ful-t | t-i-fúl | 'well poles' |

t-æ-ʀðʀi-t-t	t-i-ʀúʀ	‘dried clay’
t-ə-hun-t	t-i-hún	‘stone’
	[Sg also t-æ-hon-t and other variants]	
t-æ-hoʒ-t	t-i-húʒ	‘cloud of dust’
t-æ-fåti-t-t	t-i-fútt (A-grm)	‘failing’
t-è-ʀeš-t	t-i-ʀúšš (A-grm)	‘pit in ground’
	[Pl also t-i-ʀúš (R, T-ka)]	
æ-sagg	i-súgg (A-grm)	‘baggage’
	[rare in Sg; Pl also i-sújj]	
h. minor types		
t-e-gæy	t-i-gáyy (A-grm)	‘storage area’
t-ìhi-t-t	t-ihí (A-grm)	‘origin, homeland’
	[t-ihí arguably t-i-háyy ; Pl also t-ìhi-t-en]	
t-à-hi-t-t	t-i-híww	‘front leg’
t-à-šæfa	t-i-šfáww	‘beaded necklace’
t-è-mse	t-i-máss (A-grm)	‘fire, hell’
	[several dialectal variants of Sg and Pl]	
t-à-dhi-t-t	t-i-dáhh (A-grm)	‘folding’ (VbIN)
t-à-dət-t (√dd)	t-i-dúđ	‘suckling’ (VbIN)

As in other unsuffixed ablaut plurals, feminine suffixes (-t, postvocalic -t-t) are omitted in the Pl. A V-final stem of two or more syllables normally deletes the final V in the Pl; for the exception (‘beaded necklace’) in (206.h), see below. After this **Plural Final-V Deletion**, most of the stems in question are monosyllabic (disregarding nominal prefixes), and these monosyllabic stems show consistency in V-length from Sg to Pl. However, the cases in (206.c) have C-final bisyllabic stems of shape -CæCəP- or -CæCeP-. The corresponding plurals are of the type -CCáPP, showing **Syncope** (deleting the first V), a special **Plural Medial-V Shortening** rule (shortening the second V), an **accent formative** (χ-f), and in most but not all cases a final **gemination formative** Γ-f (unless we opt for a templatic analysis). Syncope is also observed in (206.d), where the surviving V is already short in the Sg, so there is no need for audible V-Shortening. The combination of Syncope and Stem-Final V-Deletion guarantees that all Pl stems are monosyllabic.

An <H> melody is applied to the Pl stems. A short V (original, or due to V-Shortening) therefore appears as ə. If we accept the proposition that Syncope applies to /ə/ but not to /æ/ (§3.2.7.1), we should allow the melody to apply before Syncope to insure that the latter does in fact apply in (206.c-d). If the Sg has a full V, it becomes high {u i} in the Pl. Specifically, if the Sg has i we get i in the Pl, see ‘word’ in (206.f); if the Sg has a or u we get u in the Pl, cf. several examples in (206.g); if the Sg has e there is lexical variation (for Timbuktu-area dialects) between i and u in the Pl, while A-grm has consistent u, see ‘biting’ and ‘throwing’ in (206.f) and ‘pit in ground’ in (206.g).

The gemination formative Γ -f is reliably attached in the Pl to a previously simple stem-final C following a short V (including one due to V-Shortening), see (206.a,c). Of course Γ -f has no effect if the C in question is already geminated or otherwise clustered (206.b,d,e). When the final C is preceded by a full V, Final Gemination does not occur in my T-ka data, but was observed more often than not in A-grm, see (206.f,g).

The minor types grouped in (206.h), in several cases limited to A-grm dialect, generally involve final semivowels. The A-grm form ‘storage area’ is unusual only insofar as the Sg already has stem accent. ‘Front leg’ has a Sg stem-shape -hi- before FeSg suffix complex -t-t, a position where i is sometimes analysable as /əy/. The Pl -híww has “grown” a w. This Pl has no regular phonological derivation, but there is a pattern of vowel-semivowel dissimilation (§3.4.10, §4.1.2.17). For ‘origin, homeland’, Sg stem ñhi-t-t is compatible with a representation /-ihəy-/ , and the A-grm Pl t-ihí could be interpreted as having a stem /-ihəyy/ compatible with the -CáPP- pattern in (206.a-b). ‘Beaded necklace’ has Sg -šæfa, but its plural -šfáww is based on a theoretical Sg variant /-šæfaw/, compare the cases with Syncope and V-Shortening in (206.c). For ‘fire, hell’, the A-grm Pl -móss for Sg -mse shows Stem-Final V-Deletion, followed by Schwa-Insertion to give the stem a minimal syllabic shape. A parallel derivation applies to ‘folding’.

Disregarding some irregularities in (206.f-h), and assuming for the moment a componential rather than templatic Pl ablaut, the ingredients needed to convert Sg to Pl in (206) are summarized in (207).

(207) Processes Applying to Final-Accent Ablaut Plurals

- accent formative $\acute{\chi}$ -f on final syllable
- gemination formative Γ -f (at least after short V) targeting final C
- V-Shortening (applies to second syllable of -CvCvC- stems)
- Syncope (applies to /ə/ in stem-initial -CəCV... stems after prefix)
- <H> melody on stem
- Stem-Final V-Deletion (for stems of at least two syllables)

Let us consider a sample derivation of one of the plurals, assuming a componential ablaut for these plurals. Obviously we should try to make as much use as possible of the machinery already needed for other (unsuffixed) ablaut plurals, i.e. the <HL> melody and the $\acute{\chi}$ -f (V-length) formative. Consider the Sg to Pl transitions in (208).

(208) Possible Derivations of Plurals

	'banks of pond'	'eardums'	basis
	-dǽffe	-sæle	underlying (based on Sg)
	-dǽffe	-sǎelle	gemination Γ-f and accent χ̣-f
	-dǿffa	-sǎlla	Pl <H L> melody
	—	—	Syncope (fails to apply)
	-dǿff	-sǎll	Stem-Final V-Deletion

To explain why Syncope fails to apply, it is important for the gemination formative to apply before Syncope. Otherwise the ə vowel would be vulnerable to Syncope in 'eardrums'.

It is odd that /a/ is subject to Stem-Final V-Deletion in these plurals. The closest parallel is the relatively restricted underspecified stem-final vowel /A/ in some long imperfective verb forms, which deletes word-finally but shows up as æ before a C-initial subject pronominal suffix: LoImfP -báss 'vomit', for /-bássA-/ , cf. bàssæ-næt 'they-FePl vomit' (§7.2.5.1, §7.3.1.3).

The derivations in (208) do look good historically, since the putative stem-final /a/ in the plurals is actually attested in Tayert dialects of Niger. For example, "tiḍǿffa" (LTF2 48) corresponds to Malian t-i-dǿff 'banks of pond'.

Synchronically, the componential derivations in (208) are quite dubious. There are several ad hoc ablaut formatives in addition to the regular Pl ablaut features. The final a that would have clinched the <H L> melody is nowhere to be seen. The Pl pattern t-i-C(C)ǿCC and variant t-i-CúC(C) with full high V corresponds to a more diverse range of Sg shapes. These facts suggest that a **templatic analysis** may be closer to the truth.

The template in this case would be $-C_1(C_2)ǿCC-$ or $-C_1úC(C)-$ with full high V, which can be integrated to some extent if v (full V) is treated as bimoraic, like schwa plus a C. The correctness of a templatic analysis is not sure; note that the onset can be one or two C's, the coda is usually CC but occasionally just C, and there is a further option of having schwa or a full high V as the nucleus.

In the templatic analysis, we need **rules for mapping** segments from the Sg onto the Pl template, as follows. The leftmost C of the input is mapped onto C_1 . The rightmost C (if unclustered) or CC cluster of the input is mapped onto the postvocalic C-position of the output, undergoing gemination if necessary to fill two C positions, especially after schwa. If there remains an unattached medial input C, it is mapped onto C_2 , otherwise output C_2 is left vacant. These subrules are adequate to account for the data in (206.a-e). Additional minor subrules would have to be posited to get the various $-CúC(C)-$ output stem shapes in (206.f-g), as well as the idiosyncratic outputs in (206.h).

4.1.1.25 Suppletive plurals

The suppletive cases are shown in (209).

(209) Suppletive Plurals

singular	plural	gloss
a. kin terms (including dialectal variants)		
èlle	èšše, əšše	'daughter'
ə̀nɲa	ə̀yət-ma	'brother'
	[Pl also ə̀nɲa-tæn]	
rùre-	mə̀ddana-	'son (of)'
wə̀lt, wə̀læt	šə̀tt, ə̀ššet (A-grm)	'daughter' (cpds)
wə̀læt-ma	šə̀t-ma	'sister'
b. other stems		
t-a-mə̀tt	t-ì-də̀d-en, dèd-en	'woman'
ə̀-háləs	méd̀dən, médd-ə̀n	'man'
t-è-hæle	t-ì-hatt-en	'ewe'
t-ə̀-ɾa-t-t	úlli	'(female) goat'
ə̀w adəm	ə̀ddinæt	'person' (Pl 'people')
	[Sg lit. "son of Adam" as in Arabic]	
t-ə̀ss	ì-w-an	'cow' (Pl 'cattle')
c. plurals without singulars		
—	alə̀ɾoɾa	'boys'
—	i-šə̀kkə̀tew-ə̀n	"
—	t-i-lɾə̀ɾa-t-t	'girls'
—	t-i-šə̀kkə̀tew-en	"
—	ì-d̀rar-ə̀n	'milk-water beverage'
—	t-i-finaɾ	'Tuareg syllabary'
—	i-ɾə̀ləl-ə̀n	'veil'
—	əm-an	'water'
—	ì-m-an	'self'
—	i-s-ìd̀n-ə̀n	'prayer beads'
—	t-i-s-òd̀əs-en	'evening'
—	ìrd-an (or èrd-an)	'dirtiness, filth'
—	i-s-úrar	'make-believe games'
—	t-ìssas	'the shivers'
—	ì-swat (A-grm)	'festivities'
—	t-i-šə̀mm	'handcuffs'
—	t-ítar	'sheathe'
—	ə̀ttay-ə̀n	'surroundings'
—	i-zùlal-ə̀n (K)	'milk-water beverage'

—	i-ʒ-əjraʒ (T)	‘delights’
—	t-i-nfúlal	‘marabout’s blessing’

In the case of ‘ewe’, the Sg and Pl share a stem-initial h, so this could be an intermediate case. In Niger, the Sg “tele” is cognate to t-è-hæle and there is a distinct suppletive plural “æyfəɖ” (LTF2 179).

Terms for ‘boy’ and ‘girl’ (singular), and for ‘boys’, ‘girls’, or ‘children’ are dialectally variable. For Sg ‘boy’ (or ‘child’) we can get á-lyaq, àra (also ‘son’), á-skiw (especially A-grm), or e-šækkætew (Goundam only). Plurals for ‘boys’ (or ‘children’) are the purely suppletive alæɾɔɾa (Timbuktu, no reduction of prefix after preposition), which has no plural morphological features, and regular affixal plurals related to the singulars: ì-lyaq-æn, àra-tæn, ì-skiw-æn, i-šækkætew-æn. In some Timbuktu-area dialects, i-šækkætew-æn has no Sg counterpart and functions as a suppletive plural for á-lyaq.

Terms for ‘girl(s)’ are the morphological feminines of the unmarked masculine forms. Singulars are t-à-lyaq-t, t-àra-t-t, or t-e-šækkætew-t. Among the plurals, the most interesting is suppletive t-i-lɾɔɾa-t-t. It is obviously cognate to the corresponding masculine alæɾɔɾa in the same dialects. t-i-lɾɔɾa-t-t is anomalous in that it begins with FePl t-i-, but does not end in the usual FePl suffix (-t)-en.

Agreement for all the ‘boys’ forms including alæɾɔɾa is masculine plural, and for all the ‘girls’ forms is feminine plural.

4.1.1.26 Phonologically irregular plurals

These plurals begin with segmental material carried over from the Sg, but have additional segmental material in the Pl (210).

(210) Phonologically Irregular Plurals

singular	plural	gloss
a. kin and relationship terms		
mà	màtte-	‘mother’
fi	tæy-	‘father’
màssi	màssaw-	‘owner (of)’
b. Sg æ-Ca, Pl ì-Catt-æn		
æ-ga	ì-gatt-æn (A-grm)	‘waterbag at well’
	[T-ka: Sg æ-ja, Pl ì-jajj-æn]	
æ-la	ì-latt-æn	‘leaf’
	[Pl also suffixal ì-la-tæn]	

æ-na	ï-natt-æn	'Leptadenia bush'
	[Pl more often ï-na-tæn]	
æ-zɑ	ï-zatt-æn	'young donkey'
t-æ-sa	t-ï-satt-en	'belly'
c. ...awən-		
t-æ-zóli	t-i-zolyawən-en	'metal' (A-grm T)
t-a-šóri	t-i-šoryawən-en	'hyena'
t-əkəryá	t-əkəryawən-en	'firefinch' (R)
d. other phonological irregularities		
édi	ï-yəḏ-an	'dog' (d/ḏ alternation)
ésu	əswan-æn	'bull'
	[Pl also regular Pl əsw-an]	
t-a-ɾæ̀rə̀ba	t-ï-ɾurba (rare)	'Mimosa shrub'
	[usually with suffixal plural]	
íyor	òr-an	'moon'
	[Sg dialectally áyyor, éwærr]	
t-a-zùlek-k	t-i-zùla	'bit of kindling'

In (210.a), the 'mother' and 'father' terms are special forms used chiefly in compounds and insults. In (210.b), the ï-Catt-æn plurals resemble the ï-CaPP-æn plurals (with ablaut plus suffixation) of the type æ-kos 'container', Pl ï-kass-æn (§4.1.2.8-9). Since the singulars in (210.b), of shape æ-Ca, have only one visible C, one could argue that the t's in the plural forms are nonlexical fillers. Niger dialects have similar ï-Catt-æn plurals for 'leaf', 'Leptadenia' and 'belly', but for 'waterbag at well' the A-grm plural ï-gatt-æn is isolated; in Niger the plural is "igaggän" (LTF2 75) with the lexical C repeated. For 'dog' (210.c), the d/ḏ alternation is also present in Niger dialects, but the extra y is not (LTF2 25).

4.1.1.27 Arabic plurals

The nouns in (211), all borrowed from Arabic, have ablaut plurals directly borrowed from Arabic (often alongside regular Tamashek affixal plurals).

(211) Ablaut Plurals Borrowed from Arabic

singular	plural	gloss
æddæwlæt	əddəwəl	'country'
	[Pl also also əddəwəl-æn]	
əlqəbíl-æt	əlqəbáyəl	'clan, tribe'
ælkás	əlkísan	'drinking glass'

əlmæʕiʕ-æt	əlmæʕáyəʕ	'sustenance'
ənnof	ələnwaf	'kind'

For the Arabic loan əʕʕəyʕan 'devil', I recorded Pl əʕʕəyʕətin-æn, with the Arabic broken plural followed by Tamashek MaPl -æn.

4.1.1.28 Default Plural particle ədd

For a small number of nouns that for one reason or another cannot be pluralized by ablaut or by suffixation, a default plural is formed by preposing ədd, which reduces (in some dialects) to əd before a C and to d before a V.

It is used with derived nouns beginning with a reduced demonstrative plus ən '[the one] of...', i.e., noun-noun compounds without a true noun in first position (212).

(212)	a.	sg:	ĩ	n	t-ett	
			Dem	of	Fe-eye	
			'one-eyed person'			
	b.	pl:	ədd	i	n	t-ettaw-en
			Pl	Dem	of	Fe-eye-FePl

It is also used with compounds beginning in əgg 'son of...', as in Pl ədd əgg X or d əgg X 'sons of X'.

4.2 Independent personal pronouns

The forms are shown in (213).

(213) Independent Personal Pronouns

a. Singular

1Sg	nəkk, nəkk-u, nəkk-un
2MaSg	kəyy, kəyy-u, kəyy-un
2FeSg	kəmm, kəmm-u, kəmm-un
3Sg	ənta

b. Plural

1MaPl	nəkk-æn-eḍ
1FePl	nəkk-æn-æt-eḍ (widespread)
"	nəkk-æn-æt-eḍ (T-ka, optionally K-d)
2MaPl	kəw-æn-eḍ (in K-d also pronounced kóned)
2FePl	kəm-æt-eḍ

3MaPl	ənt-æn-eđ
3FePl	ənt-æn-æt-eđ (widespread)
"	ənt-æn-æt-eđ (T-ka, K-d)

These pronouns rarely occur in noninitial position within accentual phrases. This makes it difficult to determine whether the initial-syllable accent in the singular pronominals is lexical (i.e. marked) or default. However, there is one construction where an independent pronoun follows the numeral '1'. In this case we get phrasal accent on the numeral, showing that the pronoun has no lexical accent: iy-æn-\t nækk 'I am one (= I am alone)'. See §5.1.2.5 for more examples.

Gender is distinguished in all the plural categories (for 1Pl, all of the clitic and affixal pronominals merge gender, but 2Pl and 3Pl distinguish gender in all pronominal series). Gender is also distinguished in the 2Sg, but not in 1Sg or 3Sg (in subject affixes and object clitics, 3Sg does distinguish gender).

The 1Sg and 2Sg pronouns have a CəPP shape with final geminate. They have optional extensions with -u or -un, which are used in contexts involving identificational emphasis (not the same as focalization, §12.2). For example, if I am not sure if I was the addressee of something you have just said, I might say nækk-un '(who,) me?', and you might confirm: kəyy-un '(yes,) you'.

Comparing the Sg with the Pl forms, we observe that the latter are formed by elaborating on the former. All of the Pl forms end in a morpheme -eđ that has no analogues in nominal morphology. This is preceded by -æn- in the MaPl forms (cf. Ma suffix -æn with participles, §8.5). The FePl pronouns are formed by adding -æt- (cf. Fe suffix -æt with participles and some nouns), replacing -æn- in the 2nd person and being added to -æn- in the 1st and 3rd persons. The 2nd person pronouns also show slight differences in stem from Sg to Pl (Ma kəyy versus kəw-, Fe kəmm versus kəm-). The 1FePl and 3FePl pronouns in -æn-æt-eđ have dialectally variable accent, either default -æn-æt-eđ (most dialects) or marked penultimate -æn-æt-eđ (T-ka, K-d). If T-ka has innovated, it may be by analogy to the 2FePl pronoun. The 2nd person independent pronouns can be used in insults with a following epithet: kəyy édi 'you-MaSg dog!', kəmm t-èdi-t-t 'you-FeSg she-dog!'.

There is some similarity between these independent pronouns and the various series of bound pronominals: object clitics (§10.3), dative clitics (§10.3.2), possessive suffixes (§5.2.2), and to a lesser extent the pronominal subject affixes used on inflected verbs (§7.4).

4.3 Demonstratives

4.3.1 Demonstrative pronouns

Demonstrative pronouns generally mark gender and number, though there are some exceptions. Consider the data in (214). The monosyllabic forms (w-á,

w-én, etc.), have unreliable accents. In postnominal position, the demonstrative has independent accentuation, so all demonstratives are heard as accented. However, the monosyllabic demonstratives are often unaccented in the (infrequent) case where they directly follow a preposition, as in *dæʁ w-a* ‘in this’.

(214) **Demonstrative pronouns**

category	MaSg	MaPl	FeSg	FePl
a. gender-number marked				
unmarked	w-á	w-í	t-á	t-í
Proximal	w-á-hi	w-í-hi	t-á-hi	t-í-hi
Near-Distant	wə-dí	w-i-dí	tə-dí	t-i-dí
"	wə-dí-hi	w-i-dí-hi	tə-dí-hi	t-i-dí-hi
Distant	w-én	w-í-n	t-én	t-í-n
"	w-én-hi	w-í-n-hi	t-én-hi	t-í-n-hi
Recent Anaphoric	wə-nnín	w-i-nnín	tə-nnín	t-i-nnín
"	wə-ndín	w-i-ndín	tə-ndí-n	t-i-ndín
b. single form				
unmarked	ɑ-w-á			
Proximal	á-di			
Distant	ɑ-w-én			
Focus	à			
minimal Dem	à			

The MaSg unmarked, Proximal, and Distant demonstratives often occur following the minimal demonstrative *à* to form a neutral demonstrative glossable ‘this’, ‘that’, with no specific gender identity: *ɑ w-á* ‘this/that’ (unmarked), *ɑ w-á-hi* ‘this’, *ɑ-w-én* ‘that’ (Anaphoric *ɑ w-én-dæʁ*).

The form *ɑ w-á-hi* ‘this (one)’ can also be taken as a demonstrative noun *ɑ-w-á-hi* ‘this thing’, which generates a full paradigm: MaPl *i-w-à-hi-tæn*, FeSg *t-ɑ-wà-hi-t-t*, FePl *t-i-wà-hi-t-en*.

The single-form demonstratives (214.b) have less definite reference than the forms showing agreement. The single forms can be glossed ‘that’, ‘this’, etc. The Focus form is a minimal demonstrative used in apposition to a fronted (focalized) constituent (§12.2).

The **unmarked** set can be used loosely in proximal sense, but are also used e.g. at the beginning of definite relative clauses where no deictic sense is involved. In MaSg *w-á* and FeSg *t-á*, clearly *w-* and *t-* are gender markers and *-a* is the (singular) stem. MaPl *w-í* and FePl *t-í* have the same gender markers. One can argue whether they have a plural demonstrative stem *-i* contrasting with singular *-a*, or whether they add Pl *-i* to */-a/* with VV-Contraction (41.c) (e.,g. */w-á-i/ > w-∅-í*).

Proximal demonstrative ‘this’ (near speaker) requires addition of suffix -hi (w-ú-hi etc.). A **Near-Distant** demonstrative (e.g. near addressee or a short distance from speaker and addressee) is expressed by the series ending in -di. (For the R dialect I recorded wæ-dí etc. with æ instead of ə.) This can also be used anaphorically to denote something not physically visible or otherwise present. While MaPl w-í-di and FePl t-í-di are clearly tri-morphemic, MaSg wá-di and FeSg tá-di are more ambiguous; one could take the schwa as part of the gender marker, as epenthetic, or as an irregular reduction of the -a- seen in the unmarked and proximal demonstratives. A specifically **Distant** demonstrative is expressed by -én, which contracts with the preceding V (Sg -én from /-á-en/, Pl -í-n from /-í-en/). The normally Proximal suffix -hi can be added to -di or -en, but these combinations are uncommon.

The w- of Ma[sculine] forms supports Prasse’s view that the MaSg nominal prefixes a-, e-, and æ- on nouns were originally *w-a- and *w-æ-.

The most common way to indicate anaphoric (=discourse-deictic) status (e.g. ‘this/that same one we were talking about’) is by adding **Anaphoric** suffix -dæɾ to the demonstrative, often (but not always) the unmarked demonstrative: w-ú-dæɾ, less often w-én-dæɾ, etc. However, (214.a) also shows a special **Recent Anaphoric** demonstrative, with ending -nnín, used to denote something mentioned earlier, but not the currently active “topical” referent. In context it can sometimes be glossed as ‘the former’, as when discourse referents R and S have just been introduced (in that order) and the speaker then wishes to index R. It can also be glossed ‘the preceding one’. It has a variant -ndín, which is more transparently related to əndí ‘before’. The form əndín is also used as a postnominal demonstrative (see below, §4.3.3).

For invariant à in connection with focalization, see §12.2.

Another set of demonstratives is used to provide heads to indefinite relative clauses that lack noun heads (§8.5.4, §12.1). The forms are repeated here as (215). The form i is also used in relatives (arguably definite, though there is no definite/indefinite distinction here) whose head is a 1st or 2nd person pronoun (§12.1).

(215) Demonstrative Head of Indefinite Relative

MaSg = MaPl ì
 FeSg = FePl t-ì

The Distant Anaphoric demonstrative and Anaph -dæɾ are illustrated in (216).

- (216) əzzæɾ-æn [dæɾ [æ-kall én-dæɾ]]
 live.PerfP-3MaPlS [in [Sg-country **Dist-Anaph**]]
 ‘They lived in that (aforementioned) land.’

4.3.2 Spatial demonstrative adverbs

Spatial demonstrative adverbs begin with Locative *d-* or Approximative *s-*.

(217) **Spatial Demonstrative Adverbs**

	simple	anaphoric
a. Locative ('here', etc.)		
Prox	<i>d-i-há, d-i-ha</i>	<i>d-i-há-dæɾ</i>
Near-Dist	<i>də-dí</i>	<i>də-dí-dæɾ</i>
Dist	<i>d-i-hén, d-én</i>	<i>d-i-hén-dæɾ</i>
Recent Anaphoric	—	<i>də-nnín-dæɾ</i>
b. Approximative ('around here', 'hereabouts', 'this way')		
Prox	<i>s-i-há</i>	<i>s-i-há-dæɾ</i>
Near-Dist	<i>s-i-dí</i>	<i>s-i-dí-dæɾ</i>
Dist	<i>s-i-hén</i>	<i>s-i-hén-dæɾ</i>

The accent on *d-i-ha* 'here' is contextually variable. In isolation it is given as *d-i-há*, but in adverbial function in clause-final position I usually hear *d-i-ha*. The suffixed form is always *d-i-há-dæɾ*.

The Anaphoric forms with *-dæɾ* can be glossed 'right here, in this same place', 'right there, in that same place'.

The Approximatives can denote approximate (static) location, as in 'it is standing (somewhere) around here', or pergressive motion ('through'), as in 'it came this way (=along here)'.

d-i-há is also common at the beginning of certain types of adverbial relative clause (§13.1.1.1). The sequence *d-i-há-ɔd...* with preposition *d* cliticized to *d-i-há* forms clauses translatable as '(there) where...'. The *ɔd* is omitted when an object clitic is present, as in *d-i-há-ɔt Ø-æba* 'there where he died'.

For 'on the near/far side of X', see under existential quasi-verb *əlla-* (§9.3).

4.3.3 Demonstrative postnominal particles (*i, dí, ənnín, én*)

Instead of a full demonstrative, nouns can be followed by any of three demonstrative particles. The particle is invariant for gender and number (which are expressed on the noun). The particle is accented, but has no effect on the accentuation of the noun, so the combination does not constitute an accentual phrase. The result is that the noun may have default antepenultimate accent, as in *ɑ-bəmbæra í* 'this Bambara man'. If this were a singular accentual phrase it would have appeared as *#ɑ-bəmbæra í* (with secondary accent on the second

syllable to the left of the marked accent). The accent on *í* is difficult to hear and perhaps suppressed when the preceding syllable is accented. The particles are shown in (218).

(218) **Demonstrative Postnominal Particles**

category	form
Proximate	<i>í</i> (dialectal Pl <i>ín</i> for T-md)
Near-Distant	<i>dí</i>
Recent Anaphoric	<i>ənnín</i> = <i>əndín</i> (cf. <i>əndí</i> 'before')
Distant	<i>én</i>

Masculine examples of *í* are Sg *á-mnəs í* 'this male camel' and its Pl *í-mnəs í* (T-md *í-mnəs ín*). Feminine examples are Sg *t-æ||ǣm-t í* 'this female camel' (heard as *t-æ||ǣm-t i* with suppressed accent) and its Pl *t-æ|m-en í* (T-md *ín*). An example of *dí* is *á-mnəs dí* 'that camel (near you)'. An example of (mostly adverbial) *əndín*, which generally denotes a prior time interval, is *t-ène əndín* 'that prior year' (i.e. 'a few years ago'). Examples of *én* are *á-mnəs én* 'that camel (distant)' and its Pl *í-mnəs én*.

Compare these morphemes with directional clitics used with verbs: Centripetal *-lódđ* (and variants), Centrifugal *-lín*.

Anaphoric *-dæɣ* can be added to the forms in (218), as in *í-dæɣ*, *dí-dæɣ*, *én-dæɣ*.

In (219), the demonstrative follows a noun with suffixed pronominal possessor.

- (219) *i-læmaw-æn-næm* *dí-dæɣ*
 Pl-skin-MaPl-2FeSgPoss NearDist-Anaph
 'those hides of yours-FeSg' [K]

Chapter 5

Noun phrase structure

A noun-phrase (NP) consists of a noun (as lexical head of the phrase) and, optionally, one or more modifiers or a possessor.

5.1 Nominal modifiers

5.1.1 Adjectives

5.1.1.1 *Modifying "adjectives"*

Nearly all "modifying adjectives" are, morphologically speaking, participles of intransitive verbs. They are therefore special cases of a more general construction for subject relatives. See §8.5.7 for examples.

Some other "modifying adjectives" are formally possessed constructions of the type '(a/the) X of Y', with Possessive preposition *n* (ən). The X and Y components may be nouns in apposition, with X the more basic noun and Y describing a secondary quality. For example, if X is *æ-hólæs* 'man' and Y is the compound noun *æw sendad* 'lazy one' (lit. "son of laziness," see §5.2.4.2), we get *æ-hólæs n æw sendad* '(a) lazy man'. Other ways to express 'lazy man' are the (MaSg) agentive *e-m-æsséndæd* and the participial construction *æ-hólæs i-ssündæd-æn*.

'Bad' can also be expressed using the compound initial *èrk* (§5.2.4.4).

5.1.1.2 *Comparatives*

The most common symmetrical comparative construction, glossable as 'X be as [adjective] as Y', involves the transitive verb *-ujdvh-* (PerfP *-òjdæh-*). In the absence of a specification, this verb can mean 'be equal to' or 'be as big as'. It can be adapted to other adjectival qualities by adding an appropriate specification ('X equals Y [with respect to] strength'). The specifying noun follows the verb, with no preposition. The Result stem *-ojdæh-* is usual in positive comparatives. Some dialects have *g* for *T-ka j*.

- (220) a. *wær-\dær-ĩ* *Ø-ogdeh*
 Neg-\with-1Sg 3MaSgS-be.equal.PerfN
 'He is not equal to me.' (often = '... is not as big as I') [Gao]

- (223) a. wàr n-oleh d èddinæt
 Neg 1PIS-**be.like**.PerfN Comit people
 w-ĩ n ʔ-ɾərm-an
 Ma-Dem.Pl Poss Sg-town-MaPl
 ‘We (nomads) are not like the people of towns.’
- b. á-di [bà-ʔ-s oláħ-àɾ
 so [be.lost.PerfP-ʌDat-3Sg **be.like**.Reslt-1SgS
 d ibda]
 Comit long.ago]
 ‘So, I am no longer like (I was) before.’ [K]

The transitive verb -vfu- (PerfP -òfa-, Imprt ĩfu and dialectal variants), means ‘be **better** than’. Another verb, PerfP -æssof-, means ‘prefer (X to Y)’ and may have originally been a causative. -vfu- is exemplified in (224).

- (224) t-e-jæ̀rjær-t ofæ-n-ʌtæt
 Fe-Sg-plant.sp.-FeSg be.better.PerfP-3MaPIS-ʌ3FeSgO
 ʔ-zew-æn [ən ʔ-æ-jæ̀rjær-t]
 Pl-twig-MaPl [Poss Fe-Sg-plant.sp.-FeSg]
 ‘Little twigs of tejarjart plant are better than tejarjart (itself).’

Another verb, -vššvm- (PerfP -əššæm-) means ‘become big(ger)’ or, with dative complement, ‘become **better** than, be worth more than’.

5.1.2 Numerals and other quantifiers

5.1.2.1 Basic numeral forms ‘1’ to ‘10’

The numerals ‘1’ to ‘10’ are shown in (225). In the **counting** column are the forms given when reciting the numerals in succession. The next two columns show the **trailing** form used at the end of a NP; masculine and feminine forms are distinguished. (The pronominal forms are described in §5.1.2.2, below.)

- (225) Numerals ‘1’ to ‘10’

	numeral counting	trailing	
		masculine	feminine
‘1’	d-iy-æn	əd d-iy-æn	əd d-iy-æt
‘2’	d-æssin	əd d-æssin	əd sænát-æt
‘3’	kæraɖ	əd kæraɖ	əd kæraɖ-æt
‘4’	(d-)ækkoz	əd d-ækkoz	əd ækkóz-æt

'5'	sæmmos	əd sæmmos	əd sæmmós-æt
'6'	səðis (sæðis)	əd səðis	əd səðís-æt
'7'	æssa	əd æssa	əd æssáy-æt
'8'	ættam	əd ættam	əd ættám-æt
'9'	tæz̥z̥a	əd tæz̥z̥a	əd tæz̥z̥áy-æt
'10'	mæraw	əd mæraw	əd mæráw-æt

The trailing forms begin with **Comitative** preposition *d* (əd) 'with, and' (§6.4.2). The trailing forms are added to other numerals denoting ten-somes or larger units, e.g. 'ten and five' = '15'. See the examples 'fifteen men' and 'fifteen women' in §5.1.2.4, below.

The *d*- in *d-iy-æn* '1', *d-əssin* '2', and variant *d-ækkoz̥* '4' may also have originated as the same Comitative preposition ('and' would make sense for numerals above '1', as in a counting sequence '1, and 2, and 3, ...'), but is now a frozen part of certain V-initial numerals and co-occurs with əd in the relevant trailing forms.

At least in the R dialect, the combination əd *d*- seems to have been reinterpreted as a unit prefix in the trailing forms. It then extends to all cases where the numeral stem proper begins with a V: masculine ədd æssa '7', ədd ættam '8', feminine ədd ækkóz̥-æt '4', ədd æssáy-æt '7', ədd ættám-æt '8'. One could alternatively segment as e.g. əd *d-ættam* where the *d*- is a prevocalic extension of the numeral; this would "preserve" the identity of əd as the Comitative preposition.

For many dialects (including T-ka, T-md, R), the counting and masculine trailing forms are **unaccented**. We get default accents in the counting forms, and phrasal accent on the preposition əd in the masculine trailing forms. However, the A-grm, K, and I speakers gave counting and masculine trailing forms for '2' to '10' with accent on the second syllable, e.g. K-d *d-əssín* '2', *kæríd* '3'. Note also A-grm *mæráw əd əssín* 'twelve-Ma'.

Even the T-ka and R speakers accented the bare numerals '2' to '10' when **used as NPs** in a sentence, in the absence of the implied referent nouns. Thus *ənháy-ær mæráw* 'I have seen ten', *ənháy-ær əssín* 'I have seen two', *əjɫæ-n mæráw* 'ten went'. If the referent nouns were present, the numeral would have the same accent, so one way to think of these examples is as truncations of fuller forms like 'I have seen ten men'.

For '4', '7', and '8' there is dialectal variation between *æ* and *ə* in the first syllable. T-ka and some other Timbuktu-area dialects have *æ*, but I recorded *ə* for A-grm and in some other Timbuktu-area dialects. In the cases of '7' and '8', where the second syllable has a clear *ɑ*, this variation may reflect the usual T-ka penchant for **Short-V Harmony** (§3.2.6) within these numeral stems. In '4' this is moot since the phonetic [o] before *z̥* (a BLC, §3.1.2.2) in the second syllable could be taken as /o/ or /u/.

Whether melodic harmony is at work in numerals is also a factor in the lexical representation of '6'. The stem is pronounced [sæ'dis] in T-ka and some other dialects. Because of the BLC (*d*), a melodically harmonic

representation /səðis/ is possible, and is consistent with T-ka's harmonic tendencies. However, other dialects more freely allow vowel sequences like «æ i», and with a BLC neutralizing the æ versus ə distinction, for these dialects there is no reason not to assume underlying /æ...i/.

It is clear from comparison with the pronominal forms (§5.1.2.2, below) that an original *d has also become fused with some of the V-initial numerals, particularly in their counting forms. This is the case for '1' and '2'. However, '7' and '8' did not show this fusion. Data for '4' are mixed. In counting, I recorded d-ækkoz̩ for an Imeddedeghan speaker, but ækkoz̩ from a T-ka speaker. However, both speakers had the double d in əd d-ækkoz̩.

The trailing forms are used in expressions like mæráw əd səmmos 15', a compound of the type 'ten and five'.

The feminine pronominal forms show a Feminine suffix -æt that matches FeSg participial -æt. This suffix has no intrinsic feature (e.g. a lost final V) that affected accent. However, imperfective (though not perfective) FeSg participles do undergo Rightward Accent Shift, resulting in marked penultimate accent (§3.5.3.2). Numerals do not distinguish verbal aspect categories, but are more naturally associated with imperfective (specifically, durative or stative) than with the marked perfective category.

Stems whose basic form ends in a vowel α ('7', '9') show an epenthetic -y- before the Feminine suffix. This y-Insertion is unique to numerals.

(226) **y-Insertion** (Numerals)

-y- is inserted between stem-final α and the vowel of Feminine -æt

Given that participles have a MaSg suffix -æn, one might expect this suffix in the masculine numerals. There is such a suffix in əd d-iy-æn '1', but the other masculine numerals are unsuffixed. There is a possible indirect trace of a former suffixal syllable in the accent of pronominal masculine numerals (see just below).

5.1.2.2 *Pronominal forms of numerals '1' to '10'*

When a numeral '1' to '10' is attached to a noun, it most often **precedes the noun**, and the noun has the appropriate Sg or Pl form. Prefix-Reduction applies to the vocalic prefix of the noun. The numeral agrees in gender with the noun. The forms taken by the numeral are those in (227).

(227) Prenominal Numerals

numeral	masculine	feminine
'1'	ÿ-æn (n-) [n- used before V-initial masculine noun]	ÿ-æt
'2'	æssín	sænát-æt
'3'	kærád	kærád-æt
'4'	ækkóz	ækkóz-æt
'5'	sæmmós	sæmmós-æt
'6'	səđís	səđís-æt
'7'	æssú	æssáy-æt
'8'	ættám	ættám-æt
'9'	tæzzá	tæzzá-æt
'10'	mæráw	mæráw-æt

The forms for '1' are discussed below.

In this position I regularly heard final-syllable accent on the masculine forms. The penultimate accent on the feminine numerals '2' to '10' was also clear. The feminine forms are identical, except at the onset, to the feminine forms of trailing numerals in §5.1.2.1, just above, and the comments there about the accent of the feminine forms are valid here.

The masculine counting and trailing forms are, however, unaccented. The accents in the masculine prenominal forms could therefore be due to compound accentuation, whereby a secondary accent appears on the final syllable of the compound initial. In any event, I formulate the generalization as (228).

(228) **Final-Syllable Accent** (Masculine Prenominal Numerals)

The final syllable of a numeral '2' to '9' is accented when it is followed by the modified noun.

In most feminine numeral phrases '2' to '9', the feminine numeral ending in -æt is followed by a noun beginning in t-ə- (reduced form of FePl t-i-). In the case of '2', there is yet another t just before the -æt. In practice, the -æt suffix is usually elided in these phrases, though it does appear in careful pronunciation. Thus sænát-æt ˈt-ə-mərw-en 'two tensomes (=twenty)' is elided in normal speech to [sænaˈt:əˈmərwen].

The prenominal forms for '1' are exemplified in (229).

- (229) a. ÿ-æn n ʾæ-šəđ
 one-Ma of Sg-donkey
 'one male donkey'

- b. iy-æn mæjræd
 one-Ma conversation
 ‘one conversation’
- c. ÿy-æt ʔt-æ-šet-t
 one-Fe Fe-Sg-donkey-FeSg
 ‘one female donkey’

Most masculine nouns begin with a vocalic prefix (or a stem-initial V). The numeral, presumably ÿy-æn, is then followed, as in (229.a), by another n, which I take to be the preposition ‘of’. This in turn is followed by the noun with a reduced prefix. The combination seems rather frozen, the second n being more euphonic than grammatical in nature. It is absent in the less common case where the masculine noun is C-initial (229.b). The extra n also fails to appear in the feminine counterpart (229.c). This suggests an alternative analysis of the extra n in (229.a) as part of the numeral, i.e. ÿy-ænn (prevocalic allomorph of ÿy-æn).

I have transcribed the numerals in (229.a,c) with double (nonlexical) accent. Pronunciation is variable, but I often do hear both an initial-syllable accent (the default word accent) and a light final-syllable accent (the compound-initial secondary accent). In (229.b) the noun mæjræd is unaccented, so primary phrasal accent falls on the numeral.

For ‘10’ as nominal modifier, another possibility is a compound beginning with the related noun t-àmara ‘tensome’, e.g. t-à-mara n ʔæ-wætay ‘(a) tensome of year(s)’, i.e., ‘(a) decade’.

Occasionally a numeral follows the noun (230).

- (230) a. æss-èfæl-ær i-læmaw-æn-in æssín
 Caus-be.tanned.Result-1SgS Pl-skin-MaPl-1SgPoss two
 ‘I have tanned two of my hides.’ [K]
- b. le-r ÿ-šed-æn kærád,
 have.Result-1SgS Pl-donkey-MaPl three
 ànyer-æn æssín əd ʔt-æ-šet-t
 male.donkey-MaPl two.Ma and Fe-Sg-donkey-FeSg
 ‘I have three donkeys—two male donkeys and a female
 donkey.’ [K]

For derivatives of ‘4’ and ‘6’ denoting dentition (hence age-grade) of rams, see end of §8.10.

5.1.2.3 'One' versus 'other'

MaSg $\dot{\text{y}}\text{-}\text{æn}$ and FeSg $\dot{\text{y}}\text{-}\text{æt}$ '1' have been given above. In true numeral sense, e.g. 'one house', the **numeral** is prenominal, like other numerals (§5.1.2.2, just above). However, the same forms may be used post-nominally in **indefinite** function 'a (certain) house'. This usage is fairly common on the initial mention of a new discourse reference. The noun and the numeral generally have separate accents: $\text{h}\text{æ}\text{r}\text{æt}$ $\dot{\text{y}}\text{-}\text{æn}$ 'a (certain) thing', not $\# \text{h}\text{æ}\text{r}\text{æt}$ $\text{i}\text{y}\text{-}\text{æn}$ with phrasal accent. In some contexts, where a newly introduced indefinite discourse referent is contrasted to a previously introduced discourse referent, an appropriate gloss is '**another**': $\text{x}\text{-}\text{h}\dot{\text{u}}\text{l}\text{əs}$ $\dot{\text{y}}\text{-}\text{æn}$ 'a (certain) man' or 'another man'.

In this indefinite use, a plural form $\dot{\text{y}}\text{-}\text{æ}\text{ḍ}$ is also in common use: $\text{m}\text{è}\text{d}\text{d}\text{-}\text{æn}$ $\dot{\text{y}}\text{-}\text{æ}\text{ḍ}$ 'some men'. The $\text{-}\text{æ}\text{ḍ}$ ending occurs nowhere else in the language with plural function, to my knowledge. See, however, $\text{-}\text{e}\text{ḍ}$ with Pl pronouns

(231) Forms of 'one' as Modifying Adjective

MaSg	FeSg	Pl
$\dot{\text{y}}\text{-}\text{æn}$	$\dot{\text{y}}\text{-}\text{æt}$	$\dot{\text{y}}\text{-}\text{æ}\text{ḍ}$

An alternative plural $\dot{\text{y}}\text{-}\text{æn}\text{-}\text{æn}$, obviously built on the MaSg form $\dot{\text{y}}\text{-}\text{æn}$, has the technical sense 'units', as in $\text{é}\text{-}\text{h}\text{æn}$ $\text{w}\text{-}\text{a}$ n $\dot{\text{y}}\text{-}\text{æn}\text{-}\text{æn}$ 'column of units' (in arithmetic instruction).

In the absence of a substantive head noun, the plural 'some (ones)' is expressed as in (232). In each case, the two i vowels fuse into a single phonetic vowel.

(232) 'Some (ones)'

MaPl	FePl
$\dot{\text{y}}\text{ i}\text{y}\text{-}\text{æ}\text{ḍ}$	$\text{t}\text{-}\dot{\text{y}}\text{ i}\text{y}\text{-}\text{æ}\text{ḍ}$

There is a tantalizingly similar set of forms meaning '**the other** (one)'. This is a specialized definite participial formation (the underlying verb being unelicitable). The forms are given in (233).

(233) 'the other'

MaSg	FeSf	MaPl
$\text{w}\text{-}\text{a}$ $\text{y}\text{y}\text{æ}\text{ḍ}\text{-}\text{æn}$	$\text{t}\text{-}\text{a}$ $\text{y}\text{y}\text{æ}\text{ḍ}\text{-}\text{æt}$	$\text{w}\text{-}\text{i}$ $\text{y}\text{y}\text{æ}\text{ḍ}\text{-}\text{nen}$

The similarity between plural *ÿy-æḍ* ‘(some) ones’ and the stem *yyæḍ-* (arguably underlying */iyæḍ-/*) in these frozen participles is suggestive. For Niger Tamajak, LTF 132 gives MaSg “*hæḍǎn*” etc. for « *autre* ». Although in Tamajak this may combine phrasally with ‘one’ (“*əyyǎn hæḍǎn*” « *un autre* »), the two stems are clearly different, there being no *h* in ‘one’. On the other hand, there is a natural semantic association between indefinite ‘one(s)’ and definite ‘(the) other’. In antithetical parallel constructions (‘one stayed, the other left’), the difference between ‘one’ and ‘the other’ is blurry, both referents being equally (in-)definite in discourse context. In neighboring Songhay languages, for example, the definite form of ‘one(s)’ is used in precisely this sense. Whether or not etymologically identical, the Tamashek forms for ‘one’ and ‘other’ are closely associated by native speakers. Elicitation using (French) cues of the type ‘another man’ and ‘other men’ (i.e. indefinite ‘other’) produced examples with postnominal ‘one(s)’ using the forms in (231): *æ-hóləs ÿy-æn* ‘another man’. *médd-æn ÿy-æḍ* ‘other men’. It seems, then, that the ‘other’ forms in (233) function synchronically as definite counterparts to the indefinite postnominal forms in (231).

Another way to express ‘(the) other X’, or more precisely ‘that other X’ (that we were talking about before) is by adding a demonstrative ending in Near Distant *-dí*, as in *t-α-mæḗḗ tæ-dí* ‘that other woman’ (R dialect).

5.1.2.4 Numerals greater than ‘10’

Terms for **decimal units** ‘20’ to ‘90’ are expressed by combining a numeral ‘2’ to ‘9’ with the plural noun *t-ÿ-mərw-en* ‘tensomes’. The latter is the plural of *t-à-mæra* ‘tensome, group of ten’, which is irregularly related to *mæraw* ‘ten’. The initial numeral agrees with *t-ÿ-mərw-en* in gender and is therefore always feminine (Fe suffix *-æt* on the numeral is often elided). Examples: *sænót(-æt)* *t-ə-mərw-en* ‘20’, *səmmós(-æt)* *t-ə-mərw-en* ‘fifty’. If the quantified-over noun is present, it appears with Possessive preposition *n* after the decimal numeral: *sænót t-ə-mərw-en n ʾæ-xil* ‘twenty forearm spans (elbow to finger, of fabric)’ (K dialect).

Complex numerals (‘11’, ‘37’, etc’) consisting of a decimal unit and a simple numeral are expressed as conjunctions. The decimal term comes first. If the noun denoting the referent is overt, it is attached to the decimal term. The single-digit numeral then follows in its “trailing” form (§5.1.2.1), agreeing in gender with the referent (234.a-b).

- (234) a. *mæráw* *médd-æn* *əd* *sæmmos*
 ten man-MaPl with five
 ‘fifteen men’

b.	mæraw-æt ten-Fe 'fifteen women'	dəð-en woman-FePl	əd with	sæmmós-æt five
----	---------------------------------------	----------------------	------------	-------------------

t-è-meðe 'hundred' (Pl t-í-mað) is syntactically a noun and is the head of its NP. It may be followed by a possessed noun in singular form, as in t-è-meðe n æ-háløs 'one hundred men' (lit. "hundred of man"). It may be preceded by a simple numeral: sænát-æt 't-é-mað 'two hundred'. For '150 men' I recorded t-è-meðe əd sæmmós-æt 't-è-mərw-en n æ-háløs (lit. "hundred with five-Fe tensomes of man").

é-fæð 'thousand' (Pl dialectally variable, e.g. T-ka ðfæð-æn) is also a noun syntactically, and it has the same syntax as 'hundred'. It can be preceded by a simple numeral, as in essín ðfæð-æn [əs:i'nɔ'fæðæn] 'two thousand'. For '1000 women' I recorded é-fæð ən 't-æ-mæjt-ɿ (lit. "thousand of woman"). For A-grm I recorded the noun as Sg ú-fæð, Pl èfd-an. Cognates in Niger Tamajak mean 'million, immense number'.

5.1.2.5 Pronominalized numerals

A special morphological construction involving a numeral, a suffix -e- (similar to an e found at the end of presuffixal forms of some prepositions), and a pronominal suffix (from the series used after prepositions) is exemplified in (235).

(235)	a.	ækkæræð-e-nær	'the three of us-MaPl'
	b.	ækkæræð-æt-e-nær	'the three of us-FePl'

Further examples are in (236), in 3MaPl and 3FePl form. Note the geminate ss in the 3MaPl suffix. Note also the default accent throughout.

(236) Pronominalized Numerals with -e- (T-ka, sample forms)

numeral	3MaPl	3FePl
'2'	əssin-e-ssæn	sænat-æt-e-snæt
'4'	ækkòz-e-ssæn	ækkoz-æt-e-snæt
'8'	ættòm-e-ssæn	ættam-æt-e-snæt

For the K-d dialect, I recorded the variants in (237).

(237) Pronominalized Numerals with -e- (K-d, exhaustive list for 3MaPl)

numeral	3MaPl
'2'	ɑ-sənæn-e-ssæn
'3'	ɑ-kəræð-e-ssæn
'4'	ɑ-kəzæn-e-ssæn

Note that these K-d forms are all forced into the canonical shape α -CəCəC-e-, and that ækkóʒ '4' has to grow a stem-final n to fill the third C position.

For '1', the phrasal construction in (238) was recorded for T-ka (it was rejected by the R speaker). The construction is unusual, but appears to consist of the numeral plus a **3Sg object clitic** (§10.3.1) of the appropriate gender, followed by the relevant independent pronoun.

(238) Pronominal Forms for 'One'

- | | | |
|----|--|-------|
| a. | iy-æn-\t | nækk |
| | one-Ma-\3MaSgO | 1Sg |
| | 'I am one.' (= 'I am alone.') | |
| b. | iy-æt-\tæt | əntɑ |
| | one-Fe-\3FeSgO | 3Sg |
| | 'She is one.' (= 'She is alone.') | |
| c. | iy-æt-\tæt | kæmm |
| | one-Fe-\3FeSgO | 2FeSg |
| | 'You-FeSg are one.' (= 'You are alone.') | |

5.1.2.6 *Distributive numerals*

An adverbial phrase of the type 'three at a time', 'three each', etc., can be constructed by reduplicating a numeral stem and preposing Instrumental s. Both masculine and feminine stems may be used, the former being unmarked. Examples in (239).

(239) Distributive Numerals

- | | | | | |
|----|----|-------|-------|------------------------------------|
| a. | s | iy-æn | ÿy-æn | 'one by one, one each' (masculine) |
| b. | s | iy-æt | ÿy-æt | 'one by one, one each' (feminine) |
| c. | s | æssá | æssá | 'eight by eight' |
| d. | əs | sæðís | sæðís | 'six by six' |

Example: *osæ-næt-lódd s ÿ-æt ÿ-æt* 'they-Fe came one at a time'.

5.1.2.7 Ordinals

For 'first', the verb *-æzzar-* 'go ahead, in front' is used in a definite participial construction: *w-a Ø-æzzar-æn* 'the first one-Ma', *t-a t-æzzar-æt* 'the first one-Fe', *w-i æzzar-nen* 'the first ones-Ma'. Without the demonstrative, indefinite participles like *MaSg Reslt Ø-æzzár-æn* retain the verbal meaning ('going ahead, in front').

For other numerals, a definite relative clause with the usual demonstrative head (e.g. *MaSg w-a*) plus cliticized Instrumental preposition *-\s* followed by the numeral itself (in the appropriate gender form). Masculine ordinals are illustrated in (240).

(240) Ordinals (Masculine)

	ordinal	phrase	gloss
a.	<i>w-à-\s</i>	<i>æssin</i>	'second'
b.	<i>w-à-\s</i>	<i>ættam</i>	'ninth'
c.	<i>w-a-\s</i>	<i>ʔt-æ-meðe</i>	'hundredth'

5.1.2.8 Other quantifiers

The **universal** quantifier 'all, every' is *fúkk* in the Timbuktu area (T-ka, T-md, R), *kúl* in A-grm (as in Tamajak), and *ɾəréd* around K (extending south into some Gao-area varieties). *kúl* is presumably from Arabic *kull-*, but *kul* 'all' is also used in some Songhay languages.

fúkk can be used as a noun with possessive complement: *fukk-næwæn* 'all of us'. Often it is NP-final (241.a) or clause-final (241.b), cf. "floating" *all* in English. In (241.c) it could be analysed as either NP-final or clause-final. It is independently accented even when adjacent to the relevant core NP.

- (241) a. [*áɾrəf* *fúkk*] *ÿ-mmənda*
 [money all] 3MaSg-finish.PerfP
 'All the money is finished (=has been spent).'
- b. *áɾrəf* *ÿ-mmənda* *fúkk*
 money 3MaSg-finish.PerfP all
 'The money is all finished.'

- c. n-əjráw əddinæt [s t-əjw-en fúkk]
 1PIS-get.Reslt people [Instr Fe-direction-FePl all]
 'We have gotten people from all directions (=areas).'
- d. kæl ə-rojj ya ÿy-æð
 people.of Sg-bush Emph one-Pl
 wàr ərhè-n a-s-íræð fúkk
 Neg want.PerfN-3MaPlS Sg-Caus-bathe.VblN all
 'Some nomads, they don't like bathing at all.' [K]

fúkk is best translated 'all' and often has emphatic sense. The dialectal equivalents have the same range of uses.

Distributive hák 'each, every' precedes a NP. In A-grm, hák appears to induce Prefix Reduction of the following noun], but this is not the case in T-ka or the other dialects checked. Thus 'each head' is unreduced hák é-ræff (Gao T-ka) or reduced hák 'æ-ræff (A-grm).

'Many' or 'much' is expressed by participles of the verb -vjjvt- 'be many'; see §7.3.2.2 for the forms. Example: útay Ø-æjjé-n 'lots of tea', àra-tæn æjjó-t-nen 'many children'. One can also use a more complex **partitive expression**: à Ø-æjjé-n dæx 'æ-dfar 'a lot of pillow covers' (K dialect).

'Few' or 'little (amount)' is expressed by any of the participles meaning 'small'; see §8.5.7. Adverbial 'a little' can be expressed by the term àbænnan (variant àmbænnan), or its reduplication ambænnàn-bænnan. These forms are related (irregularly) to bænnún 'for nothing, freely; in vain'.

Another way to say 'a few X's' is to use a phrase with PerfP -əla- 'have' in a relative clause with minimal demonstrative à as head, and the quantified NP as the source of subject agreement (242.a-d). Another common construction is hæræt '(some-)thing' with following possessed NP (hence literally 'a little [bit] of ...'), most often a mass or abstract noun, but sometimes a countable noun (242.e).

- (242) a. a əlæ-næt úlli
 Dem have.PerfP-3FePlS goats
 'a few goats'
- b. a əlæ-n 'ə-lyaq-æn
 Dem have.PerfP-3MaPlS Pl-child-MaPl
 'a few children'
- c. à i-la údi
 Dem 3MaSgS-have.PerfP butter
 'a little butter' [K]

- d. á-di t-áttær
 so LoImpf-look.for.LoImpfP
 [à læ-n] ʔØ-sæʔrer-æn]
 [Dem have.PerfP-3MaPlS Pl-firewood-MaPl]
 [d [à læ-næt ʔt-ə-zúʔam]]
 [and [Dem have.PerfP-3FePlS Pl-firewood-MaPl]]
 ‘So, (go) look for some firewood and some charcoal.’
- e. hæʔræt èn ʔØ-w-an
 thing Poss Pl-cow-MaPl
 ‘a few cows’

For indefinite ‘a(n)’ and plural ‘some’, and the possibly related forms meaning ‘other’, see §5.1.2.3 above.

The sense ‘**most of**’ can be expressed using the noun t-əššəm ‘majority’ with a possessor, e.g. t-əššəm-nænær ‘most of us’.

The sense ‘**both**’ can be expressed by the forms in (243), recorded for a K-d speaker.

- (243) a. æmmu-n də-dí-dær
 die.PerfP-3MaPl there.NearDist
 i-ssán-æn
 3MaSgS-be.two.Reslt-Partpl.MaSg
 ‘They-Ma both died.’
- b. æmmu-t-næt də-dí-dær t-i əssán-en
 die.PerfP-3FePl there.NearDist Fe be.two.Reslt-Partpl.Pl
 ‘They-Fe both died.’

The relationship between the masculine (243.a) and feminine (243.b) is irregular, especially since (243.a) ends in the MaSg Partpl suffix -æn while (243.b) ends in Pl Partpl suffix -en. For Algeria, DTF 4.1841 gives masculine “essenen” (presumably əssán-æn) in the sense ‘both’ (“tous 2”), with feminine “essenetîn” or “tessenetîn,” presumably (t)əssæn-æt-en with a Feminine morpheme -æt- as seen in personal pronouns.

For ‘(be/do) very much, a lot’, see the verb -vknv- (§13.5.5).

5.1.2.9 Days of the week

The seven days of the week have Arabic names, as is true of all other languages of northern Mali: litní ‘Monday’, æltænáta ‘Tuesday’, ællárba ‘Wednesday’, əlxəmis ‘Thursday’, əlžúmʔat ‘Friday’, əssəbət ‘Saturday’, ælhádd ‘Sunday’.

5.1.2.10 Tent sizes

From a K-d speaker come the forms in (244) and (245).

- (244) a. i n sænút-æt
 Dem Poss two-Fe
 'tent or house with 2 central pillars'
- b. i n əkkóz-æt
 Dem Poss four-Fe
 'tent or house with 4 central pillars'
- c. i n sæđiṣ-æt
 Dem Poss six-Fe
 'tent or house with 6 central pillars'
- (245) a. i n səmmós-æt
 Dem Poss five-Fe
 'small tent with 5 side cords'
- b. i n sæđis-æt
 Dem Poss six-Fe
 'medium tent with 6 side cords'
- c. i n ættám-æt
 Dem Poss eight-Fe
 'large tent with 8 side cords'

(244) and (245) represent different ways of measuring the size of a tent; (244) can also apply to small houses. The two systems make use of different sets of numerals, since the central pillars (or tent posts) are placed in pairs, while side cords that tie down a tent range in number from five to eight per side (without necessary pairing with cords on the opposite side). Note that (244.c) is identical in form to (245.b).

5.2 Possession and compounding

5.2.1 Ordinary nominal possessives

When the possessor is a noun (or NP), it follows the possessed noun and is preceded by the Possessive preposition *n* (ən if between C's). A wide range of semantic connections are expressed, as with English *of*, from ownership of property to various more abstract relations including logical subject or object of a VbIN (246).

- (246) a. *ǣ-kall* [ən ʔt-ə-m-əzzuq-q-nǣnǣr]
Sg-place [**Poss** Fe-Sg-Ø-dwell.VblN-FeSg-1PlPoss]
‘a place of our living’ (=for us to live in)
- b. *t-orhènnaw-en* [ən ʔØ-rəzzej-æn-nǣsæn]
Fe-disease-FePl [**Poss** Pl-livestock-MaPl-3MaPlPoss]
‘diseases of their livestock animals’
- c. *òzz ÿ-æn* [ən kǣl ʔt-ǣ-mǔšǣq-q]
proverb one-MaSg [**Poss** people.of Fe-Sg-Tuareg-FeSg]
‘a proverb of the Tuareg people’ (lit. “of people of Tamashek language”)
- d. *i-s-ǐdǣrhæn-ǎdd*
3MaSgS-Caus-desire-\\Centrip
úrǎl [ən ʔt-ə-mšǔr-ənnet]
go.back.VblN [**Poss** Fe-Pl-old.camp-3SgPoss
t-i n dàt ǎ-w-ǎ]
Fe-Dem.Pl Poss in.front.of Dem-Ma-Dem.Sg]
‘It desires its return (=wants to return) to its old camping grounds of (=from) beforehand’
- e. *t-e-kǣnkǣn-t* [ən t-èsəm-t lǣbás-ǣt]
Fe-Sg-saltlick-FeSg [**Poss** Fe-salt-FeSg be.bad-Partpl.FeSg]
‘a saltlick (salty earth) of poor-quality salt’
- f. *e-mǣtǣm ən t-èsəm-t*
Sg-taste **Poss** Fe-salt-FeSg
‘a taste (=a pinch) of salt’ [K]
- g. *ǣssín bùtǎl-æn n údi*
two.Ma bottle-MaPl **Poss** butter
‘two bottles (full) of butter.’

(246.d) ends with a second instance of *n*, in [t-i n dǎt ǎ-w-ǎ] ‘of beforehand’ Here **the possessed element is a PP**, literally ‘in front of this’, but it denotes an earlier time and so is noun-like logically.

The possessed noun may be extended by, or replaced by, a demonstrative, usually of the same unmarked demonstrative series used as heads of definite relatives clauses (MaSg *w-ǎ*, MaPl *w-ǐ*, FeSg *t-ǎ*, FePl *t-ǐ*). Note FePl *t-i* in the phrase in (246.d) just discussed. Likewise, in (247), *t-ǎ* is appositional to *t-èje*, and *t-ǎ* functions as the immediate syntactic head to which the possessor PP is attached.

- (247) dæɾ t-eje [t-à [n 'æ-tæram]]
 in Fe-direction [Fe-Dem.Sg [Poss Sg-west]]
 'in the direction of the west (=westward)'

See also the compounds in §5.2.4.1, below. For n after the numeral ÿy-æn 'one.Ma', see §5.1.2.2.

5.2.2 Pronominal possessor suffixes

The pronominal suffixes used in ordinary possessives are those in (248). Gender of pronominal possessor is distinguished only in 2Sg, 2Pl, and 3Pl.

(248) Pronominal Possessor Suffixes

category	invariant	postvocalic	after n	after other C
1Sg		(˘)-nin	(˘)-in	(˘)-in
1Pl	-næɳæɾ			
2MaSg		(˘)-nnæk	(˘)-næk	-ənnæk
2FeSg		(˘)-nnæm	(˘)-næm	-ənnæm
2MaPl	-næwæn			
2FePl	-nækmæt			
3Sg		(˘)-nnet	(˘)-net	-ənnet
"		(˘)-nnes	(˘)-nes	-ənnes
3MaPl	-næwsæn			
3FePl	-næsnæt			

Note that 3Sg fails to distinguish gender in this series (as in independent pronouns). The 3Sg form ends in t in T-ka, in s in most other dialects (A-grm, R, T-md).

Parenthesized (˘) before an allomorph indicates that the preceding syllable (the word penult) is accented, even with nouns that would otherwise be accented on an earlier syllable. In other words, the possessor suffixes in question force penultimate word accent; cf. §3.3.1.1. In full word transcriptions, such a suffixally induced accent is written as ˘, where v is any vowel. Note that the invariant forms in the leftmost column also have marked penultimate accent. However, the 2Sg and 3Sg postconsonantal variants (-ənnæk, etc.), take default accents.

Examples showing the allomorphy are 1Sg matəjɪ-nin 'my peanuts' (matəjɪ), e-hæn-nin 'my house' (é-hæn), and əlʃɪbb-in 'my pocket' (əlʃɪbb); and 3Sg matəjɪ-nnet, e-hæn-net, and əlʃɪbb-ənnet. The postconsonantal forms like 2MaSg -ənnæk are used after any C other than n, including other sonorants like {l m r}, as in a-læmðm-ənnæk 'your-MaSg young dama

gazelle', α -šærðl-ənnət 'his/her young ram', and α -kæbðr-ənnæm 'your-FeSg sparrow' (from α -læmom, α -šærrol, α -kæbor).

Possessor suffixes are added to the last element in the **core NP**, which includes demonstratives. Any "adjectives" or other relative clauses follow (249).

- (249) a. t - α -s-ðærnəs- t $t\alpha$ - $d\acute{\imath}$ - $d\grave{a}r$ -ənnæm
 Fe-Sg-Instr-veil-FeSg Fe-NearDist-Anaph-2FeSgPoss
 dale- t
 be.green-Partpl.FeSg
 'that blue veil of yours' [K]
- b. w -en- $d\grave{a}r$ -in
 Ma-Dist-Anaph-1SgPoss
 'as concerns me' (lit. "those of mine") [K]

See also the predicate genitive construction of type ð-nin 'it is mine' in §9.4.

NP's of the type '**mine**' (= 'the one that belongs to me', Fr *le mien*) can be formed by adding the postvocalic endings in (248) to the appropriate gender-number form of a simple demonstrative, generally MaSg w -á 'this' (MaPl w -í, FeSg t -á, FePl t -í), as in most definite relative clauses. Thus w -ð-nin 'mine', w -ð-nnæk 'yours-Ma', w - α -næwæn 'yours-MaPl', etc.

5.2.3 Inalienable possessive suffixes with certain kin terms

For the most part, the pronominal possessive suffixes in §5.2.2, just above, are used with semantically inalienable as well as alienable nouns. They occur, for example, with body-part nouns. Among kin terms, however, there are two morphological patterns. Some nouns take the regular possessive suffixes. Examples in (250).

(250) Kin Terms with Regular Pronominal Possessive Suffix

gloss	stem	example
'mother'	ánna, ənná	annð-nin 'my...'
'father'	ábbá, əbbá	abbð-nin 'my...'
'FaSiSo'	æ-bábaš	æ-babðš-in 'my...'

Further kin terms of this regular type are æ-bábaš 'cross-cousin', ð-jæya 'great grandson', α - $d\grave{a}ggal$ 'father- or son-in-law', and α - $l\acute{a}gg\grave{a}s$ 'brother-in-law'. This is also the pattern for "kin" terms that are just special uses of ordinary nouns in possessed form (e.g. 'child', 'man', 'woman').

A handful of kin terms take a special set of pronominal possessive suffixes given in (251), below. Since these nouns are a subset of the (semantically) inalienable nouns in the language, for lack of a better term I call these suffixes **inalienable**. The stems in question are V-final, so there is only one suffixal series. All of the suffixes are distinct from their counterparts in the regular possessive series (§5.2.2, just above). The (˘) before some suffixes indicates that the suffix forces penultimate word accent.

The postconsonantal allomorphs for singular possessors are difficult to elicit. The inalienable noun stems that end in a C are plural: *tæy-* ‘fathers (of ...)’ and *mæssaw-* ‘owners/masters (of ...)’, and they normally require plural possessors, as in *tæy-næɾ* ‘our fathers’ and *mæssäw-kmæt* ‘your-FePl masters’. In Tuareg society, one does not easily speak of the ‘fathers’ or ‘masters’ of a single person or object. In the case of ‘father’, the synonym *ábba* (250) can be used in its plural form (with alienable possessor suffix). When pressed to combine Sg possessor suffixes with *tæy-* or *mæssaw-*, informants grudgingly add *-(e)ɾ*, *-k*, *-m*, and *-s* with no phonological difficulty but find the combinations awkward. With *mæssaw-* ‘owners’, I recorded 1Sg *mæssaw-ɾ* (T-ka), *mæssaw-eɾ* (R), and *mæssaw-i* (A-grm).

(251) Inalienable Possessive Suffixes

category	invariant	after V only	after C only
1Sg	zero, <i>-eɾ</i> , <i>-ɾ</i> , (rarely) <i>-i</i>		
1Pl	(˘)- <i>næɾ</i>		
		[postvocalic (˘)- <i>nnæɾ</i> for A-grm]	
2MaSg	<i>-k</i>		
2FeSg	<i>-m</i>		
2MaPl		(˘)- <i>wwæn</i>	(˘)- <i>wæn</i>
2FePl	(˘)- <i>kmæt</i>		
3Sg	<i>-s</i>		
3MaPl		(˘)- <i>ssæn</i>	(˘)- <i>sæn</i>
3FePl	(˘)- <i>snæt</i>		

This paradigm has strong affinities to the series of pronominal suffixes used after prepositions (§6.2). Note the dialectal 1Sg ending *-eɾ* (for T-ka varying with *-ɾ*), and the postvocalic gemination of the initial C in the 2MaPl and 3MaPl (and, for Ansongo-Gourma, 1Pl).

The kin (or more generally relationship) terms that take the suffixes in (251) are listed in (252). The forms in the “stem” column can be used with understood 1Sg possessor.

(252) Relationship Terms taking Inalienable Suffixes

gloss	stem	example
'mother'	mà	mà-s 'his/her ...'
'mothers'	màtte-	màtte-ssæn 'their-MaPl ...'
'father'	fi	fi-wwæn 'your-MaPl ...'
'fathers'	tæy-	tæy-nær 'our ...'
'brother'	æŋŋa	æŋŋa-m 'your-FeSg ...'
'brothers'	àyæt-ma	àyæt-ma-s 'his/her ...'
'sister'	wælæt-ma	wælæt-ma-k 'your-MaSg ...'
'sisters'	šæt-ma	šæt-ma-s 'his/her ...'
'maternal uncle'	æŋŋæt-ma	æŋŋæt-mà-snæt 'their-FePl ...'
'son'	rùre	rùre-s 'his/her ...'
'wife'	hænni-	hænni-s 'his ...'
'wives'	hænnæy- (R)	hænnæy-nær 'our ...'
'master'	mèssi, mæssi	mèssi-s 'his/her ...'
'masters'	mæssaw-	mæssän-snæt 'their-FePl ...'
'mistress'	mæssä-	mæssä-k 'your-MaSg ...'
'mistresses'	mæssäwæte-	mæssawætè-ssæn 'their-MaPl ...'

The 'mother' and 'father' terms in (252) are used chiefly in kin compounds (like 'mother's father'), and in insults. The more common 'mother' and 'father' terms, which take alienable possessor suffixes, are in (250) above.

Some 1Sg inalienable combinations are æŋŋa (unaffixed) varying with æŋŋ-er 'my brother', and wælæt-ma varying with wælæt-m-er 'my sister'.

Those special kin terms that are used only as compound initials cannot directly take possessive suffixes.

When an inalienable noun has a noun or other nonprominal NP as possessor, the construction is that in (253). The possessed noun has a **3Sg possessor suffix** (regardless of actual number of the possessor).

(253)	rùre-s	ən	ʔØ-hæt-an
	son-3SgPoss	Poss	Pl-Songhay-MaPl
	'the son of the Songhays'		

This use of a 3Sg morpheme in "agreement" with a NP of variable number-gender is parallel to the use of a 3Sg pronominal as resumptive pronoun in subject-focus clauses (§12.2.2.1).

5.2.4 Compounds

5.2.4.1 Analytic compounds with *ən*

Most noun-noun “compounds” are expressed analytically as [X [ən Y]] ‘X of Y’, with the regular Possessor preposition *ən* or allomorph *n* (§5.2.1). The noun X and the following PP are separately accented, but if the PP is unaccented and has no more than two syllables a phrasal accent appears on the final syllable of the compound initial. Either X or Y, or both, may be pluralized if semantically appropriate. Consider the examples in (254), with *t-e-fæ̀tel-t* ‘lamp, flashlight’.

- | | | | | |
|-------|----|--|--------------------------|--------------------------------|
| (254) | a. | <i>t-e-fæ̀tel-t</i>
Fe-Sg-lamp-FeSg
‘gas lamp’ | <i>ən</i>
Poss | <i>bó̌tron</i>
gasoline |
| | b. | <i>t-e-fæ̀tel-t</i>
Fe-Sg-lamp-FeSg
‘flashlight’ | <i>ən</i>
Poss | <i>píl-tæn</i>
battery-MaPl |

This can be expanded by adding a simple demonstrative (MaSg *w-á*, FeSg *t-á*, MaPl *w-í*, FePl *t-í*) in apposition to the first noun. These are also the usual demonstratives found in definite relative clauses (§12.1). The construction is therefore of the type [X [Dem *ən* Y]], literally ‘X, this (one) of Y’, as in (255).

- | | | | | |
|-------|----------------------|--------------|-------------|---------------|
| (255) | <i>t-e-fæ̀tel-t</i> | [<i>t-à</i> | <i>n</i> | <i>am-an]</i> |
| | Fe-Sg-lamp-FeSg | [Fe-this.Sg | Poss | water-MaPl] |
| | ‘oil or diesel lamp’ | | | |

Typologically, these ‘lamp’ compounds involving *ən* are semantically ordinary, with the compound final Y denoting a substance or other entity that characterizes a particular type of the class of entities denoted by the compound initial X. However, in Tamashek, compounds can also be used in expressions that correspond to noun-adjective expressions in many other languages. Because the analytic compound construction is so productive, it is possible for Tamashek to lexicalize some “adjectival” concepts as nouns.

Although Tamashek has productive gender marking in nouns, the common terms for many biological species and life-form terms (e.g. ‘bird’) are fixed (some are masculine, others feminine). The most reliable way to specify actual sex of an animal is to form a compound with *èyy* ‘male’ or *t-ùnte* ‘female’ as compound final (256).

- | | | | | |
|-------|----|----------------------------|--------------|-------------|
| (256) | a. | <i>e-jæ̀dèd</i>
Sg-bird | [<i>n</i> | <i>èyy]</i> |
| | | ‘male bird’ | [Poss | male] |

b.	t-e-jæðet-t	[ən	t-unte]
	Fe-Sg-bird-FeSg	[Poss	female]
	'female bird'		

Another example involving an adjectival sense is in (257).

(257)	e-m-ævt	[n	'æ-zægáeygay]
	Sg-Agent-be.planted	[Poss	Sg-lofty]
	'a lofty (towering) tree'		

I view compounds with *ən* as essentially appositional in nature, the PP functioning much like a definite relative clause, as seen most clearly in (255). Thus (257) could be literally glossed '(a) tree, a lofty one'. However, no pause is necessary in Tamashek.

In addition to the compounds with specialized kin term as initial and without *ən*, discussed just below, there are some ordinary compounds with a kin term as initial plus *ən* and the final. An example is (258), where *α-ðæggal* 'in-law' is used to denote a biological species that is similar to (but less common or less important than) another species denoted by the final.

(258)	α-ðæggal	[ən	dazí]
	Sg-in.law	[Poss	herb.sp. (<i>Sida ovata</i>)]
	'herb sp. (<i>Sida cordifolia</i>)'		

5.2.4.2 Compounds involving kin terms or 'people'

The stems in (259) are used only as compound initials, without *ən*. The kinship glosses below ('son of X', 'daughter of X') can be literal, as when the compound final is a human name (e.g. 'son of Ahmad'). They can also have extended senses, as in 'son of X' used to indicate clan affiliation, where X is a toponym or other term by which the clan is known. *kæl* 'people of' is used to denote broader categories, such as entire clans, populations of towns, etc.

(259) Kin-Term Compound Initials

gloss	compound initial
'son of'	ægg (before V), æw or ù (before C)
'sons of'	ædd ægg, ædd æw, d ægg, d æw
'daughter of'	wælt, wæltæt; also t-æw or t-ù (before C)
'daughters of'	šætt (most dialects), əšset (A-grm)
'people of'	kæl (Gentilic compounds, 'people of ...')

The specifically masculine Pl ‘sons’ is just the Sg plus the (otherwise rare) prenominal Pl particle *èdd* or *d* (§4.1.2.28), but in contexts where gender is not focal the gentilic initial *kæl* ‘people of’ is more common. *kæl* is very common with tribe and clan names (the compound final is often a place name), and other expressions for categories of people (e.g. ‘people of the desert’, ‘people of the city’).

For ‘son of’, Sg *ægg* is often used before a V, versus *æw* or *ù* before a C. Soime examples, which also exemplify the extended senses of this compound type, are in (260).

(260) Compounds with ‘son’

base noun	gloss	compund	gloss
<i>lækkol</i>	‘school’	<i>ù lækkol</i>	‘schoolboy’
<i>kæsa</i>	‘jail’	<i>ù kæsa</i>	‘prisoner’
<i>mamælá</i>	‘commerce’	<i>u mamælá</i>	‘merchant’
<i>α-m-ærwas</i>	‘debt’	<i>ægg ʼæ-mærwas</i>	‘lender’
<i>á-wnaf</i>	‘curiosity’	<i>ægg ʼæ-wnaf</i>	‘curious person’
<i>sëndad</i>	‘laziness’	<i>æw sendad</i>	‘lazy person’

We also see *ægg* in the compound *ægg adæm* ‘son of Adam’, i.e. ‘human being’. However, the more common (but now less transparent) form of this combination is *æwadæm* (now probably fused and reanalysed as *æ-wadæm*) ‘human being’. It has no plural, being replaced by *èddinæt* ‘people’ in nonsingular sense. Another case of a former compound becoming frozen is *α-wənhəð* ‘member of blacksmith caste’, with Pl *i-wənhəð-æn*, FeSg *t-α-wənhəð-ʔ*, and abstractive *t-əwwənhəða* ‘being a blacksmith’.

For Sg ‘daughter’, I recorded *wælt* for T-ka, *wæläet* for other dialects (A-grm, R, T-md). Female counterparts of the ‘son of’ compounds in (260) can generally be produced by substituting ‘daughter’ for ‘son’. The alternatives *t-æw* and *t-ù*, used before C’s, are just *æw* and *ù* preceded by a Feminine prefix. An example of a masculine/feminine pair (K-d dialect): *u ʼt-ə-kərmu-t-t* ‘male prisoner (in jail)’, *t-u ʼt-ə-kərmu-t-t* ‘female prisoner’.

Pl *šætt* ‘daughters’ occurs in (K-d) *šætt ʼæ-tæræs*, lit. “daughters of the plain,” denoting any of several high-quality beads.

For normal human reference, *ægg* ‘son of’ and *wælt* ‘daughter of’ are replaced by the plural forms in (259) when denoting more than two persons. However, *ægg* is also used in some fixed combinations, as in *ægg ufækáni* ‘son of U [personal name]’, a term denoting the male agama lizard. Its plural is not *#èdd ægg ufækáni*, rather a simple suffixal plural *ægg ufækàni-tæn*. In other words, such nonhuman combinations function as frozen compounds whose internal segmentation is disregarded by morphology (we could just transcribe *æggufækáni* for this noun).

At least one noun appears to be frozen compounds beginning with a variant of *mà* ‘mother’, but Arabic *ʔumm-* ‘mother’ or its HassAr reflex *um̩m̩* (Pl *um̩m̩-aat*) is involved. A noun meaning ‘gum of *Commiphora* tree’, is attested dialectally as *màtælxæyr*, *màtælxer*, or *ùmmælxer*. These are evidently from a HassAr compound *um̩m̩ l-xayr* ‘mother of goodness’, with partial replacement of HassAr *um̩m̩-* by forms closer to its Tamashek counterpart *mà* ‘mother’ (Pl *màtte-*). Another, more difficult case is *t-a-mætt-æðan-t* ‘lower intestine’, which appears to contain *úðan* ‘intestines’. One might connect *-mætt-* historically with ‘mother’, but this would have to have been frozen into an unsegmentable stem, with resulting addition of regular nominal prefixes. Alternatively, *t-a-mætt-æðan-t* could be a frozen deverbial nominal from a lost Passive (*-tt-*) verb of some type.

The last kin compounds considered here involve *fòm̩ba* (T-ka) or *fəmba* (Ansongo-Gourma) added to a ‘mother’ term (*ənnà*, *mà*). The compound may be glossed ‘stepmother’, but the most common sense is ‘mother’s co-wife’ (when the father has two or more wives). Attested forms are *ənnà fomba* (Timbuktu) and *mà fəmba* (Ansongo). For Timbuktu I also recorded a masculine counterpart *əbbà fomba* ‘stepfather’. The compound final is borrowed from Songhay (e.g. *Koyraboro Senni ñaa fumba* ‘step-mother, mother’s co-wife’), and the Tamashek dialects that have these compounds are those near the Niger River in contact with Songhay.

5.2.4.3 Some ‘gazelle’ compounds

In the specific case of *u-dámitt* (variant *u-dámit*) ‘young male gazelle’, the *u-* seems to be frozen to the stem, and the structure of the compound is opaque, though a loose connection to *e-dæm* ‘gazelle’ (FeSg *t-e-dæmi-t-t*) is probably still felt by native speakers. The frozenness is shown by retention of *u-* in ablaut Pl *ú-dmatt*. The FeSg *t-u-dəmit-t* ‘young female gazelle’, and FePl *t-u-dəmit-en*, can alternatively be segmented with the (first) *t* as part of the stem, though the feminines could also be segmented with *-t-t* and *-t-en*. The stem-final *t* (or *tt*), though now used even in the masculine forms, may have originated by reanalysis of the feminine forms.

A-grm has *æw dām̩itt*, arguably fused as *æw-dām̩itt*, cf. MaPl *æw-dəmitt-æn*, FeSg *t-æw-dām̩itt* (or *t-æw-dəmit-t* or *t-æw-dəmi-t-t*) and FePl *t-æw dəmitt-en*.

The reference here is to *Gazella rufifrons*, one of three gazelle spp.

5.2.4.4 Compounds with *èrk*, *t-èrk* ‘bad’

A construction meaning ‘bad X’ (X = any noun) is formed with Ma *èrk* or Fe *t-èrk* followed by the simple noun. The feminine form is often reduced to *t-èr* before the *t-* that begins most feminine nouns. The plural is expressed by

suffixation and/or stem-ablaut on the noun, leaving the compound initials unchanged. Vocalic prefixes on the noun undergo Prefix Reduction as after prepositions. The initial gets phrasal accent when the final is unaccented and has no more than two syllables.

(261) èrk compounds

	noun	gloss	compound	gloss
a.	hæræt hæræt-æn	'thing' (Pl)	èrk hæræt erk hæræt-æn	'a bad thing' 'bad things'
b.	é-dægg i-dægg-an	'place' (Pl)	erk 'æ-dægg èrk 'Ø-dægg-an	'a bad place' 'bad places'
c.	t-α-məšer-t t-í-mšar	'campsite' (Pl)	t-èrk 't-ə-məšer-t t-erk 't-ə-mšar	'a bad campsite' 'bad campsites'

A textual example is (262).

- (262) t-əssún-æd-\dær-sæn w-i i-há
 2S-know.Reslt-2SgS-\in-3MaPl Ma-Dem.Pl 3MaSgS-be.in.Reslt
 [erk ælmækær] dár [y 'ə-rázzej]
 [bad sign] too [Dat Sg-livestock]
 'You-Sg know the ones among them (=foods) in whom there is a bad effect ("sign") for the livestock.'

5.2.4.5 Compounds with -hæn- 'house'

The stem of the noun é-hæn 'house' occurs in a number of somewhat frozen compounds as an initial element, in the form -hæn- or -hən- (cf. also verb -huvv-, PerfP -æhona- 'move out.PerfP', and kin term hænni 'wife'). The compounds known to me are tabulated in (263). The compounds function morphologically like unsegmentable stems (e.g. for plural marking).

(263) Compounds with -hæn-

- | | | |
|----|------------------------------|---|
| a. | e-hæn-dægg
α-hæn-zabbu | 'location (of a thing)'
'host (of a traveler)' |
| b. | α-hən-s-əwæt | 'crossing river (VblN); crossing place, ford' |
| c. | ə-hən-s-ádæk
ə-hən-s-ádæl | 'good camping spot'
'playing field' |

ə-hən-š-újəš	'entranceway'
ə-hən-z-úzəʀ	'inhabited area'

The examples in (263.c) have compound finals of the shape *-s-úCəC*, i.e. instrumental nominals with *-s-* (or assimilated *-š-*, *-z-*). The compound final *-s-əwət* in (263.b) is arguably based on a causative VbIN #*α-s-əwət* not otherwise attested (cf. *-vwvt-* 'hit' or 'take animals to market'). Some similar VbIN's doubling as instrumental nominals are listed in §8.9. The compound finals in (263.a) are an ordinary noun *e-dægǵ* 'place' and a variant of a VbIN (*ə-zabbi* or *à-zəbbu*) for the verb 'go down; go home after the day's work'.

The use of *-hən-* as opposed to *-hæn-* may have originated in VbIN forms like (263.b), since the ablaut melody for multisyllabic VbIN's is <H>. It may have subsequently spread into cases like those in (263.c). There is dialectal variation between *-hæn-* and *-hən-* in some of the forms.

For A-grm I also recorded a compound verb with PerfP *-hæn-s-æskær* '(object) be placed in a stable position (so it won't tip over)'. It is possible that this was back-formed from the corresponding VbIN *α-hæn-s-əskær* 'stable position; low area where rainwater collects'. The verb here is *-s-vskvr-* (PerfP *-əss-æskær-*) 'hold upright' or '(rainwater) collect'.

5.2.4.6 *Compounds with ənd- 'yester-'*

The morpheme *ənd-* or *ænd-* (the two cannot be clearly distinguished) occurs in a few frozen compounds denoting a prior time unit (264).

(264) Compounds with *ənd-*

compound	gloss	related noun/adverb	gloss
ənd-əšəl	'yesterday'	á-šəl	'day'
ænd-æhəd	'last night'	é-həd	'night'
ənd-ihədə́	'year before last'	ənhód	'last year'

Interpreted as compounds, e.g. *ənd ʼə-šəl* (with Prefix Reduction), these are somewhat irregular (one would expect #*ənd ʼə-šəl*). However, they all have a clear historical relationship to the related nouns and adverbs indicated.

The "compound initial" *ənd-* is perhaps also (irregularly) related to the conjunction *əndí* 'before' (with plain *d*).

5.2.4.7 *Other frozen compounds*

There are undoubtedly some frozen compounds lurking here and there in the lexicon, especially in flora-fauna taxonomy.

For ‘sand-plover’, æ-ḍær-áylul or variant æ-ḍær-áylal is interpreted by some natives as a slightly irregular compound of á-ḍær ‘foot’ (arguably á-ḍær) and ‘guinea-fowl’, the latter normally expressed as t-àylal-t.

For ‘yellow flower sp.’ (*Senecio* or similar), I recorded t-èṭṭ-ærær, cf. t-èṭṭ ‘eye’ and PerfP -ærær- ‘be yellow’. For at least some speakers, the stem is treated as a unit for purposes of suffixal pluralization: Pl t-èṭṭ-ærær-en. The compound is frozen, compare the regular participial construction t-èṭṭ t-ærær-æt ‘yellow eye’.

5.2.4.8 Phrasal compounds

A few phrasal compounds are attested, particularly for flora-fauna species. The construction is not as productive as in languages of southern Mali, for example.

(265) Phrasal Compounds (shown with word boundary)

- | | | |
|----|---|------------------------------------|
| a. | s-əwəf
Caus-be.frightened.ShImpf
‘quail sp.’ (<i>Codornix</i> sp.) | é-jhæn
Sg-troop |
| b. | jùzæy
look.up.ShImpf
‘herb sp. that follows sun’ (<i>Heliotropium</i> sp.)
[for jùzæy see discussion below] | t-ó-fukk
Fe-Sg-sun |
| c. | kàèwkæw
peck.ShImpf
‘woodpecker’ | í-ɾbab
Pl-tree.hole |
| d. | læɾlæɾ
lick.ShImpf
‘pinkie (little finger)’ | am-an
water-MaPl |
| e. | əggəd
jump.ShImpf
‘scrub-robin sp.’
[for dialectal variants see (266), below] | t-à-ršəṭ-ṭ
Fe-Sg-excrement-FeSg |
| f. | t-əllær
3FeSgS-lick.ShImpf
‘herb sp. with milky sap’ (<i>Euphorbia</i> sp.)
[dialectally also contractions like t-ə-lláx] | á-xx
Sg-milk |

- | | | |
|----|---|--------------------------------|
| g. | t-əzzəl
3FeSgS-stretch.ShImpf
'rainbow' (A-grm) | à-ræba
Sg-mouth.bit |
| h. | t-àwəl
3FeSgs-guard.ShImpf
'lily-trotter, jacana' (bird that can walk on water lily leaves) | æ-lata
Sg-water.lily.leaves |

The verb in these examples can be identified as short imperfective, but there is some ambiguity as to whether it is the inflectable ShImpf or bare (in the latter case it would be identical to the Sg Imprt). In (265.a-d) there is no subject affix, and the compound is treated as MaSg for purposes of agreement, but since the stem is C-initial we cannot exclude the possibility that an original 3FeSg prefix *t-* has been lost. In (265.e), there is clearly no subject affix, making an identification as Sg Imprt possible. In (265.f-h), on the other hand, there is an audible 3FeSg prefix, and the compound as a whole is treated as feminine in agreement. Perhaps in (265.e) the unprefixated "imperative" functions as the masculine counterpart of such feminines.

The verb in (265.b) can mean 'look up' or 'go north, go away from river', and cognates in some non-Malian Tuareg varieties mean 'go up'. Perhaps 'look up (at sun)' is pertinent to this compound.

While the transcriptions in (265) shows word boundaries between verb and noun, these compounds can function as simple stems. For example, 'woodpecker' (265.c) can be pluralized as *kæwkæw-ï-ɾbab-tæn* with MaPl suffix *-tæn*. Note that *ï-ɾbab* 'tree holes' is already plural (by ablaut), so *-tæn* can only be taken as suffixed to the entire stem: [*kæwkæw ï-ɾbab*]-*tæn*.

As an example of the mutations that can occur with semi-transparent compounds, consider the three variants in (266), all of which denote the same bird (scrub-robin or similar species). *t-à-ršəṭ-ṭ* means 'bit of excrement, animal dropping(s)'.

- | | | |
|----------|--------------------|-----------------------------------|
| (266) a. | əggəd
jump | t-à-ršəṭ-ṭ
Fe-Sg-dropping-FeSg |
| b. | ægu
make[?] | t-à-ršəṭ-ṭ
Fe-Sg-dropping-FeSg |
| c. | æggū
son.off[?] | t-à-ršəṭ-ṭ
Fe-Sg-dropping-FeSg |

The first variant appears to contain (Imprt) *əggəd* 'jump'. The second is more difficult to segment, but *ægu* could be taken as a dialectal variant of Imprt *əj* 'make'. In the third, the onset resembles *əgg* 'son of', but in such a compound one would expect Prefix Reduction in the following noun. Both *ægu* and *əggū* could further be taken as containing *ù* 'owner of', in which case

(266.c) could be parsed as ‘son of owner of excrement (pellets)’. Plurals are difficult to elicit, but I did obtain æggu-t-ǝ-ršəḍ-en for the third one.

In (267), the verb is PerfP zəjrət- rather than ShImpf -zəjræt-.

- (267) zəjrət bənnən
 be.long.PerfP without.reason
 ‘middle finger’ (takes FeSg agreement)

zəjrət ‘be long, tall’ is an adjectival C-initial verb, hence its perfective cannot take subject pronominal prefixes. Therefore 3MaSg and 3FeSg forms are identical.

In (268) we have a negated PerfN verb. The phrase is literally ‘it was not (= has not been) cut’ (compare the English flower term *forget-me-not*). The species denoted is a long, trailing vine.

- (268) wər ǝ-qqəræ-t
 Neg 3MaSgS-be.cut.PerfN-Aug
 ‘crawling vine sp.’ (*Ipomoea* sp.)

from, leave (a place)'. Allative 'to X' can likewise be expressed by the transitive verb (PerfP) -vkkv- 'go to'. With other verbs of motion or conveyance, a non-directional locational adverb such as locative 'in the desert' can be glossed contextually as ablative or allative. Preposition *ɾòr* 'at the place of, chez' is regular in the first half of parallel constructions of the type 'from X to Y', with *hàr* 'until, all the way to' (§6.7) in the second half.

(270) Prepositions

before noun	before pronoun	gloss
è, y, ì	-a-, -ha- (clitic)	'to, for' (Dative, §6.3)
s, əs	sàèr-	'with' (Instrumental, §6.4.1)
d, əd	dàèr-	'with; and' (Comitative, §6.4.2)
dætén	—	'with; and' (Comitative, §6.4.2)
n, ən	[see §5.2.2]	'of' (§5.2.1-2, §9.4)
dəɾ	dəɾ-	'in, at' (§6.5.1)
ɾòr	ɾòr-	'chez' (§6.5.2)
	[arguably ɾùr, but {o u} indistinguishable before r]	
dàw, dæg	dàw-	'under' (§6.5.3)
jənnəj	jənnəj-	'above' (§6.5.4)
	[dialectally dənnəg]	
fəl	fəlla-	'on' (§6.5.5)
dət	dàta-	'in front of' (§6.5.6)
dàræt	dàra-	'behind' (§6.5.7)
dədès (T-ka)	dədəs-	'next to' (§6.6.1)
	[e-dès (T-md), dægman (A-grm)]	
jèr	jèr-, jère-	'between' (§6.6.2)
	[gàèr (A-grm), before pronoun gàèr- (A-grm) or gàère- (K)]	
ebré	ebré-	'toward'
	[dialectally bré, ìbere, s èbre, s ʔæ-brét, s ét]	

The variants of type {C, əC} involve an epenthetic schwa inserted when a preposition consisting of a C is followed by a C-initial noun and is preceded by pause or by another C.

Pronominal datives are always clitics. Other pronominal PPs can also be clitics, particularly if the preposition has a monosyllabic (CvC-) shape. An example with *dəɾ-əs* 'in 3Sg', where the position after Neg *wàr* and before the verb indicates clitic status (271).

- (271) *wàr- \dàɾ-əs* ì-bəddəd ʔ-jətt
 Neg-ìin-3Sg 3MaSg-stand.LoImpfN Sg-pole
 'The pole doesn't stand in it' (=doesn't reach the bottom of the river)

Before unaccented nouns of one or two syllables, the phrasal accent will fall on the final syllable of the preposition. Even with unaccented monosyllables, I know of no instance where the phrasal accent falls on the penultimate syllable of a bisyllabic preposition like *jənnəj*. However, with a pronominal ending we get e.g. 1Sg *jənnəj-i* ‘over me’, showing that there is no fixed accent on the final syllable of the preposition (§6.5.4).

6.2 Pronominal suffixes with prepositions

The pronominal suffixes used with prepositions except Dative are those in (272). For the forms of Dative clitics and their phonology, see §10.3.2. For possessive suffixes on nouns, see §5.2.2.

(272) Pronominal Suffixes After Preposition (excluding Dative and Possessive clitics)

person	after V or C	after V	after C
1Sg	-i, -eɣ		
2MaSg		-k	-ək
2FeSg		-m	-əm
3Sg		-s	-əs
1Pl	(˘)-næɣ		
2MaPl		(˘)-wwæn	(˘)-wæn
2FePl	(˘)-kmæt		
3MaPl		(˘)-ssæn	(˘)-sæn
3FePl	(˘)-snæt		

The notation (˘) indicates that the preceding syllable (the word-penult) must be accented. The Sg suffixes have no special accentuation properties and are compatible with default accent on the word antepenult. This is most easily seen with bisyllabic pre-pronominal forms *jənnəj-*, *fəlla-*, etc., where the combinations with Sg pronominals have default accent (2MaSg *jənnəj-ək*, *fəlla-k*, while those with Pl pronominals have a grammatically specified penultimate accent (1Pl *jənnəj-næɣ*, *fəllə-næɣ*).

The -eɣ variant of the 1Sg is found in Timbuktu-area dialects, especially T-ka, varying with -i. The -eɣ variant was rejected by my Gao, A-grm, and K informants, who use only -i.

The alternations of zero with schwa in 2MaSg, 2FeSg, and 3Sg can be accounted for either as allomorphs, by assuming underlying /e/ and deleting it by VV-Contraction after a V, or by assuming no underlying schwa and having it inserted by Schwa Epenthesis.

The suffixes *-kmæt* and *-snæt* are used even after C-final prepositions, resulting in unusual triple CCC clusters. Examples: *jənnəj-kmæt* ‘above you-FePl’, *jənnəj-snæt* ‘above them-FePl’.

Some spatial prepositions have consistent C-final forms before pronominal suffixes (*dær-*, *dæʀ-*, *ʀòr-*, *dàw-*, *jənnəj-*). Others have a form ending in *a* before pronominal suffix (*fælla-*, *dàta-*, *dàra-*), see §6.4.1.5-7. The *a* is dropped before 1Sg *-i*.

After the prepositions that take the form CVC(C)*a-* (with final *a*) before a pronominal, the suffixes 2MaPl *-wæn* and 3MaPl *-sæn* geminate their initial C’s in all dialects, hence *fəllä-wwæn* ‘on them-Ma’ and *fəllä-ssæn* ‘on them-Fe’. In most dialects (Gao K R T-ka T-md), this does not apply to 1Pl, the other plural pronominal of similar *-CvC* shape: *fəllä-næʀ* ‘on us’. One effect is that all 2nd and 3rd person Pl suffixes of both genders begin with a CC cluster after these prepositions. A-grm and Im dialects do geminate the *n* of the 1Pl suffix after V-final preposition allomorph: *fəllä-nnæʀ* ‘on us’ (A-grm), *dəwä-nnæʀ* ‘under us’ (Im).

Compound prepositions, some of them fairly frozen (like *dædes = d’æ-des* ‘beside, next to’), are described in §6.5.

6.3 Dative (or Purposive)

The **dative** preposition is used for the addressee argument of *-vnnv-* ‘say’, and for a wide range of other indirect object arguments. With a few verbs like *-vmmvʀ-* ‘seek, look for’ and *-vʀrvs-* ‘slaughter’, the sole complement is expressed as dative, as in *əmmæʀ-æʀ-à-s* ‘I looked.PerfP for it.’ With ditransitive verbs like *-vkfv-* ‘give’ and *-s-vknu-* ‘show’, the recipient and theme (i.e. the object given or shown) may both appear in nonprepositional direct object form, but if both are pronominalized the recipient must be in dative form (§9.1.4). The Dative can also be used for **non-argument purposive** (including benefactive) NPs.

Before a noun, the Dative preposition takes the form *è* (dialectally also *ï*) before a consonant, and *y* before a vowel. Dative pronominal clitics are based on a morpheme *-hɑ-*, reduced (for T-ka) in some positions to *-hə-*, followed by a pronominal morpheme. See §10.3.2. In the form *y*, the Dative preposition occurs in **purposive clauses**, which begin with *y à-àd*, or *y à-à* before a clitic (*à* is a minimal demonstrative). In either allomorph, the Dative preposition can be used before a VblN in an alternative purposive construction. See §13.2.1.

The Dative, alone among simple prepositions, **cannot be fronted and cliticized** to its extracted complement NP in relativization or focalization. Perhaps this is because *è* is the only adnominal preposition that consists entirely of a vowel (in clitic position it could disappear due to VV-Contraction). The Dative is **replaced by Instrumental -s**, a “neutral” cliticized preposition also used in ‘that’ complements, in these extraction

constructions (§12.1.4, §12.2.3). This obviates any potential confusion between cliticized Dative #-\è and non-clause-initial Future particle è (§9.6.3).

Dative examples with nominal complement are in (273). (273.a) has both a true dative ('to my friend') as core argument of 'give', and a purposive ('for the sheep').

- (273) a. ðkfe-ʀ úzrəf [y ʔə-m-idi-nin]
 give.PerfP-1SgS money [Dat Sg-Agent-be.with-1SgPoss]
 [e ʔt-æ-hæle]
 [Dat Fe-Sg-sheep]
 'I gave money to my friend for (i.e. to buy) a sheep.'
- b. wər èmmex-æn [y æ-kall súnd ènta]
 Neg look.for.PerfN-3MaPlS [Dat Sg-land like 3Sg]
 'They haven't looked for a (=another) land like it.'
- c. t-e-jæ̀rjær-t wər t-oleʀ
 Fe-Sg-plant.sp.-FeSg Neg 3FeSgS-be.good.PerfN
 [y àra-tæn]
 [Dat child-MaPl]
 'Tejarjart (*Cassia italica*) is not good (medicine) for kids.' [K]
- d. n-æmmóy [e mæssì-næʀ]
 1PlS-thank.Reslt [Dat master-1PlPoss]
 'We thank (=are thankful to) God.' [K]
- e. i-twár-ʔt [e ʔt-è-jrəs-t]
 3MaSgs-store.Reslt-ʔ3MaSgO [Dat Fe-Sg-winter-Fe]
 'He has stored it-Ma for the winter.' [K]

6.4 Instrumental and Comitative

6.4.1 Instrumental s (əs)

The Instrumental preposition occurs in canonical **instrumental** function, e.g. '(I cut the meat) with a knife'. It can also be glossed 'because of' or 'due to' in some contexts. It also occurs in a number of **adverbial** phrases with a locational or temporal noun, as in s é-hæð 'at night' and əs dæ̀des 'on the side'.

The Instrumental differs from all other true prepositions discussed here in that it does not always require Prefix Reduction on a following noun. Thus contrast s é-hæð 'at night' with dəʀ ʔæ-hæð 'in the night' or ammas n ʔæ-hæð 'the middle of the night'. Absence of Prefix Reduction is typical of

- d. α n-əs-īdærhæn α-ʌs α-s-íkəl
 Foc 1PlS-Caus-want.Reslt Dem-ʌInstr Sg-Instr-travel.VbIN
 α-ʌsər-əs n-ət-ájj
 Foc-ʌInstr-3Sg 1PlS-LoImpf-do.LoImpfP
 ‘what [focus] we desire is that we travel [focus] to it (=make it
 a place to visit)’.

6.4.2 Comitative d (ðd), dætén, or hækódd ‘with, and’

The Comitative preposition is used to indicate accompaniment, typically involving persons or at least animate beings. Examples are ‘go with X’ (verb -vjlv-), ‘meet with X’ (verb -muqqvs-), ‘finish X’ (verb -vbđv-, X may be a VbIN), ‘ask (sb) about X’ (verb -s-vstvñ-). It is also used as the regular conjunctive coordinator ‘and’ with nouns, though ‘with’ or ‘along with’ is a more revealing gloss. On conjunction see §14.1.1.

The verb -idaw- (PerfP -æddew-) ‘accompany, go with’, has a comitative sense built in, and takes preposition dær ‘in’ rather than d.

The verb -vru-, PerfP -èru- ‘be long ago, have done long ago’, is used with a comitative complement to indicate that the subject has not seen, or been away from, the referent of the complement: ərù-ɣ-ʌdər-ək ‘I haven’t seen you-MaSg for a long time.’

Before nouns, the preposition is heard as ðd (preconsonantal) or d (prevocalic). This suggests a base form /d/ and, where necessary, Schwa Epenthesis. Examples: ðd hæræt ‘with a thing’, d úlli ‘with goats’.

An extended form dætén is also in common use before nouns, especially in conjunctive sense ‘and’ or ‘as well as’. There is often, but need not be, a prosodic break between the two conjuncts when dætén introduces the second conjunct. Another form, hækódd (T-ka) or hæk éd (R K-d), cf. hák ‘every, each’, is also used in conjunctions, and can be glossed ‘as well as’. hækódd can be used when there is a prosodic break, or even a syntactic separation, between the conjuncts.

- (276) a. t-ænfo n ʼə-rázzej,
 Fe-benefit Poss Sg-livestock,
 t-a n ʼæ-xx-ænnet
 Fe-Dem Poss Sg-milk-3SgPoss
 həkád dəɾ t-a-ræssä-nnet,
 as.well.as also Fe-Sg-body-3SgPoss
 t-a-gəŋgìlə-t-t [dætén ʼæ-šærúju]
 Fe-Sg-dune.sedge-Fe-FeSg [and Sg-burrgrass]
 'something (=fodder plants) beneficial for livestock, of (=for)
 its milk, as well as (for) its body, (namely) duge sedge and
 burrgrass.'
- b. dəɾ ʼə-bdúj-ænnet
 in Sg-be.wet.VblN-3SgPoss
 [həkádd t-æɾàr-t-ænnet] ?
 [as.well.as Fe-dry.VblN-3SgPoss]
 'in its wet state as well as in its dry state?'

Before a pronominal ending, the preposition *d* takes an extended form, which in T-ka is *dæɾ-*. It is heard as phonetic [dæɾ] before a C (i.e. in plural forms), and as [dər] before a pronominal beginning in a high V (i.e. in singular forms). The T-ka paradigm is (277).

(277) Pronominal Paradigm of *d* (T-ka)

person	Sg	Pl
1	dər-i, dær-ɛɾ	dær-næɾ
2Ma	dær-ək	dær-wæn
2Fe	dær-əm	dær-kmæt
3Ma	dær-əs	dær-sæn
3Fe	"	dær-snæt

In 'and' conjunctions of two pronominals, the second conjunct (e.g. 'you-Sg' in 'me and you-Sg') often takes its full independent form rather than a form from the paradigm in (277). For examples see §14.1.1.

My T-md and R data show prevocalic *d-* and prenasal *də-* (rather than *dæɾ-*) in all the forms except 1Sg, which is *dər-i*. The entire pronominal paradigm in these dialects (unlike in T-ka, for example) has merged with that of *dæɾ* 'in', which also reduces the preposition to *d-* and *də-* before pronominals other than 1Sg (§6.5.1). However, these dialects still distinguish Comitative *d* (or *əd*) from Locative *dæɾ* before nouns.

(278) Pronominal Paradigm of *d* ‘with’ and of *dæ̃r* ‘in’ (R dialect)

person	Sg	Pl
1	<i>dæ̃r-i</i> (rerey <i>dæ̃r-er</i>)	<i>dð-næ̃r</i>
2Ma	<i>d-ək</i>	<i>dð-wæn</i>
2Fe	<i>d-əm</i>	<i>dð-kmæt</i>
3Ma	<i>d-əs</i>	<i>dð-sæn</i>
3Fe	"	<i>dð-snæt</i>

In these dialects, forms like *d-əs* still function as bisyllabic for purposes of Default Accentuation: *olæh-æ̃r-\dær-əs* ‘I resemble him’ (T-ka along with A-grm and K-d), with regular antepenultimate default accent, and variant *olæh-æ̃r-\d-əs* (R T-md) with accent on the same syllable (which is here the penult rather than antepenult). In other words, we should really represent the dialectal allomorphs as ($\grave{\text{~}}$)-*d-əs* and the like, where the diacritic indicates that the default accent falls on the immediately preceding syllable.

For ‘without X’, where X is some NP or adverbial, see §6.7, below.

Further examples of Comitative *d* are in (279). See also the use of *d* in numeral phrases (§5.1.2.1, §5.1.2.4).

- (279) a. *t-assàq-q-\dær-əs*
 Fe-connect.VblN-FeSg-\with-3Sg
 ‘being connected with (=adjacent to) it.’
- b. *ikét t-an-æ̃lmad-æn*
 just LoImpf-Ø-know.LoImpfP-3MaPlS
 [d əddinæt-ə̃nnet]
 [with people-3SgPoss]
 ‘Just recently they are becoming familiar with its people.’
- c. *ɑ-hæroj-næ̃sæn* [d əddinæt-næ̃sæn]
 Sg-be.neighbor.VblN-3MaPlPoss [with people-3MaPlPoss]
 ‘their being neighbors with their people’
- d. *æ̃-kall ən súnu bæ̃nkás* [əd kóro]
 Sg-land Poss S B [and K]
 ‘the land of Sounou, Bankass, and Koro (villages)’.
- e. *wæ̃r-\dær-əs əss-ærtæ̃y-æn hæ̃ræt ənta*
 Neg-\with-3Sg Caus-mix-3MaPlS thing 3Sg
 ‘They don’t mix anything with it (=have nothing to do with it).’

- f. ənn-ilmæd-næt-\dər-əs ʔ-t-ə-rəs-w-en-nænær
 Ø-learn.Reslt-3FePlS-\with-3Sg Fe-Pl-body-FePl-1PlPoss
 ‘Our bodies have become accustomed to it (land).’

In cliticized form -\d, the preposition occurs in a number of important clause-initial complementizers, in a range of adverbial (§13.1.1.1, §13.1.2), purposive (§13.2.1), and subjunctive clauses (§13.3). One could argue that the complementizer èd ‘because’ also contains -\d (§13.2.2).

6.5 Spatial prepositions

6.5.1 ‘in, at’ (dæɾ)

This is the basic Locative preposition, indicating position in some space or enclosure, whether or not motion is involved (‘in’, ‘into’, ‘from inside’ = ‘out of’). Before a C or a non-high V, it is usually heard as [dæɾ]. Before a high V {ə u i} it is usually heard as [dæɾ], presumably by Short-V Harmony. Care must be taken to distinguish Locative dæɾ from discourse particle dər ‘also, too’ (especially since the latter is usually heard as dæɾ in T-ka, with short æ). It should also be distinguished from -dæɾ, an Anaphoric element appearing at the end of demonstrative pronouns and adverbs (§4.3).

For T-ka, the pronominal paradigm is straightforward (280)

(280) Pronominal Paradigm of dæɾ ‘in’ (T-ka)

person	Sg	Pl
1	dəɾ-i, dəɾ-er	dæɾ-nær
2Ma	dəɾ-ək	dæɾ-wæn
2Fe	dəɾ-əm	dæɾ-kmæt
3Ma	dəɾ-əs	dæɾ-sæn
3Fe	"	dæɾ-snæt

In my R data, Locative dæɾ has completely **merged with Comitative d** in pronominal combinations (but not before nouns). The 1Sg form is dəɾ-i or rarely dəɾ-er, whose ɾ shows that this reflects the original locative form. Before pronominals other than 1Sg we get d- (prevocalic, i.e. in singular forms) and də- (preconsonantal, i.e. in plural forms). The paradigm is given (278), above.

It is possible that dæɾ is distantly connected historically with the noun é-dægg ‘place’, but if so the historical phonology is irregular.

Because Tamashek (like Songhay) has no ablative case, the locative is used in PP’s associated with verbs that have ablative sense (‘leave’, ‘remove’, etc.).

A variety of examples are in (281). Note particularly the **partitive** function in (281.g-h); a similar example with ‘who?’ is (777) in §12.3.8. Such partitive phrases also occur with numerals (e.g. ‘four in [=of] the ...’). (281.j) is a good example of the apparent ablative gloss ‘from’, actually attributable to the motion verb.

- (281) a. əzzæʁ-æn [dæʁ æ-kall én-dæʁ]
 dwell.PerfP-3MaPl [in Sg-land Dist-Anaph]
 ‘they (have) lived in that country.’
- b. a-w-a ʁærr [ù-\tæn
 Dem-Ma-Dem.Sg indeed [Foc-3MaPlO
 ʔ-kkæs-æn [dæʁ æ-kall]]
 3MaSgS-remove.PerfP-Partpl.MaSg [in Sg-land]]
 ‘that is precisely what removed them from (=forced them to leave) the land’.
- c. dæʁ t-æ-hàji-t-t
 in Fe-Sg-be.long.time.VblN-Fe-FeSg
 ‘for a long time’
- d. i-fannæz-\dæʁ-sæn úʁʂad
 3MaSgS-diminish.LoImpfP-**in**-3MaPl destruction
 ‘Loss (of life and livestock) is diminishing among them.’
- e. wæʁ Ø-æwwed abbà-nnet
 Neg 3MaSgS-reach.PerfN father-3SgPoss
 [dæʁ t-əššəjrət-t]
 [in Fe-length-FeSg]
 ‘He isn’t at tall as (=he is shorter than) his father.’ [K-d]
- f. dæʁ ʔæ-jæzzī-nnæk
 in Sg-opinion-2SgPoss
 ‘in your opinion’
- g. əndék [dæʁ ʔØ-kall-æn í-dæʁ]
 which? [in Pl-land-MaPl Prox-Anaph]
 w-ù-\s Ø-øjær
 Ma-Dem.Sg-\Instr 3MaSgS-be.bigger.PerfP
 ‘Which of (=among) those lands is the bigger?’

- h. wær è t-ækš [dæɾ Ø-s-an]
 Neg Fut 3FeSgS-eat.ShImpf [in Pl-meat-MaPl]
 [á Ø-æjj-én]
 [Dem 3MaSgS-be.many-Partpl.MaSg]
 ‘She will not eat very much of the meat.’
- i. nækκ s-aräd-æq-ʌq
 1Sg Caus-bathe.LoImpfP-1Sgs-ʌ3MaSgO
 [dæɾ am-an]
 [in water-MaPl]
 ‘I bathe him in water.’
- j. əŋkær-æɾ [dæɾ éðəs]
 arise.PerfP-1SgS [in sleep]
 ‘I have gotten up from sleeping.’ [K]
- k. ʌ i-ttær-æn [a-ʌhĩ Ø-æj]
 Dem 3MaSgS-seek [Dem-ʌ1SgO 3MaSgS-do.ShImpf]
 [dæɾ lækkol]
 [in school]
 ‘one who had sought to put me in(to) a school’ [K]

6.5.2 ‘at the place of, chez’ (ɾòr)

The preposition ɾòr is used like French *chez*, i.e. ‘at/to the place (e.g. home) of’. In the absence of a true ablative case, ɾòr can also be used to designate the point of departure (‘from ...’) when describing a linear extension or motion, especially when paired with hür ‘until, all the way to’ or when combined with a verb like -vfv- ‘leave, go from’.

Because the r is a BLC (§3.1.2.2), the lexical representation could be either /ɾor/ or /ɾur/. Since there is no clear evidence in the relevant dialects (especially T-ka) for /ɾur/, I transcribe the preposition as ɾòr based on its phonetic form. LTF2 118 has “ɾur” for Niger Tamajak. I have also recorded variants wùr (K) and ɾòrr (T-ka).

The pronominal paradigm is regular (282). Examples are in (283).

(282) Pronominal Paradigm of *ɾòr* (or *ɾùr*) ‘at the place of, chez’

person	Sg	Pl
1	<i>ɾòr-i, ɾòr-er</i>	<i>ɾòr-nær</i>
2Ma	<i>ɾòr-ək</i>	<i>ɾòr-wæn</i>
2Fe	<i>ɾòr-əm</i>	<i>ɾòr-kmæt</i>
3Ma	<i>ɾòr-əs</i>	<i>ɾòr-sæn</i>
3Fe	"	<i>ɾòr-snæt</i>

- (283) a. *ɑ-ʌtæn* *n-əkəl* *ɾás*
 Fut-ʌ3MaPIO 1PlS-spend.midday.ShImpf only
 [wur *dəd* T]
 [**chez** Pl T]
 ‘We’ll spend the midday with them, at the home of T (personal name) and company.’ [K]
- b. *ɾorr* *ɑ-w-ɑ* *ĩ-fæl-æn*,
chez Dem-Ma-Dem.Sg 3MaSgS-leave.PerfP-Partpl.MaSg
gorængóræn *t-əkkə-d-ʌódd* *frontière*
 G 2S-go.to.ShImpf-2Sgs-ʌCentrip border
 ‘Moving on from that (place), Gorangoran, you go to the border.’
- c. *ɑ-ræzzèj-in* *jé-q-ʌq*
 Sg-livestock-1SgPoss put.Reslt-1SgS-ʌ3MaSgO
 [*ɾòr* *æññɑ*]
 [**chez** brother]
 ‘I have put (=left) my livestock with (=at the place of) my brother.’ [K]
- d. *eɟàs-ʌɾor-əs*
 sleep.VbIN-ʌ**chez**-3Sg
 ‘sleeping (staying overnight) at his/her place.’ [K-d]

6.5.3 ‘under’ (*dàw*, *dàgg*)

Before a noun, the preposition in T-ka and T-md is *dàw* before a C, and either *dàw* or *dàgg* before a V, hence *daw* ʾæ-hæn = *dægg* ʾæ-hæn ‘under the tent’. Prasse attributes the gg to an original *w-w at the morpheme boundary (something like **daw wæ-hæn*) when the MaSg prefix on the noun began with *w (MGT 1.82). The A-grm dialect does have *dàww* as the basic form of the preposition. There is, however, also a V-length difference between *dàw* and *dàgg* (*dàww*) variants.

Only *dàw* is used in T-ka and T-md before pronominal suffixes (284).

(284) Pronominal Paradigm of *dàw* 'under'

person	Sg	Pl
1	<i>dàw-i, dàw-er</i>	<i>dàw-nær</i>
2Ma	<i>dàw-ək</i>	<i>dàw-wæn</i>
2Fe	<i>dàw-əm</i>	<i>dàw-kmæt</i>
3Ma	<i>dàw-əs</i>	<i>dàw-sæn</i>
3Fe	"	<i>dàw-snæt</i>

For K-f I recorded 1Sg *dàw-i*, 2MaSg *dàw-ək*, and 3Sg *dàw-əs* as in T-ka, but plurals based on *dàwa-*: 1Pl *dawà-nær*. 3MaPl *dawà-ssæn* (or *dàw-sæn*).

For the dialects of I (=Imenas) and R, the form is *dàwa-* before Sg as well as Pl pronominals: 3Sg *dàwa-s*, 1Pl *dawà-nær*, 2MaPl *dawà-wwæn*. However, *dàwa-* reduces to *dàw-* before 1Sg *-i*, so *dàw-i* 'under me' is general in the region. For A-grm we get *dèww-* before pronominals as before nouns: 3Sg *dèww-əs*.

- (285) a. *t-a-dæ̀wal-t* *t-a* *ə̀ndə̀rræ-t,*
 Fe-Sg-nanny.goat-FeSg Fe-Dem.Sg small-Partpl.FeSg,
t-a-\dagg *i-ll-`é* *`æ-ræyd*
 Fe-Dem.Sg-\under 3MaSg-exist-\3MaSgO Sg-goat.kid
 'A young nanny-goat, under whom there is a goat kid'
- b. *t-ə̀qqáš-ær* [*daw* *`t-æ-yæ̀ttuf-t*]
 LoImpf-dig.LoImpfP-1sgS [**under** Fe-Sg-termitary-FeSg]
kilo-tæn [*n* *ə̀ttæram*]
 kilo-MaPl [Poss grain]
 'I dig out (from) under the termite mound (some) kilos of grain.' [K]

6.5.4 'above, over' (*jə̀nnə̀j*)

The form before a noun is *jə̀nnə̀j* (often realized as *jə̀nnə̀j*), and there is no change before a pronominal. For A-grm I recorded *də̀nnə̀g* (as in Niger Tamajak).

With pronominal endings the forms are as shown in (286). Since this preposition is bisyllabic, it brings out the accentual effects of Pl (versus Sg) endings.

(286) Pronominal Paradigm of *jənnəj* 'above'

person	Sg	Pl
1	<i>jənnəj-i, jənnəj-er</i>	<i>jənnəj-nær</i>
2Ma	<i>jənnəj-ək</i>	<i>jənnəj-wæn</i>
2Fe	<i>jənnəj-əm</i>	<i>jənnəj-kmæt</i>
3Ma	<i>jənnəj-əs</i>	<i>jənnəj-sæn</i>
3Fe	"	<i>jənnəj-snæt</i>

6.5.5 'on' (*fəl, fəlla-*)

This preposition can mean 'on (an object or surface)' and has some more abstract uses associated with particular verbs such as 'be obligatory (on X)'. With a temporal noun it can mean 'within, in the space of', as in *fəl ʔæ-wætəy* 'in the space of (=within) a year'. It is used with complements of certain verbs such as *-rvftv-* 'be frightened of (something)'.

It can also be used in the context of cause or motive. It is part of *ma-\fəl* 'why?' (lit. 'on what?'), and various clause-initial conjunction-like phrases meaning 'because ...', including *α fəl...* and just *fəl...* (§12.3.7, §13.3.2).

An example of ungeminated *l* before a noun is *fəl ʔæ-hæn* 'on the house'. In some versions of the local Tamashek orthography the preposition is written as *fäll* even in pronominal position, but there is no linguistic basis for this. Before a pronominal ending, the basic form is *fəlla-* (287).

(287) Pronominal Paradigm of *fəl* 'on'

person	Sg	Pl
1	<i>fəll-i, fəll-er</i>	<i>fəllä-nær</i>
2Ma	<i>fəlla-k</i>	<i>fəllä-wwæn</i>
2Fe	<i>fəlla-m</i>	<i>fəllä-kmæt</i>
3Ma	<i>fəlla-s</i>	<i>fəllä-ssæn</i>
3Fe	"	<i>fəllä-snæt</i>

The noun *α-fəlla* 'north; top, upper part' occurs in most dialects. *T-ka* and *T-md* distinguish the two accentually as *α-fəlla* 'north' and *à-fəlla* 'top'.

- (288) a. *t-əjə-d-\tæt* [fəl ʔæ-rəff-ənnət]
 2S-put.ShImpf-2SgS-3FeSgS [on Sg-head-3SgPoss]
 '... and put it (=wild date pit) on his head.' [K]

- b. kəm-ak æyy-\fàlla-m t-à-ḍəzza
 2FeSg-Ø leave.Imprt-\on-2FeSg Fe-Sg-laughter
 'You-Fe, cut out the laughing (on yourself)!'

 c. nækk əsle-ɾ t-æ-n-hærək-k-ənnæm
 1Sg hear.PerfP-1SgS Fe-Sg-Ø-neighbor-FeSg-2FeSgPoss
 t-əbḍá [fæl əra-tæn]
 3FeSg-be.separated.Reslt [on child-MaPl]
 'Me, I heard that your female neighbor, she has gotten divorced on account of the children.' [K]

6.5.6 'in front of' (dàt)

The preposition is *dàt* before a noun, *dàta-* before pronominals (289).

(289) Pronominal Paradigm of *dàt* 'in front of'

person	Sg	Pl
1	<i>dàt-i, dàt-er</i>	<i>datà-næɾ</i>
2Ma	<i>dàta-k</i>	<i>datà-wwæn</i>
2Fe	<i>dàta-m</i>	<i>datà-kmæt</i>
3Ma	<i>dàta-s</i>	<i>datà-ssæn</i>
3Fe	"	<i>datà-snæt</i>

There is a noun *datá* 'front, forward part', often in the phrase *əs datá* 'to the front, ahead, forward'.

An example of the preposition is (290).

- (290) t-əkkà data-m
 3FeSgS-go.PerfP in.front.of-2FeSg
 'It (=God's creation, i.e. people) goes in front of you-FeSg.' [K]

6.5.7 'behind' (ḍàræt, ḍàra-)

Before a noun the form is *ḍàræt*. The pronominal paradigm has *ḍàra-* (292).

(291) Pronominal Paradigm of *dàràt* 'behind'

person	Sg	Pl
1	<i>dàr-i, dâr-er</i>	<i>dàrû-nær</i>
2Ma	<i>dàra-k</i>	<i>dàrû-wwæn</i>
2Fe	<i>dàra-m</i>	<i>dàrû-kmæt</i>
3Ma	<i>dàra-s</i>	<i>dàrû-ssæn</i>
3Fe	"	<i>dàrû-snæt</i>

The related noun is *dàrá* 'rear', as in adverbial phrase *əs dàrá* 'in the rear'.

An alternative preposition *dəffər* is mainly characteristic of Tawellemmett, but is used to some extent in A-grm alongside *dàràt*.

The sense can be spatial ('behind the house') or temporal (292).

- (292) [ad *əddər-æn* *əddinæt* *dàra-s*
 [Fut be.alive.ShImpf-3MaPlS] people **behind-3Sg**
 'The people will live on after him;' [K]

6.6 Compound prepositions

6.6.1 'beside' (*dædes* or *d`æ-des*, *dægman*)

For T-ka, the form for 'beside, next to' is phonetic [*dæ'des*]. It might still be segmentable as *d`æ-des* ... 'by the side (of...)', itself a prepositional phrase. However, the underlying noun (without the first preposition *d*) does not occur synchronically in these dialects. In the adverbial PP *əs dædes* 'to the side', *dædes* clearly functions as a noun. With pronominals, we get e.g. 1Sg *dædès-in* 'beside me', 1Pl *dædes-nænær* 'beside us', 3Sg *dædès-ənnət* 'beside him/her/it'. The endings here are possessive rather than prepositional, a vestige of the nominal origin of *dædes*.

In other dialects (Gao, K, R, T-md) the form in isolation of this preposition is [*e'des*], which I transcribe *é-des*. It has the look of a simple noun with Sg prefix *e-*, and is obviously the lost noun underlying the T-ka variant *dædes*. However, *é-des* often functions as a simple preposition. In the 1Sg the ending is *-in* (R) or *-i* (K): *e-dès-in*, *e-dès-i* 'beside me'. R also allows a 1Sg dative ending: *e-dès-\ha-hi* 'beside me', and this is the form recorded for some Gao-area dialects. For K, other forms are 3Sg *e-dès-ənnət*, 1Pl *e-dès-\ha-nær*, and 3MaPl *e-dès-\ha-sæn*. Evidently the pronominal endings are a mix of possessive suffixes and dative clitics, perhaps sensitive to person-number-gender features. The corresponding adverbial phrase is *s è-des* 'to the side'.

For T, I recorded *s t-e-dès-t-in* 'beside me'.

For A-grm I recorded an alternative preposition *dægman*, as in Tawellemmett (Niger). This is another instance of fusion of a nominal

(294) Pronominal Paradigm of *jèr* 'between' (T-ka)

person	Sg	Pl
1	<i>jèr-i, jèr-er</i>	<i>jerè-nær</i>
2Ma	<i>jèr-ək</i>	<i>jerè-wwæn</i>
2Fe	<i>jèr-əm</i>	<i>jerè-kmæt</i>
3Ma	<i>jèr-əs</i>	<i>jerè-ssæn</i>
3Fe	"	<i>jerè-snæt</i>

I recorded the same data from the R speaker, and (with *g* for *j*) similar forms for the Gao area. However, Gao and R speakers also gave the following variants, with the short form of the stem before Pl as well as Sg suffixes: 1Pl *jèr-nær*, 2MaPl *jèr-wæn*, and 2FePl *jèr-kmæt*.

For A-grm and some Gao-area dialects I recorded *gær* 'between'. The A-grm speaker also used *gær-* before a pronominal (*gær-i-ɫdər-ək* 'between you-Sg and me', *gær-sæn* 'among them', *gær-nær* 'between us', etc.).

6.6.3 'toward' (*èbré-*)

'Toward X' (where X is a location) is expressed by the dialectal variants in (295). *èbré* (or variant) is syntactically a noun rather than a true preposition, and takes a complement noun (or pronominal) in possessor form (296).

(295) 'Toward'

form	dialect
a. simple	
<i>èbré</i>	T-ka
<i>bré, bæré</i>	K
<i>ïbere</i>	K-d
b. with Instrumental s	
<i>s èbre</i>	T-ka T-md
<i>s ʼæ-brét</i>	A-grm
<i>s ét</i>	A-grm

(296)	<i>èbrè</i>	n	<i>ʼt-à-šalje</i>
	toward	Poss	Fe-Sg-left
	'toward the left'		

In context, the Tamashek 'toward' forms, like French *vers*, can be used in the sense 'around X, in the vicinity of X'.

- (297) æss-òkæl-æʀ ebré n færaš
 Caus-travel.PerfP-1SgS **toward** Poss F
 t-ú-dæʀ t-òhæʒ-æt
 Fe-Dem.Sg-Anaph 3FeSgS-be.near.PerfP-Partpl.FeSg
 ‘I traveled over toward (=around) Farach (place), not far from here.’

6.7 Preposition-like particles

Some particles that can precede NPs (or independent pronouns), but do not satisfy the tests for true prepositional status, are shown in (298).

(298) Preposition-like Particles

form	gloss or label	reference
òr	‘except’	§11.3.1
hàr	‘until, all the way to’	§13.1.1.5
mér	‘or’	§14.2.2
wælá	‘without’	(see below)
kúd	‘even’	§11.2.2

These forms do not combine with pronominal suffixes to form a clitic. Instead, they **combine with independent pronouns**, like 2FeSg nàmm, e.g. òr nàmm ‘except you-Fe’. In addition, when these forms are followed by a noun, **the noun does not undergo Prefix-Reduction** (299).

- (299) Ø-osæ-\\d [wælá t-ò-s-wəl-t]
 3MaSgS-come.PerfP-\\Centrip [without Fe-Sg-Instr-turn-FeSg]
 ‘He came (here) without a key ring.’

Consider now the sequence ‘**from X (all the way) to Y**’ with spatial reference. The ablative element in ‘from X’ part is expressed by an otherwise stationary locational expression, normally a true PP with ʀòr ‘at, chez’. The ‘to Y’ part can be expressed with hàr in the sense ‘all the way to’. Directional clitics can help clarify the direction of motion (300).

- (300) ərjæš-æʀ-\\ádd [ʀor ʔé-wet] [hàr a-m-æzzəʀ]
 walk.PerfP-1SgS-\\Centrip [chez Sg-market] [until Sg-Ø-camp]
 ‘I walked from the market all the way to the camp.’

While temporal ‘after’ is sometimes just a special case of ðàræt ‘behind’, there is also a form šæmá- that occurs in adverbials. One such adverbial is šæmá-\\s ‘afterwards’ (lit. “after it-Sg”), where šæmá- seems to function as a

Chapter 7

Verbal morphology

This chapter focuses on inflectable verb stems that occur in “ordinary” clauses. This excludes verb forms that are confined to relative clauses, including participles (i.e. subject relatives), on which see §8.5, and certain inflectable verb stems (Reslt and LoImpfP) that undergo ablaut modifications in definite relative clauses (§3.5.3, §12.1).

As noted in §2, each regular verb has the set of stems in (302).

(302) Verb Stems

a. perfective system

PerfP [perfective positive]
PerfN [perfective negative] (after Neg wàr)
Reslt [resultative] (positive only)

b. short imperfective system

ShImpf [short imperfective] (after Fut or complementizer)
Imprt [imperative] (in positive only)

c. long imperfective system

LoImpfP [long imperfective positive]
LoImpfN [long imperfective negative] (after Neg wàr)
Prohib [prohibitive] (after Neg wàr)

These stems share a uniform set of subject prefixes and suffixes §7.4.1. There are two exceptions. First, imperatives have an unaffixed 2Sg, and special suffixed 2MaPl and 2FePl forms (§7.4.3). Second, certain verbs with “adjectival” sense have a special type of perfective stem (of probable nominal origin) that can take subject suffixes but not subject prefixes (§7.4.2).

The morphological relationships among the stem types in (302) vary depending on the type of verb, which is primarily determined by the basic syllable shape of the stem, distinguishing short from full V’s and in some positions distinguishing geminate consonant clusters, represented as “PP,” and nongeminate clusters, represented as “PQ.” Where indexation is not needed I use “C” for consonants, hence “CC” for clusters that may be geminate or nongeminate. In abstract representations of stems, “v” is a short vowel, “u” is a full vowel, and “V” can be either short or full. It is not necessary to mark accents in these abstract lexical representations, since inflectable verb stems

acquire accent either by accent formative $\acute{\chi}$ -pcl in ablaut (Reslt, LoImpfP), or by Default Accentuation (§3.3.1). Aside from differences among **stem-shape classes**, e.g. -vPPvC-, -vPQv-, and -CvCvC-, there are also special features associated with **adjectival verbs**.

This chapter is organized as follows. First, Augment -t of a large class of V-final stems is discussed (§7.1). These are referred to throughout as **augment verbs**, in contrast to **unaugmented V-final stems**. Then the stem categories in (302) are discussed in turn, briefly describing the syntax and semantics of each category, and extracting generalizations about ablaut morphology that apply across stem-shape classes (§7.2). In §7.3.1 I focus in turn on each stem-shape class, beginning with various types of (syllabically) light verbs and moving on to heavy and superheavy stems (on the light/heavy distinction see §3.4.1.4). In §7.3.2 I proceed to discuss verbs that have individual idiosyncrasies. There is considerable duplication between §7.2 and §7.3, since they approach the same morphological system from two different perspectives. In §7.4 I describe the pronominal subject prefixes and suffixes.

7.1 Augment verbs with -t-

7.1.1 Augmented and unaugmented V-final stems

We will see that many verbs end in a C, but there are quite a few others that end in a V. Of the V-final verbs, the majority are **augment verbs** (short for augmented V-final verbs) that add a suffixal Augment (“Aug” in interlinears) -t- word-finally and before C-initial subject and Participle suffixes. The Augment does not occur in non-participial nominals (VblN, Agentive, etc.). In this section, I focus on the distribution of -t- itself, and on its effect on a preceding V. The full set of stems for augment verbs is discussed below (§7.3.1.6, §7.3.1.13, §7.3.1.16).

While many augmented verbs are unrelated to nouns (except their own derivatives), others are matched with an underived noun and may be considered **denominal**, e.g. noun $\acute{\alpha}$ - γ orr ‘patty from droppings put into animal’s mouth to prevent suckling’, verb γ uru-t (PerfP $\acute{\alpha}$ qqor $\acute{\alpha}$ -t) ‘smear (breast) to deter suckling’ (VblN $\acute{\alpha}$ - γ aru). There are no other productive denominal verbalizations.

Augment -t- is absent before a V-initial subject suffix (303.a), whereupon the stem-final V contracts with the suffix-initial V (§3.2.3). However, the augment is present when there is no subject suffix (303.b), and when the subject suffix begins in C-initial (303.c). The addition of clitics has no effect on the presence/absence of -t-.

(303) PerfP of 'fly away'

a. VV-Contraction (37.d) to e with V-initial suffix

1Sg	əffurre-ʀ
2Sg	t-əffurre-d
2MaPl	t-əffurre-m
3MaPl	əffurre-n

b. Augment *-t* with no subject suffix

1Pl	n-əffurræ-t
3MaSg	ĩ-ffurræ-t
3FeSg	t-əffurræ-t

c. Augment *-t-* before C-initial suffix

2FePl	t-əffurræ-t-mæt
3FePl	əffurræ-t-næt

In other dialects (A-grm Gao K R T-md), such stems begin with *æ* rather than *ə* in the perfective system (e.g. PerfP *-əffurræ-t*). T-ka has harmonized the stem-initial short V with the <H> V of the following syllable (cf. §3.2.6), but in T-ka there is no synchronic evidence that the initial V is underlying /*æ*/.

The stem-final V is shortened before *-t* in ordinary inflected forms (PerfP, ShImpf), but when the final V is protected by a $\bar{\chi}$ ablaut feature (as in the long imperfectives) it does appear as a full V before *-t*. Thus 3MaSg PerfP *ĩ-ffurræ-t* (303.b) and 3MaSg ShImpf *ĩ-ffurræ-t* have short pre-augment V, but 3MaSg LoImpfP *i-t-ĩfərru-t* shows a full pre-augment V. See **Pre-Augment V-Shortening** (115) (§3.4.9.2).

There are a few augment verbs, belonging to a broader **adjectival** class, whose perfective inflected forms allow a full V to surface before the *-t-*, violating Pre-Augment V-Shortening, and usually keep the *-t-* even before V-initial suffixes. An example is 'be speckled' (372.d), with 3MaSg PerfP *kəšə-t* (not **kəšə-t*) and 3MaPl *kəšə-t-æn* (not **kəšə-n* in this sense, though the latter is attested as a MaSg participle). The verbs in question have PerfP *CəCa-t* and Imprt *CəCə-t*, or PerfP *CàCa-t* and Imprt *CàCə-t*. The Imprt forms suggest that these verbs have a basic shape *-CVCv-* (+ *-t*), but have the peculiarity that the stem-final *v* is unconditionally lengthened to *a* in the perfective. There are other (C-final) adjectival verbs that have a similar long *a* (or other long V) in the second perfective syllable, e.g. PerfP *-əzzəy-* 'be heavy', *bəhəw-* 'be grey', and *šəggəʀ-* 'be red'. While these adjectival perfectives are lexically irregular, one could argue that they include a lengthening formative $\bar{\chi}$ (perhaps $\bar{\chi}$ -f, i.e. applying to the final stem syllable), and this $\bar{\chi}$ blocks (or undoes) Pre-Augment V-Shortening in augment verbs like *CəCa-t*.

In (304), below, we see that the augment *-t-* is present in all imperative forms. Based on the non-imperative data in (303), this is not surprising in the

case of 2Sg (zero subject suffix) and 2FePl (C-initial suffix). However, the presence of *-t-* is noteworthy in the case of 2MaPl (V-initial subject suffix).

(304) Imperatives of 'fly away'

2Sg	fùrrə-t
2MaPl	furrə-t-æt
2FePl	furrə-t-mæt

The *-t-* in *furrə-t-æt* might be taken as evidence that the 2MaPl and 2FePl Imprt forms are directly based on the 2Sg Imprt.

The addition of a clitic, or the addition of Hortative suffix (*-et*), does not affect the presence/absence of the augment *-t-*, and no special (morpho-)phonological rules apply when these elements are added. Examples are *n-əhuskə-t-et* 'let's become beautiful' (hortative), *i-bbùqqæ-t-æt* 'he burst it-Fe' (object clitic), *i-bbùqqæ-t-ə-s* 'it burst for him/her' (dative clitic), and *i-bbùqqæ-t-ədd* 'it burst coming this way' (directional clitic).

In **participles**, Augment *-t-* is absent from the singular forms (which have V-initial suffixes, MaSg *-æn* and FeSg *-æt*), but it is present before the C-initial Pl suffix *-nen* (305). As with inflected verbs, the *-t-* has a shortening effect on the stem-final V.

(305) Definite Participles of 'scrub'

a. Augment omitted before V-initial suffix

MaSg	w-α i-ffuffære-n
FeSg	t-α t-əffuffære-t

b. Augment present before C-initial suffix

MaPl	w-i əffuffərə-t-nen
------	---------------------

[FePl has different demonstrative *t-i*, same Partpl form]

Augment *-t-* is **absent from VbIN** forms (*α-fəffəru* 'scrubbing', *à-fərru* 'flying'). Their plurals do have a *t* (e.g. *α-fəffəru-tæn*), but this *t* is interpretable as part of the postvocalic allomorph *-tæn* of the MaPl suffix (which is *-æn* after a C).

The VbIN (and other nominalizations that also lack *-t-*) show that Augment *-t-* is restricted to finite verb forms and participles. Within this domain, there is a phonological basis for the presence/absence of *-t-*, viz., it is absent when the stem is followed by a V-initial subject (or Participial) suffix, otherwise it is present. The only exceptions are the 2MaPl imperative, which is parasitic on the 2Sg imperative, and adjectival perfectives like *kæšsα-t-æn* 'they-Ma are/were speckled'.

In spite of its apparent phonological basis, Augment *-t-* is somewhat mysterious. While the augment class contains the majority of V-final verbs,

there are other V-final verbs that do not take the augment. There is some overlap in the syllabic shapes allowed in augment and non-augment classes (see below). The augment verbs and the non-augment V-final verbs also differ in the way the stem-final V contracts with a following suffix-initial V, both in the output of the contraction and in accentual patterning (§3.2.3).

(306.a) illustrates the canonical shapes of non-augment V-final verbs, while (306.b) does the same for augment verbs.

(306) V-Final Verbs

gloss	PerfP	LoImpfP	Imprt
a. non-augment			
light			
‘fold’	-òðha-	-tí-ðh-	àðh
‘have mercy’	-òʃfa-	-ʃíffu-	òʃfu
‘bellow’	-èrku-	-ríkku-	èrku
‘do’	-èja-	-tá-jj-	èj
‘say’	-ènna-	-jánna-	ènn
‘bray’	-èru-	-t-íru-	èru
‘grow’	-èti-	-t-íti-	èti, ìti
	[K-d also PerfP -ætíy-, etc.]		
‘be born’	-èwa-	-t-íwi-	ìwi
middleweight			
‘harm’	-è ərra-	-t-à ərra-	ərr
	[phonetic [-æ]:æ̀r̀a-]; variant -èððərra-, etc. (R)]		
‘load’	-èjjujja-	-t-àjæjja-	jàjj
superheavy			
‘be confused’	-èmtælla-	-t-ìmtèlli-	mètèll
‘spread’	-èm-saka-	-t-ìm-suku-	m-èsuk
b. augmented (with -t-)			
middleweight			
‘burst’	-èbbuqqæ-t	-t-ìbèqqu-t	bùqqə-t
‘hunt’	-èhhuyyæ-t	-t-ìhəyyu-t	hùỳyæ-t
‘fine (sb)’	-èjjukkæ-t	-t-ìjækku-t	jùkkə-t
‘be joyful’	-èddəwæ-t	-t-àdəwa-t	dəwæ-t
superheavy			
‘obtain’	-èhrækkæ-t	-t-ìhrækki-t	hèrèkkə-t
‘nibble’	-èjmænjàmæ-t	-t-ìjmènjàmi-t	jəmènjàmè-t

There is a **partial phonological basis** for the distinction between augment and non-augment stems. First, the quality of the stem-final V shows more variability in non-augment (306.a) than in augmented (306.b). The PerfP in (306.b) always ends in ...æ-t, while we have examples of final a and u in (306.a); likewise, the imperfectives for non-augment verbs can end in i, u, a, or zero (which depending on the particular form can be analysed as /i/ or /A/), while augment verbs have only high V's.

Second, a glance at (306) shows that all light stems are non-augment. There are middleweight and superheavy verbs of both augmented and non-augment types. However, among middleweight verbs, my data suggest that all -CvCCv- stems are non-augment, all -CvCv- stems are augmented, and only -CuCCv- and -CvCv- stems are split between the two.

Among superheavy stems, -CvCvCCv- and -CvCvCv- stems can be augmented or non-augment, but all other underived superheavy verbs are strictly augmented. So -CvCv-, -CuCCv-, -CvCvCCv-, and -CvCvCv- are the four shapes where either choice can be made. For -CuCCv-, note non-augment -jujju- 'load' and augmented -jukku- 'fine'. For -CvCvCCv- note non-augment -mvtvllv- 'be confused' and augmented -hvrvkku- 'obtain'.

The situation in **A-grm** dialect is rather different. Augmented verbs with -CuCCv- shape (full u medially) in T-ka and other dialects usually have cognates in A-grm with medial short V, i.e. -CvCCv- (+ -t). For this dialect, non-augment and augmented classes compete broadly across middleweight V-final verbs.

7.1.2 Alternative segmentations of Augment -t-

As with some other suffixes, there is some ambiguity as to the precise form of the -t- augment. I segment it as -t- and assign the preceding æ or ə to the verb stem. Certainly there is evidence that the stems in question end in a full V (it appears overtly in the VbIN, for example), so we need a V-Shortening rule that applies to the V when it is followed by the augment. The closest parallel to this is the shortening of a stem-final V (in unaugmented verbs) before C-initial subject and Participial suffixes, e.g. Pl Partpl -nen (§8.5.1). This analysis allows us to take the final full V (i or u) that appears overtly in the VbIN and in the LoImpFP as lexical (except where a final u is attributable to spreading from another medial u in the stem).

However, **other segmentations** of the augment are also possible. Alternative #1 is to segment the augment as -vt- (v = short vowel), realized as -æt- or -ət-. This strategy would require application of VV-Contraction, effectively deleting the stem-final full V before the short V of the suffix. This would entail hyphenating 'burst.PerfP' as -əbbuqq-æt (instead of my -əbbuqqæ-t), and its Sg Imprt as b̀uqq-ət (instead of b̀uqqæ-t). To account for the alternation of -æt- and -ət- in this analysis, one could simply include the augment in the scope of the respective stem melodies. Alternatively, we could

allow the melodies to apply to the pre-VV-Contraction stem, then have the stem-final V's high or low feature transferred to the augment-initial V as part of the VV-Contraction process. A similar transfer occurs in VV-Contraction examples involving unaugmented V-final stems in the ShImpf, which end in the underspecified high vowel /i/ (§3.1.2.4, §7.3.1.3).

Alternative #2, which might be considered by readers who wish to motivate the distinction between augmented and unaugmented V-final verbs other than by lexical verb-class assignment, would be to take the augment as -t as before, but to claim that verbs of the augment class end in underlying short (not full) *v*. The difference between augment verbs and other V-final verbs would then be predictable: augment verbs are simply those verbs ending in a final short *v*. This would account directly for the surface *v* in the augmented forms (əffurræ-t, furræ-t, etc.). It would also permit a phonological interpretation of the way VV-Contraction applies when the stem-final V is directly followed by a V-initial subject suffix (-æʀ, -æd, -æm, -æn), see (305.a), above. Specifically, we could posit /æ-æ/ → e in all of these combinations. For unaugmented verbs, we would posit stem-final /a/ in the PerfP, so the VV-Contraction cases would have underlying /a-æ/, which surfaces as either æ or e depending on which suffixal category is involved (§7.3.1.1).

Alternatives #1 and #2 each have some attractive features. I reject alternative #1 since the VblN and other nominals show a clear stem-final full V (with no Augment). I reject alternative #2 since there is no other evidence for positing stem-final short V's (contrasting in phonological behavior both with full V's and with deletable stem-final V's).

7.2 Stem categories

7.2.1 Mood-aspect-negation (MAN) categories

To repeat, each regular verb has the basic stems shown in (307).

(307) Basic Verb Stems

- a. perfective system
 - Perfective Positive (PerfP)
 - Resultative (Reslt)
 - Perfective Negative (PerfN)

- b. long imperfective system
 - Long Imperfective Positive (LoImpfP)
 - Long Imperfective Negative (LoImpfN)
 - Prohibitive (Prohib)

- c. short imperfective system
 Short Imperfective (ShImpf)
 Imperative (Imprt)
 Hortative (Hort)

The three “systems” are based on morphology, not (just) on meaning.

The Imprt has special 2Sg, 2MaPl, and 2FePl forms. All other stems are **inflectable** in the sense that they can take the full set of pronominal subject prefixes and suffixes. A minor exception is that special perfectives of many adjectival verbs can take subject suffixes but not prefixes.

In French-language scholarship, the Reslt is often referred to as “l’intensif de l’accompli.” Likewise, the LoImpfP is referred to as “l’intensif de l’inaccompli.” The two “intensives” have some ablaut features in common, namely $\acute{\chi}$ -pcl (accent) and $\bar{\chi}$ -pcl (V-lengthening).

I use “long imperfective” to designate a set of stems characterized by ablaut formatives including at least one consonantal increment (prefixation of -t- or internal gemination). The short imperfectives and the perfectives lack these consonantal increments; they are distinguished from each other by stem vocalism, except that adjectival verbs often have an irregular perfective stem. The basic grammatical difference between the ShImpf and the LoImpfP is that the ShImpf functions as a dependent form, either preceded by a Future particle or occurring in add-on clauses following an independent clause. The English present tense of stative verbs (‘they know’, ‘it is green’) usually translates into Tamashek as Reslt (rather than LoImpfP). The LoImpfP is therefore typically used for habitual aspect, and for ongoing activities (e.g. progressives).

Inflectable verb stems take **default accents**, with three exceptions. First, an ablaut accent formative occurs in the Reslt (but not other perfective) and LoImpfP (but not other long imperfective) stems (§7.2.2.2, §7.2.5.1). Second, unaugmented V-final verb forms combine with V-initial suffixes to produce words with surface penultimate accent, suggesting both the stem-final V and the suffix-initial V are counted for purposes of Default Accentuation (though they are later contracted into a single surface V); see §3.3.1.2 and §7.3.1.3-4. This is compatible with Default Accentuation, but the latter must apply at a pre-surface level. Third, these unaugmented V-final verbs undergo Stem-Final /A-Deletion (29) (§3.1.2.4) in the short imperfectives, and for a subset of these verbs (specifically, the light stems, e.g. -vCCv-), the resulting stem-final CC cluster is resyllabified (Final-CC Schwa-Insertion (44), §3.2.4); in the T-ka dialect this resyllabification entails a shift of accent to the inserted schwa (i.e. onto the stem-final syllable); see §3.3.1.2, §7.3.1.3. With these exceptions, inflected verb stems (and inflected forms) are transcribed below with default accent (“ \grave{v} ”). If an unaccented inflected verb has fewer than three syllables, a phrasal accent will appear on any preceding particles within the accentual phrase. Thus \grave{i} -bsa ‘he vomited’, negative wər i-bsa ‘he did not vomit’ with phrasal accent on the Neg particle.

For participles (Partpl), which can be based on any stem in (307) that is capable of occurring clause-initially (PerfP, Reslt, LoImpfP), but have a special set of MaSg, FeSg, and Pl suffixes instead of the usual pronominal subject prefixes and suffixes, see §8.5. For verbal nouns (VbIN), agentives (Agent), and other purely nominal derivatives, see §8.8-11.

For most (nonadjectival) light stems, the stem-shape is basically consistent in PerfP, Imprt, and ShImpf, e.g. -vPQv- or -vPPvC-. With heavy stems that do not have a full V in the first Imprt syllable, there is variation in surface shape of the onset, with PvC... in the Imprt corresponding to either -vPQ... or -vPPvQ... (depending on syllabic structure) in the perfectives and short imperfectives. I take the Imprt to be indicative of the lexical representation of the stems. Both the -vPQ... and -vPPvQ... onsets require a rule of **Stem-Initial V-insertion**. In addition, -vPQ... requires a rule of **Stem-Initial Syncope**, while -vPPvQ... requires a rule of **C₁-Gemination**. On these rules, see §3.4.8.

7.2.2 Perfective system

The Perfective Positive (PerfP) is used for temporally bounded events in the past (i.e. events that ended prior to the “now” of the speech act, or some other contextually established deictic center). The PerfP is the basic form of the perfective system, and the other two perfective-system stems are built on it.

The Resultative (Reslt), which adds accent and length formatives to the PerfP, is used when the perfective event results in a situation or state, and depending on the verb can be translated as a stative present (‘knows’) or as a perfect (‘has already arrived’). It can often be translated loosely as present progressive (‘is red’, ‘is burning’), but this does not capture the actual tense/aspect nuance of Tamashek, which specifies a situation or state that results from an event or state that began earlier (and may or may not be complete, depending on the verb).

The Perfective Negative (PerfN) is formed by adding an ablaut formative changing æ in the PerfP to e. Except for light verbs ending in CvC, this formative has no audible effect, in which case the PerfN is indistinguishable from the PerfP. The PerfN is used, after Negative preverbal particle wæɾ, to negate either the PerfP or the Reslt. It must directly follow wæɾ with no intervening material other than clitics.

Both the PerfP and the Reslt have participial forms used in subject relatives. The PerfN lacks its own participial form, since the relevant subject relative is formed by adding a Participial ending directly to the Neg particle preceding the PerfN verb.

7.2.2.1 Perfective Positive stem (PerfP)

The PerfP is the normal positive verb form for completed events. The time reference is therefore normally past (with respect to the here-and-now). No other marking of past time reference is needed. The PerfP can also be used in exhortations (prayers) with 'God' as subject.

All PerfP stems are lexically unaccented. Unless an accented directional clitic is present, the word-form built on the PerfP stem gets the default accent.

Examples are in (308), giving the unmarked (i.e. Sg) Imperative (Imprt) for comparison. Phonetic representations in brackets show the effects of BLC's and/or monophthongization of homorganic diphthongs.

(308) Perfective Positive

	gloss	PerfP	Imprt
a.	'dance'	-ədlæl-	ədləl
	'kneel'	-əjæn-, -jæn-	əjən
	'coagulate'	-əqqrhæs- [æq...]	ɾùrhæs [ɾo'r...]
	'fear'	-əmmuttæsə-t	mùttəsə-t
	'be folded'	-ənnuʔfæs-	nùʔfəs [no't...]
	'refuse'	-ùnjæy-	ùnjəy [u'ndzi]
	'be joyful'	-əddəwə-t	dəwə-t
	'dust off'	-əkkəkəkəy-	kəkəkəy
	'be coarse'	-əffərsæššæn-	fərsæššæn
		[Imprt also fərsəššən (A-grm, R)]	
	'scrape off'	-əjjərnənnəwə-t	jərnənnəwə-t
b.	'vomit'	-əbsa-	əbs
	'be separate'	-əbða-	əbðu
	'load'	-əjjujja-	jàjj
	'testify'	-əjjəyha- [...iha]	jəyh
	'sit'	-əqɣima-, -əqɣəyma-	qàm, ɾəyəm
		[for 'testify' and 'sit' (medial əy or i), see §7.3.2.9-10]	
c.	'open'	-òra-	àr
	'leave'	-òya-	əyy
			[note short æ in əyy]
	'move out'	-əhona-	hàn
	'marry'	-ədobæn-	dùbən
	'drag'	-əhobæ-t	hùbə-t
d.	'go with'	-əddew-	ìdaw
	'be new'	-əynay-	ìynay

e.	'cut up'	-æblæjbælæj-	bələjbələj
	'sing'	-ægraræs-	gərurəs
	'go down'	-ætrara-	tərur [tæ'ror]
f.	'share'	-əʒun- [æ'ʒun-]	əʒun, ʊʒan
	'feel pain'	-əsnin-	ʃsnan
	'be far'	-ùjəj-	àjəj
	'be thirsty'	-əffud-	ʃfad
g.	prefixal derivatives (Chapter 8)		
	'extinguish'	-æ̃s-mækæ-t	s-ə̃mməkə-t
	'reply'	-ə̃ss-ùdmær-	s-ùdmær [...mær]
	'hit each other'	-æ̃nm-æwæt-	nəm-əwət
	'be arrested'	-ə̃tt-ə̃rmæs- [...-ə̃r...]	t-ə̃rmæs

While deferring detailed analysis to the sections on particular verb classes, I can here note some major patterns, beginning with vocalism. In (308.a-b), and with causative 'reply' and passive 'be arrested' in (308.g), we observe a basic **perfective <H L> melody**. This melody is realized as surface vocalic sequence «L» (monosyllabic, in the short variant -jæn- of 'kneel', though this is confined to certain dialects, and even there it is arguably underlying bisyllabic /-əjæn-/), «H L» (bisyllabic), «H H L» (trisyllabic), «H H L L» (quadrissylic), or «H H L L L» (pentasyllabic), where each H is from the set of high vowels {u ə i} and each L is from the set of low vowels {ɑ æ}. The maximal surface pattern «H H L L L» is 'scrape off' in (308.a). This PerfP <H L> melody is applicable to a great many verbs, and is unique (in verbal morphology) to the perfective (especially PerfP). The corresponding Imprt forms in (308.a) and for 'be arrested' in (308.g) show either pure <H> or pure <L> melody; those in (308.b) are mostly analysable as having underlying <L H> (e.g. æbs is analysable as /æbsɪ/ ending in an underspecified high V).

In (308.c-e), and in causative 'extinguish' and reciprocal 'hit each other' in (308.g), we observe a **perfective <L> melody**; note that mid vowels {e o} are compatible with <L> melody, though more needs to be said about them. A case can be made that in those stems involving syncopated vowels, i.e. (308.g, e), the pure <L> melody is **derived from underlying <H L>** via Stem-Initial Syncope and Leftward L-Spreading, see §3.4.6. However, the verbs in (308.c-d) have a version of pure <L> perfective melody and do not syncopate.

The verbs in (308.d, f) are predominantly adjectival in sense. This class has Imprt vowel sequence «i ɑ» or «u ɑ», which typically occurs throughout the short and long imperfectives and in some nominals. The perfectives are lexically idiosyncratic in form, and some do not allow subject prefixes. The perfectives in (308.d) have <L> melody, while those in (308.f) have <H> melody, but since the perfectives are lexically specific I prefer not to attempt to derive them by componential ablaut as I do for the nonadjectival verb classes.

These melodies are valid for the entire perfective system. The Reslt has the same melody. The PerfN changes a final-syllable *a* to *e*, but this *e* is arguably still compatible with the L part of the perfective melody.

For most dialects other than T-ka (and A-grm), the initial short V created by Stem-Initial V-Insertion varies between *ə* and *æ* in the perfective. The *æ* variant occurs when the following syllable has a full high V (*u* or *i*), whether this full high V is lexical or is part of Reslt ablaut, otherwise we get the *ə* variant. For these dialects, we could assume a basic /ə/ (after Melodic Association) with a morphologically specialized **Melodic Dissimilation** rule in perfectives with inserted initial short V (inserted *ə* becomes *æ* before (C)Cv..., where *v* is a full high vowel). This would require no modification of the basic <HL> perfective melody that I assume for T-ka. On the other hand, if we wish to have the initial *æ* in the other dialects directly specified by the melody, the latter would have to be **three-part <L H L>** in the relevant cases.

Examples of the PerfP are in (309). (309.c-d) is the divine exhortation type mentioned above.

- (309) a. *æmæru-dær* *é-hæd* *ï-ja*
 now Sg-night 3MaSgS-do.**PerfP**
 ‘Now night has fallen.’ [K]
- b. *əqqæl-ær* *e-bæršæj*
 become.**PerfP**-1SgS Sg-patched.tent
 i-bdáj-æn
 3MaSgS-be.wet.Reslt-Partpl.MaSg
 ‘I’ve become a wet patched tent (=I’ve gotten very old).’ [K]
- c. *ɑ-dí-š* *i-wwæy-ǎdd* *mæssī-nær*
 so 3MaSgS-take.**PerfP**-\Centrip master-1PIPoss
 t-æ-lil-t
 Fe-Sg-help-FeSg
 ‘So, may God bring help!’ [K]
- d. *Ø-oyyà* *yæ||à* *t-i-jàttew-en*
 3MaSgS-leave.**PerfP** God Fe-Pl-pillar-FePl
 ‘May God leave (alone) the pillars (of society)!’ [K]
- e. *Ø-æz-zæ|l-ǎkæwæn* *mæssī-nær*
 3MaSgS-Caus-pay-ǎ2MaPl master-1PIPoss
 ‘May God see that you-MaPl are (re-)paid!’ [K-d]

7.2.2.2 Resultative stem (*Reslt*)

The Resultative, often referred to in Tuareg and Berber studies as the “intensive perfective” (=“l’intensif de l’accompli”), denotes a state resulting from the event or transition denoted by the corresponding PerfP. For many verbs this is the common equivalent of the English present tense, especially for adjectives and other statives (‘I am sitting’, ‘she is sick’, ‘they know’, ‘it is red’). In spite of these present-tense translations, the Tamashek forms are correctly taken as resultatives presupposing a prior event or the beginning of a state. Past time reference for the resulting state (‘he knew’, ‘I was sitting’) can be specified by preposing the Past preverbal particle *kælá*.

In simple (unsubordinated) positive utterances, the defective verbs -*vllv*- ‘be, exist’, -*vlv*- ‘have, own, possess’, and locational -*vhu*- ‘be (somewhere)’, occur almost exclusively in the *Reslt*, hence -*əllá*-, -*lá*-, -*há*- (§7.3.2.11-13). The PerfP is rare, and apparently grammatical only in subordinated finite clauses. The PerfN, which is homophonous with the PerfP for these verbs, occurs after *Neg wær*.

Some other statives like ‘be’ occur much more often in *Reslt* form (-*æmós*-) than in PerfP form (-*æmos*-) in positive sentences, though the latter forms are attested. Likewise with verbs of adjectival meaning, which regularly appear in the *Reslt* for stative sense (‘be red’, ‘be big’), whereas the PerfP forms are inchoative in sense (‘become red’, etc.).

The *Reslt* stem is based on the PerfP, including the latter’s vocalic melody, but it has additional ablaut formatives. For most verbs (excluding some statives), the effect of these formatives is to **lengthen** and **accent** the V following the first C(C) of the stem. If the relevant V is already full, the lengthening is vacuous. The targeted “first postconsonantal V” is, for most verb classes, definable with respect to the syllabic shape of the *Imprt*, since the *Imprt* does not show the effects (notably Stem-Initial Syncope) found in the perfective stems and often in the *ShImpf*. The relevant ablaut formatives for the *Reslt* can be represented as $\bar{\chi}$ -*pc1* and $\acute{\chi}$ -*pc1*, where “*pc1*” specifies that these formatives are associated with the first postconsonantal V of the stem.

For most **adjectival** verbs, regardless of stem shape, the lengthening formative fails to apply (even where it would be audible), but the accent formative does apply.

Consider (nonadjectival) -*vjrvw*- ‘get’, *Imprt* *əjrəw* and PerfP *əjrəw*-. The V targeted by the *Reslt* ablaut formatives is the second stem V, since this is the first postconsonantal V. The *Reslt* stem is therefore *əjráw*-, formed by combining -*vjrvw*- with the <L H> melody of the entire perfective system, and with the *Reslt* formatives $\bar{\chi}$ -*pc1* and $\acute{\chi}$ -*pc1*. By contrast, the adjectival verb -*vmsvd*- ‘be sharp’, with the same -*vPQvC*- shape, has PerfP *əmsæd*- and *Reslt* *əmsæd*- (not #*əmsád*-). For such adjectival verbs, the *Reslt* shows marked accent but no lengthening. Another case of this type is -*vnvl*- ‘(blade) be blunt’, PerfP *ənæł*-, *Reslt* *ənæł*- (not #*ənól*-).

Consider now -hvlvylvy- ‘be joyful’, Imprt hələyləy, (syncopated) PerfP -əhləyləy-. The Reslt is -əhīləyləy- (T-ka) or -æhīləyləy- (most other dialects). The derivation of these forms is tricky. Although the initial ə in T-ka could be attributed to Short-V Harmony, there is no evidence in T-ka itself that the initial vowel is underlying /æ/. The representation -əhīləyləy- makes perfect sense in T-ka if we have a two-part <H L> melody with the H attaching to the first two V’s, while the L attaches to the last two V’s. In the other dialects, Reslt -æhīləyləy- requires either a **three-part <L H L> melody**, or the same <H L> melody as in T-ka with a morphologically restricted Melodic Dissimilation converting initial /ə/ to æ when the following syllable has a full high V, as noted in §7.2.2.1, above.

More examples showing the morphological relationship between Reslt and PerfP stems are in (310).

(310) Resultative

gloss	PerfP	Reslt
a. nonadjectival, PerfP ends in ...æC, both χ-pc1 and ̄χ-pc1 audible		
‘get’	-əjræw-	-əjráw-
‘hide’	-əffær-	-effár-
‘kneel’	-əjæn-, -jæn-	-əján-, -ján-
‘run’	-òšæl-	-ošál-
‘refuse’	-unjæy-	-unjáy-
b. adjectival, χ-pc1 but not ̄χ-pc1 applied		
‘be brown’	fáwa-t	fawá-t
‘be enough’	-əgdæh-	-əgdæh-
‘be far’	-ùjəj-	-ujéj-
‘be white’	məlləl-	məllól-
c. nonadjectival, targeted V already full, χ-pc1 but not ̄χ-pc1 audible		
‘go to’	-əkkɑ-	-əkká-
‘sit’	-əqqimɑ-	-əqqíma-
‘go with’	-æddew-	-æddéw-
‘share’	-əʒun-	-əʒún-
‘persist’	-æhhokæ-t	-æhhókæ-t
‘reply’	-əss-ùdmær-	-əss-údmær-
‘be folded’	-ənnufæs-	-ənnútfæs-
	(both with phonetic [...noʔ...])	
‘load’	-əjjujja-	-əjjújja-

d. nonadjectival, Reslt has *i* in penult after geminated C₁, $\acute{\chi}$ -pc1 audible

'be arrested'	-ətt-ərmæs- (phonetic [...ærm...])	-ətt-írmæs- (phonetic [...e'rm...])
'be variable'	-ənnəwwær-	-ənníwwær- [K-d]
'raise (child)'	-ərrəbba-	-ərríbba-

e. like (d), Reslt has *i* in antepenult or earlier, $\acute{\chi}$ -pc1 inaudible

'be slippery'	-əzzəlbbæbbæy-	-əzzílbbæbbæy-
'be coarse'	-əffərsæšsæn-	-əffíršæšsæn-

f. nonadjectival, Reslt has *i* after ungeminated C₁, $\acute{\chi}$ -pc1 inaudible

'be joyful'	-əhlæylæy-	-əhílæylæy-
'be ashamed'	-əkراكæɖ-	-əkírakæɖ- (phonetic [əke'r...])
'need'	-əmrətær-	-əmírətær- (phonetic [əme'ɾ...])
'(hole) gape'	-əxbabæ-t	-əxíbabæ-t
'hit each other'	-ənm-æwæt-	-əním-æwæt-
'deserve'	-ənhæjja-	-ənihæjja-
'cut up'	-əblæjbælæj-	-əbílæjbælæj-
'extinguish'	-əs-mækæ-t	-əs-ímækæ-t
'make go up'	-əs-s-awæn-	-əsí-s-awæn-

g. nonadjectival, like (e) but targeted V already a full vowel, $\acute{\chi}$ -pc1 and $\bar{\chi}$ -pc1 inaudible

'fear'	-əmmùttæsæ-t	-əmmúttæsæ-t
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In the Reslt stems in (310.a), both lengthening ($\bar{\chi}$ -pc1) and accent ($\acute{\chi}$ -pc1) are audible. In (310.b), we hear a marked accent ($\acute{\chi}$ -pc1), but lengthening ($\bar{\chi}$ -pc1) conspicuously fails to apply, even though the relevant V is short. This pattern is characteristic of verbs that are basically adjectival in nature. This confirms the need for a grammatical distinction between nonadjectival (310.a) and adjectival (310.b). In (310.c), the marked accent is audible but lengthening (if present) is not, since the V in question is already a full V. The surface forms in (310.c) therefore give us no clue as to which stems belong with the nonadjectival verbs in (310.a), and which belong with the adjectival verbs in (310.b). Presumably those with adjectival sense, like 'be brown', belong with (310.b), but there is no way to prove this empirically.

In (310.d-f), we have an *i* in the Reslt. As I analyse these forms, the *i* is the result of applying $\bar{\chi}$ -pc1 to /ə/ (after Melodic Association), where the relevant schwa is the overt or underlying *v* following the first C position of the stem. For example, 'raise (child)' in (310.d) is -rvbbu- and 'be joyful' in (310.f) is -hvlvlyvy- in their basic lexical representation, and the first short *v* is targeted by $\bar{\chi}$ -pc1, resulting in -ərríbba- and -əhílæylæy- after all rules have applied. In

- b. əzzäy-æn-łt
know.**Reslt**-3MaPlS-ł3MaSgO
'They know (=are familiar with) it.'
- c. ənn-ilmæd-æn d æ-kall
Ø-know.**Reslt**-3MaPlS with Sg-land
'They have become familiar with the land.'
- d. è-næle ɣas [à n-ərhá]
Sg-millet only [Foc 1PlS-want.**Reslt**]
'Millet only [focus] is what we want.' [K]
- e. t-æss t-ækkús
Fe-cow 3FeSgS-be.hot.**Reslt**
'The cow is (=has become) warm.' [K]
- f. t-äši-t-t dæɣ t-əññá
Fe-grass.sp.-Fe-FeSg too 3FeSgS-be.ripe.**Reslt**
'The *Eragrostis* grass too is ripe (=has ripened).' [K]

7.2.2.3 Perfective Negative stem (PerfN)

Negation is expressed in all aspect-mood categories by the preverb wær, which undergoes Short-V Harmony to wær when immediately followed by a high vowel {u ə i}. Both the PerfP and the Reslt of positive sentences are negated by a single form that is here labeled PerfN (Perfective Negative). For example, both PerfP əssæn-æɣ 'I knew, found out', and the much more common Reslt əssún-æɣ 'I know', are negated as wær əssen-æɣ 'I don't know' or 'I didn't know'.

Curiously, the same combination of wær plus PerfN verb that is used to negative the PerfP or Reslt is also used as a **prohibitive** (i.e., negative imperative) 'don't VERB!'. There is no audible difference, even at clause level, between the prohibitive and perfective negative readings. However, there is an alternative prohibitive construction consisting of wær plus the Prohib[itive] stem, which belongs to the long imperfective system. See §7.2.5.3 for both types of prohibitive.

The PerfN is **formed from the PerfP** by adding a single ablaut formative that is realized (if at all) as an e vowel. I label this **€-pc1f**. This formative is expressed audibly only in **light stems ending in ...CæC-**, where it appears in the second syllable. Otherwise the PerfN is homophonous to the PerfP. The basic morphological data are given in (312).

(312) Perfective Negative

gloss	PerfP	PerfN
a. PerfN with e replacing PerfP æ		
‘destroy’	-əhlæk-	-əhlek-
‘enter’	-əjjæš-	-əjješ-
‘hit’	-əwæt-, -wæt-	-əwet-, -wèt-
‘dish out’	-òjæm-	-òjem-
‘bring’	-æwwæy-	-æwwey-
‘refuse’	-ùnjæy-	-ùnjej-
b. V-final, PerfN = PerfP except for contraction effects with Pl -æC subject suffix		
‘stretch’	-òjja- (contracting)	-òjja- (noncontracting)
‘eat’	-əkša- (contracting)	-əkša- (noncontracting)
‘do’	-əja- (contracting)	-əja- (noncontracting)
c. C-final, PerfN = PerfP throughout (because stem is heavy)		
‘sit’	-əqqima- [æqq...]	[=PerfP]
‘can, be able’	-əddobæ-t	[=PerfP]
‘go north’	-əjozæy-	[=PerfP]
‘go east’	-əjjəwæy-	[=PerfP]
‘cut up’	-æblæjbælæj-	[=PerfP]
‘hit each other’	-ənm-æwæt-	[=PerfP]
‘depilate’	-əš-šær-	[=PerfP]
d. C-final, PerfN = PerfP throughout (because PerfP is not ...CæC-)		
‘go with’	-əddew-	[=PerfP]
‘go far’	-ùjəj-	[=PerfP]

The change from PerfP to PerfN is easily heard in the verbs in (312.a), which are light and C-final, with æ in the second syllable of the PerfP. (These are the same verbs that express both $\acute{\chi}$ -pcl and $\bar{\chi}$ -pcl audibly in the Reslt.)

In (312.b), the stems are **light V-final verbs**, i.e. -V(C)Cv- with the length of the first V variable. These verbs do not distinguish PerfN from PerfP in the unsuffixed forms shown in the table, hence PerfP $\dot{\imath}$ -kša ‘he ate’, negated as wèr i-kša ‘he did not eat’. However, these verbs do distinguish PerfN from PerfP if one of the Pl -æC or -CæC subject suffixes, e.g. 3MaPl -æn or 3FePl -næt, is present. This is because, for PerfN ablaut as for Reslt ablaut (see §7.2.2.2, above), the initial æC of subject suffixes is included, for with light V-final verbs, in the **scope of ablaut**. For example, the 3MaPl (suffix -æn) occurs in PerfP əlhæ-n ‘they wept’ (cf. Reslt əlhá-n), which is negated as wèr əlhe-n, while the 3FePl (suffix -næt) has PerfP əlhæ-næt, negated as wèr əlhe-næt. See the full paradigm of the PerfN for the similar verb -òjja- ‘weep’

in §7.3.1.3, below. For other verbs, including heavy V-final verbs, subject suffixes are not within the scope of ablaut.

In (312.c), the verb is too heavy to be affected by ϵ -pclf. In (312.d), the PerfP does not end in ...CæC-. Causative -æš-šær- ‘depilate’ looks as though it ought to be amenable to ϵ -pclf, but it is syncopated from -...š-všvr- and therefore counts as heavy rather than light.

In summary, the effect of ϵ -pclf is to insert e replacing a short æ of the PerfP, when this is the first postconsonantal V and is also the final V.

(313) shows that a **clitic may intervene** between Neg wær and the PerfN verb.

- (313) a. wær-\tæn i-jrew ʔš-šni ?
 Neg-\3MaPIO 3MaSgS-**get.PerfN** Sg-blood ?
 ‘Blood (disease) has not afflicted them?’
- b. wær-\tæt n-ərha
 Neg-\3FeSgO 1PIS-**want.PerfN**
 ‘We don’t want it-Fe.’ [K]
- c. méddən wær ərhè-n šæršəm
 men Neg want.PerfN charchem
 ‘Men don’t want (don’t like) charchem (a dish).’ [K]

7.2.3 Short imperfective system

The ShImpf stem is closely related morphologically to the Imprt (used in positive imperatives) stem. There is a short hortative form based on the ShImpf stem. I discuss the inflected ShImpf and Imprt stems, and the short hortative forms, in this section before turning to the long imperfective system.

Stative aspect with present time reference is normally expressed by the Reslt stem in the perfective system. Therefore “imperfective” is used here for a more limited temporal/aspectual range than in other languages where imperfective stems are required with present time reference.

7.2.3.1 Short Imperfective stem (ShImpf)

In positive main clauses with no preverb, other forms (Reslt, LoImpfP) are used as translation equivalents of the English present tenses (simple present, present progressive). The ShImpf is used after a **Future** preverbal particle (e.g. ad), with or without negation. It is used in an **add-on construction** in parallel with a preceding imperfective clause (§13.4). It is used in **subordinated clauses** beginning with minimal demonstrative ò, for example purposive clauses (§13.2.1). It is optionally used in the **consequent clause** of

counterfactual and proverbial conditionals (§13.9.2-3). It is used with the verb -vnnv- 'say' in the fixed expression t-ənnə-d 'you-Sg (would) say', translatable more idiomatically as 'it is/was as though ...', with a following NP or clause.

A Neg preverb with the Future, or in an add-on clause, is compatible with a ShImpf verb. Thus ad ï-drurəm 'it (liquid) will run' is negated as u-mər ï-drurəm 'it won't run'.

Examples of the ShImpf stem are in (314), with PerfP forms for comparison.

(314) Short Imperfective Positive

	gloss	ShImpf	PerfP
a.	'see'	-ənhəy-	-ənhæy-
	'know'	-əssən-	-əssæn-
	'sleep' (√ds)	-əttəs- [æʔ...]	-əttæs- [æʔ...]
	'dig'	-əʀəš-	-əʀæš-
	'refuse'	-ùnjəy-	-ùnjæy-
	'coagulate'	-əqqurhəs-	-əqqurhæs-
	'reply'	-s-üdmər- [...mər]	-əss-udmər-
	'be folded'	-ənnuʔfəs-	-ənnuʔfæs-
b.	'cut up'	-əbləjbələj-	-əblæjbælæj-
	'be ashamed'	-əkrukəʔ- [...kəʔ]	-əkkrakəʔ-
	'marry'	-ədubən-	-ədobæn-
c.	'be arrested'	-ətt-ərməs-	-ətt-ərmæs-
	'hit each other'	-ənm-əwət-	-ənm-əwæt-
	'shake'	-əkkəykəy-	-əkkəykæy-
d.	'share'	-ùzan- (or -əzun-)	-əzun-
	'go with'	-ïdaw-	-əddew-
	'belch'	-ùjray-	-əjruy-
e.	'run'	-əšəl-	-əšæl-
	'go far'	-əjəj-	-ùjəj-
f.	'be able'	-ədabə-t, -ədubə-t	-əddobə-t
	'groan'	-əhnəffə-t	-əhnəffæ-t
	'fly'	-əffurrə-t [əf:or:ət]	-əffurræ-t
	'die'	-əmmæt- (§7.3.2.1)	-əmmu-t
g.	'laugh' (√dʒ)	-əʔs- (/ -əʔsɪ- /)	-əʔsə- [æʔ...]
	'do'	-əj- (/ -əjɪ- /)	-əjə-

	'sit' ($\sqrt{r(y)m}$)	-æqqam-, -æqqaym-	-əqqima- [æq...]
		[ShImpf = /-æqqamA-/ , /-æqqamI-/ , /-æqqaymI-/ (§7.3.2.9)]	
	'eat'	-ækš- (/ækšI-/)	-əkša-
	'kill'	-əŋr- (/əŋrI-/)	-əŋra- [æŋ...]
	'say'	-ænn- (/ænnI-/)	-ənna-
h.	'drink'	-əsáw- (/æsWI-/)	-əswa-
i.	'open'	-àr- (/arI-/)	-òra-
	'butcher'	-àš- (/ašI-/)	-òša-
	'look'	-àjj- (/ajjI-/)	-òjja-
	'leave'	-əyy- (/æyyI-/)	-òyya-
	'fall'	-ïðu- [eðu]	-òða-
j.	'move out'	-æhan- (/æhanI-/)	-əhona-
	'load'	-æjjajj- (/æjjajjI-/)	-əjjujja-
	'be confused'	-əmtəll- (/əmtəllI-/)	-əmtəlla-
	'extinguish'	-s-əmm-əkt (/s-əmm-əktI-/)	-əs-m-əkta-
k.	'be searched'	-æffæyk- (/æffæyKA-/)	-əffæyka-

The stems in (314.a) have <H> melody in the ShImpf, and a composite <H L> melody with exactly one low V in the PerfP. In (314.b), the ShImpf is again of <H> type, but in the PerfP the <L> melody applies throughout the PerfP stem (perhaps derived from <H L>, §3.4.6). In (314.c), it is the ShImpf stem that has **stem-wide <L> melody**, while the PerfP has <H L>. In (314.d), we observe a surface «u a» or «i a» vocalic sequence in the ShImpf, but the PerfP relocates the relevant high V (or a mid-height version thereof) into the second syllable of the stem. In (314.e), we have a stem-shape /-vCVC-/; the vocalism of 'go far' is unique to this stem, while the initial a/o alternation exemplified by 'run' is common. The <L H> melody here results in a surface vocalic sequence «a ə».

The remaining sets in (314) involve V-final stems. In (314.f) we have a set of augmented V-final verbs with Augment -t-, which shortens a stem-final full V in the ShImpf (and PerfP). I return to these augment verbs below. (314.f) also includes the irregular verb 'die' (§7.3.2), which has some affinities to this augment class.

The morphophonology of **non-augment V-final** stems (314.g-j) requires extended commentary. The final V appears as a in the PerfP. The stem-final V disappears word-finally in the ShImpf (see **Stem-Final /A-Deletion** (29), §3.1.2.4), but an underlying stem-final V can be posited based on phonological behavior (including accentuation). In most cases the stem-final V in the ShImpf is an underspecified high V, symbol /i/. This is the case in the light V-final verbs of shape /-vCCv-/ , /-vCv-/ , /-vCCv-/ , and /-vCv-/ , which have a low V in the first syllable of the ShImpf but end in /i/ (314.g-i). This is

therefore another case of the <L H> melody as seen more transparently in (314.e).

The same <L H> ShImpf melody occurs in **heavy non-augment V-final stems**, provided that they have a medial full V. In (314.j) this is the case with ‘move out’ and ‘load’, but not the other examples, which lack medial full V’s. The relevant medial full V is either i or u in the basic representation of the verb, though in the ShImpf this high V combines with the L part of the melody and therefore surfaces as a. The <L H> melody maps onto the three stem syllables to give surface vocalic sequences of the type «L L H». The example of this in (314) is ShImpfP /-æjjajji-/ ‘load’ (j), for which I suggest a basic representation /-vjjujju-/ (cf. PerfP -əjjujja-).

The stem-final /ɪ/ shows up as surface ə before the C-initial subject suffixes (2FePl -mæt, 3FePl -næt). It also combines with the vowel of a following /-æC/ suffix (except 1Sg subject) to form ə, by VV-Contraction (37.c) (§3.2.3.3). An example is 3MaPl /-æn/, which surfaces in these paradigms as ...ə-n. The /ɪ/ is additionally “counted” as a syllable in **Default Accentuation**, even when otherwise deleted without trace. Thus /-æjjajji-/ ‘load’ (ShImpf) has, with Future ad, 3MaSg ad Ø-æjjajj ‘he will load’ (with phrase-penultimate accent, not #əd Ø-æjjajj), 3MaPl ad æjjəjjə-n (not #...æ-n), and 3FePl ad æjjəjjə-næt (with schwa before the suffix).

The complete paradigms of bisyllabic ShImpf /-ækšɪ-/ (314.g) ‘eat’ and /-arɪ-/ ‘open’ (314.i), and of trisyllabic ShImpf /-æjjajji-/ ‘load’ (314.j) are given in (315). The cases with ə before the kš in ‘eat’ have undergone Short-V Harmony triggered by the schwa of the following syllable (§3.2.6). Note that \grave{v} accents are fixed (since the deleted stem-final V counts for purposes of Default Accentuation, §3.3.1), while \grave{v} accents on surface monosyllabic forms will give way to phrasal accent on e.g. Future preverb əd. Compare ad əkšə-n ‘they-Ma will eat’ with əd t-ækš ‘she will eat’.

(315) ShImpf of ‘eat’ (/ -ækšɪ-/), ‘open’ (/ -arɪ-/), and ‘load’ (/ -æjjajji-/)

subject	ShImpf ‘eat’	ShImpf ‘open’	ShImpf ‘load’
a. no schwa			
3MaSg	Ø-ækš	Ø-ər	Ø-æjjajj
1Pl	n-ækš	n-ər	n-æjjajj
1Sg	ækš-ær	ər-ær	æjjəjj-ær
3FeSg	t-ækš	t-ər	t-æjjajj
b. schwa present			
3MaPl	əkšə-n	ərə-n	æjjəjjə-n
2Sg	t-əkšə-d	t-ərə-d	t-æjjəjjə-d
2MaPl	t-əkšə-m	t-ərə-m	t-æjjəjjə-m
2FePl	t-əkšə-mæt	t-ərə-mæt	æjjəjjə-mæt
3FePl	t-əkšə-mæt	t-ərə-næt	æjjəjjə-næt

Consider now the paradigms for ‘drink’ and ‘read’ (316). This verb is of the same type as ‘eat’ (315). The basic form of the ShImpf is /-æswɪ-/.

(316) ShImpf Paradigm of ‘drink’ and ‘read’

subject category	‘drink’	‘read’
a. Resyllabified		
3MaSg	Ø-əsəw [əsu ¹]	Ø-əɾər
3FeSg	t-əsəw	t-əɾər
1Pl	n-əsəw	n-əɾər
b. Not resyllabified		
3MaPl	əswə-n	əɾrə-n
3FePl	əswə-næt	əɾrə-næt
2Sg	t-əswə-d	t-əɾrə-d
2FePl	t-əswə-mæt	t-əɾrə-mæt
2MaPl	t-əswə-m	t-əɾrə-m
1Sg	əsw-æɾ	əɾɾ-æɾ

Unlike ‘eat’, which has a stable word-final kš cluster, the /sw/ and /ɾr/ clusters created by the word-final deletion of /t/ in (316) is unstable and must be **resyllabified** by **Final-CC Schwa Insertion** (44) (§3.2.4). In T-ka, but not other dialects, this inserted ə acquires a marked accent by **Epenthetic-Vowel Accentuation** (70) (§3.3.2). The non-resyllabified shape -æCC- does occur in prevocalic contexts even for verbs like ‘drink’ and ‘read’; compare Sg Imprt əsəw ‘drink!’ with MaPl Imprt əsw-æt. For some other dialects (R T-md Ts), resyllabification occurs under the same conditions, but for ‘read’ and most similar cases the Epenthetic-Vowel Accentuation rule does not apply, hence 3MaSg Ø-əɾər with default accent, as seen in àd i-ɾər ‘he will read’ (contrast T-ka àd i-ɾər). However, even in these dialects, we do get final-syllable accentuation for ‘drink’: àd i-səw ‘he will drink’. In fact, the ShImpf of this verb often behaves phonologically as -əsú rather than -əsəw (hence əsú-ɔtt ‘drink it!’ in several dialects, with postvocalic 3MaSg clitic allomorph -ɔtt, instead of əsw-ə, with postconsonantal allomorph -ə).

In the ShImpfP variant /-æqqəmA-/ ‘sit’ (314.g) and in ShImpf /-æffækA-/ ‘be searched’ (314.k) the ShImpf ends in /A/ for T-ka, an underspecified low V that is subject to deletion word-finally but that “counts” for purposes of Default Accentuation. So we get Future 3MaSg ad Ø-æqqəmA ‘he will sit’ and ad Ø-æffæk ‘it will be searched’, and 3MaPl counterparts ad Ø-æqqəmə-n and ad æffækə-n. The æ in the penult of 3FePl æffækə-mæt is another manifestation of this /A/. Underlying final /A/ is rare in ShImpf forms, since it applies only to unaugmented stems that simultaneously are V-final, are C-initial, are bisyllabic, and lack a medial full high V. The few stems that satisfy these conditions, like ‘sit’ and ‘be

searched', have no basis for a composite <L H> melody in the ShImpf. However, /-æqqamA-/ 'sit' does have dialectal variants /-æqqamɪ-/ and /-æqqaymɪ-/; hence 3MaPl Future ad Ø-æqqəmə-n or ad Ø-æqqəymə-n with schwa instead of æ before the suffix.

Some further processes are observed in the **augmented V-final verbs** of (314.f). To begin with, **VV-Contraction** (37) applies in the combinations with V-initial subject suffixes, all of which have the shape /-æC/, such as 3MaPl -æn and 2Sg -æd. In these combinations the suffixal Augment -t- is omitted and the stem-final V contracts with the suffixal V (317).

(317)	a-æ	→	e
	i-æ	→	i
	u-æ	→	u

In augment verbs with ShImpf <L> melody, of course the stem-final V is /a/. In those with ShImpf <H> melody, the unmarked choice for the stem-final V is /i/, hence 3MaPl Future ad əhnəffi-n 'they-Ma will groan', 2Sg Future (causative) ad š-əššəjri-d 'you-Sg will lengthen'. Note the antepenultimate default accent here (showing that this type of VV-Contraction precedes Default Accentuation). However, if there is a medial u in the stem, the stem-final too appears as u by a special **u-Spreading** rule (119). This rule precedes another rule, **Medial V-Shortening** (120), that reduces the original medial full vowel /u/ to ə before a CC-cluster preceding any /-æC/ subject suffix (i.e. in the absence of Augment -t-).

In (318), -hvnvffv- (+ -\t) 'groan' illustrates the unmarked final i, -ḏvrurv- (+ -\t) 'be diluted' illustrates u-Spreading, and -furrv- (+ -\t) 'fly' illustrates u-Spreading followed by Medial V-Shortening. All of these processes are observable in (318.b), with Augment -t- absent, while in (318.a) the Augment forces Pre-Augment V-Shortening (§3.4.9.2). This merges {u i} into ə, so we cannot determine whether u-Spreading has applied in (318.a). Clearly, however, Medial V-Shortening has not applied to the augmented forms of 'fly' in (318.a) as it has in the unaugmented forms in (318.b).

(318) ShImpf Paradigm of three verbs

subject	'groan'	'be diluted'	'fly'
a. Augment -t- present			
3MaSg	ĩ-hnəffə-t	ĩ-ḏrurə-t	ĩ-ffurrə-t
3FeSg	t-əhnəffə-t	t-əḏrurə-t	t-əffurrə-t
3FePl	əhnəffə-t-næt	əḏrurə-t-næt	əffurrə-t-næt
2FePl	əhnəffə-t-mæt	əḏrurə-t-mæt	t-əffurrə-t-mæt
1Pl	n-əhnəffə-t	n-əḏrurə-t	n-əffurrə-t

b. Augment -t- absent

3MaPl	əhnəffi-n	əḍruru-n	əffərru-n
2Sg	t-əhnəffi-d	t-əḍruru-d	t-əffərru-d
2MaPl	t-əhnəffi-m	t-əḍruru-m	t-əffərru-m
1Sg	əhnəffi-ɣ	əḍruru-ɣ	əffərru-ɣ

([phonetic [...eɣ], [...oɣ] [...oɣ])

u-Spreading and Medial V-Shortening are typical of T-ka. However, in some other dialects, Medial V-Shortening is absent, and u-Spreading applies (in the ShImpf) only when the source u and the targeted full V are separated by only a single C. To see this, consider another verb of the ‘fly’ type, ‘be numerous’, with ShImpf -əbbuffə-t. For T-ka the 3MaPl ShImpf is əbbəffu-n, parallel to əffərru-n in (318.b). However, for R (a Gourma dialect), we get əbbuffe-n, where the medial u is not shortened, and rounding and backing features are not copied from /u/ onto the stem-final V. On the other hand, where only one C intervenes, both T-ka and R have 3MaPl ShImpf əbləmbulu-n ‘they-Ma roll’ alongside 3MaSg ShImpf i-bləmbulə-t for the verb -bvlvmbulu-.

Verbs whose basic form (best seen in the imperative) begins in CV... add a stem-initial short V in the inflected ShImpf (but not Imprt). Most of the stem-initial ə’s and æ’s in the ShImpf stems cited above are due to this process, and do not appear in the corresponding imperatives. Moreover, in most cases this **Stem-Initial V-Insertion** (99) co-occurs with either **Stem-Initial Syncope** (101) or **C₁-Gemination** (103), both of which have the effect of producing a stem onset of the shape /-vCC.../. The same processes apply in the perfective stems. However, some verbs (chiefly causatives, but also a handful of underived -CvCvC- stems) treat perfective and ShImpf differently with respect to these stem-initial processes. The rules are given in §3.4.8. ShImpf examples are given in the central column, flanked by PerfP and Imprt for comparison, in (319).

(319) Stem-Initial Processes in Perfective and Short Imperfective Stems

	gloss	PerfP	ShImpf	Imprt
a.	‘see’	-ənhæy-	-ənhəy-	ənhəy
	‘know’	-əssæn-	-əssən-	əssən
	‘dig’	-əɣæš-	-əɣəš-	əɣəš
	‘vomit’	-əbsa-	-æbs-	æbs
b.	‘be ashamed’	-əkrukæḍ-	-əkrukəḍ-	kərukəḍ
	‘converse’	-ədwənnæ-t	-ədwənnə-t	dəwənnə-t
	‘cut up’	-əbləjbələj-	-əbləjbələj-	bələjbələj
	‘shine’	-əmləwləw-	-əmləwləw-	mələwləw

c.	'coagulate'	-əqquhæs-	-əqquhəs-	ɾurhəs
	'get angry'	-əđđukræ-t	-əđđukrə-t	đükrə-t
	'boast'	-əbbæræj-	-əbbæræj-	bæræj
	'lie face down'	-əbbumbæy-	-əbbumbəy-	bumbəy
d.	'be able'	-əddobæ-t	-ədobæ-t	døbæ-t
		[dialectally ShImpf -ədubə-t, Imprt døbə-t]		
	'be wounded'	-əbewæs-	-əbowæs-	bəwæs
	'marry'	-ədobæn-	-ədubæn-	døbæn
	'be tested'	-ən-emæs-	-ən-amæs-	n-əmæs
	'be adult'	-əm-ewæđ-	-əm-awæđ-	m-əwæđ
	'milk'	-əz-ozæj-	-əz-uzæj-	z-üzæj

In (319.a), the basic stem (as in the Imprt) already has an initial short V. In (319.b-d), Stem-Initial V-Insertion applies to the ShImpf. In addition, we see Stem-Initial Syncope in (319.b), and C₁-Gemination in (319.c), but neither applies to the ShImpf in (319.d).

Causative ShImpf forms are given in the same format in (320).

(320) Stem-Initial Processes in Causatives

	gloss	PerfP	ShImpf	Imprt
a.	'imitate'	-əss-əjbær-	-s-əjbær-	s-əjbær
	'count'	-əss-odæn-	-s-ıđæn-	s-ıđæn
	'make boil'	-əs-wæs-	-s-əwæs-	s-əwæs
b.	'make shine'	-əs-mæləwlæw-	-s-əmmələwləw-	s-əmmələwləw
	'rave'	-əs-ləwlæw-	-s-əlləwləw-	s-əlləwləs

While the usual stem-initial modifications apply to perfective stems of causatives, their ShImpf stems apply none of these processes to the Causative prefix itself. However, C₁-Gemination applies to the first C of a following heavy (but not light) inner stem (320.b). For example, 'make shine' has a basic representation -s-vmvlvwlw- from already (super-)heavy inner stem -mvlvwlw-. Therefore the m is targeted by C₁-Gemination in the ShImpf -s-əmmələwləw-.

7.2.3.2 Imperative positive stem (Imprt)

The usual positive imperative is of the short imperfective system (with no subject prefix). There is also a long imperfective version of the imperative that I call long imperative positive (§7.2.5.4), commanding the addressee to perform recurrent acts, but it is not very common in positive imperatives.

The high-frequency positive imperative is expressed by a stem (“Imprt”) that is very closely related to the ShImpf. The Imprt does not undergo the stem-initial changes described in §7.2.3.1, above, for the ShImpf (insertion of schwa, C₁-Gemination, syncope). There are three Imprt forms for each verb (§7.4.3): singular-subject (unaffixed, no gender distinction), 2MaPl subject with suffix (˘)-æt, and 2FePl subject with suffix (˘)-mæt. These two Pl suffixes require penultimate accent (§3.3.1.1), while the Sg Imprt has default accent (except when resyllabification has applied). This is seen most clearly in superheavy stems, e.g. ‘be bunched’, with Sg Imprt ləkəndə-t, MaPl Imprt ləkəndə-t-æt, and FePl Imprt ləkəndə-t-mæt.

Examples of the Imprt, showing the inflectable ShImpf stem for comparison, are in (321). More examples of the Sg Imprt are given alongside PerfP forms in §7.2.2.1, and some examples with augment -t- are in §7.1.

(321) Imperatives

	gloss	ShImpf	Sg Imprt	2MaPl	2FePl
a.	‘fight’	-əknəs-	əknəs	əknəs-æt	əknəs-mæt
	‘be’	-əməl-	əməl	əməl-æt	əməl-mæt
	‘play’	-əddəl-	əddəl	əddəl-æt	əddəl-mæt
	‘move out’	-əzləy-	əzləy [æ'zli]	əzləy-æt	əzləy-mæt
	‘reach’	-əwəð-	əwəð [...æð]	əwəð-æt	əwəð-mæt
b.	‘refuse’	-ərðu-	ərðu [æ'rðu]	ərdü-hæt	ərdü-mæt
	‘separate’	-əbðu-	əbðu [æ'bðu]	əbdü-hæt	əbdü-mæt
	‘be useful’	-ənfu-	ənfu	ənfü-hæt	ənfü-mæt
	‘pardon’	-əɣfu-	əɣfu [æ'ɣfu]	əɣfü-hæt	əɣfü-mæt
	‘fall’	-iðu-	iðu	iðü-hæt	iðü-mæt
	‘be born’	-iwi-	iwi	iwi-hæt	iwi-mæt
c.	‘fold’	/-ɑdhi-/	ɑdh	ɑdh-æt	ɑdhə-mæt
	‘vomit’	/-æbsi-/	æbs	æbs-æt	æbsə-mæt
d.	‘build’	/-ækni-/	əkən	ækn-æt	əkənə-mæt
	‘leave’	/-əjli-/	əjəl	əjl-æt	əjlə-mæt
	‘drink’	/-æswi-/	əsəw	æsw-æt	əswe-mæt
	‘read’	/-æɣri-/	əɣər	æɣr-æt	əɣrə-mæt
e.	‘die’	-æmmæt	æmmæt	æmmæt-æt	æmmæt-mæt

The V-initial suffix MaPl (˘)-æt is extended as (˘)-hæt after an overt V, which is i or u in all cases (-iba- ‘be lost’ has dummy 3MaSg subject and forms no imperative), as shown in (321.b).

The examples in (321.c-d) are for the verbs with stem-final underspecified high vowel /i/ in the inflected ShImpf. We actually see a manifestation of this vowel, in the form ə, only in the FePl imperatives, e.g. əbsə-mæt 'vomit-FePl!', where Short-V Harmony has then applied to the word-initial /æ/ to produce another ə. In the MaPl imperative, there is no overt sign, direct or indirect, of a stem-final /i/. Instead, the -æt suffix behaves like the 1SgS suffix -ær with these same verbs in the inflected ShImpf, thus compare əbs-æt 'vomit-MaPl!' with ad əbs-ær 'I will vomit'. In the Sg imperative, the /i/ likewise has no manifestation, but this is typical of word-final position (as also in the inflected ShImpf forms with no nonzero subject suffix). I conclude that the /i/ is deleted (by Stem-Final i/A-Deletion (29), §3.1.2.4) in the (Sg imperative, and by an ad hoc morphophonological rule before MaPl Imperative suffix (")-æt, but is phonologically active in the FePl imperative.

In (321.d), the Sg Imprt undergoes resyllabification (§3.2.4, §3.3.2), e.g. /ækn/ → əkən. This does not happen in the plural imperatives, which begin with a V.

In heavy stems, we can see that the modifications (syncope or gemination) that occur at the onset of many ShImpf (and perfective) stems do not apply to the imperative. Note particularly the final column in (322).

(322) Imperatives of Long Verb Stems

gloss	PerfP	ShImpf	Sg Imprt
a. Stem-Initial Syncope			
'be bunched'	-əlkændæ-t	-əlkəndə-t	ləkəndə-t
'peel off'	-æfræŋkæw-	-əfrəŋkəw-	fərəŋkəw
b. Stem-Initial Gemination			
'coil'	-əlləkæ-t	-əllækæ-t	lækæ-t

There is a suppletive Imprt stem ʔyæw for 'come!' (§7.3.2.8).

A textual example of the imperative is (323).

(323) kəm-ak æyy-ʔfəlla-m t-à-ðəzza
 you.FeSg-Ø leave.Imprt-ʔon-2FeSg Fe-Sg-laughter
 'You-Fe there, leave from yourself (=cease) laughing!'

The **negative imperative** (=prohibitive) category is expressed using either the PerfN or a the Prohib stem of the long imperfective group after Neg particle wær (§7.2.5.3, below).

For a special 'let's ...!' hortative construction including the Imprt stem, see §7.2.4.

7.2.3.3 Hortative of ShImpf with suffix (˘)-et

The Hortative suffix can be added to inflected ShImpf stems to form the (short) hortative positive. The suffix is (˘)-et, extended as (˘)-het after a full vowel. It is the only suffix beginning with a full V. Insertion of h is also typical of clitics that begin with a short or full V. When word-final, the Hortative suffix requires accent (marked as ˘) on the word penult. For Hortative (˘)-et with long imperfective stems, see §7.2.5.5. For an alternative hortative construction based on the Imprt stem, and not involving the Hortative suffix, see §7.2.4, below.

The most common forms are those with 1Pl subject in inclusive sense ('let's...'), but other subject categories may also occur. Examples in (324).

- (324) a. n-aššəl-et
1PlS-run.ShImpf-**Hort**
'Let's run!'
- b. ašəl-æ̣r-et
run.ShImpf-1SgS-**Hort**
'Let me run!'
- c. n-əhuskə-t-et
1PlS-be.beautiful.ShImpf-Aug-**Hort**
'Let's become beautiful!'
- d. əjlə-n-et
go.ShImpf-3PlS-**Hort**
'May they go!'
- e. n-əkrəbbə-t-et
1PlS-taste-Aug-**Hort**
'Let's taste!'

'Let' in e.g. 'Let me run!' should be interpreted in abstract hortative sense rather than as an imperative directed at a permission-granting authority. Further examples illustrating other verb classes: n-ədubən-et 'let's marry!', n-æqqəm-et 'let's sit!', n-æ̣r-et 'let's kill!'.

Hortative (˘)-et follows pronominal subject suffixes (325.b,d). With augment verbs, the suffix follows Augment -t- (324.c,e). However, it precedes clitics, including object or dative pronominals and directionals, as shown in (325). It is therefore clearly a word-level suffix rather than a clitic.

- (325) a. æ̣r-æ̣r-et-˘t
kill.ShImpf-1SgS-**Hort**-3MaSgO
'Let me kill him!'

- b. æŋʁ-æʁ-et-\\tæt
kill.ShImpf-1SgS-**Hort**-\\3FeSgO
'Let me kill her!'
- c. n-às-et-\\ódd
1Pl-go.ShImpf-**Hort**-\\Centrip
'Let's come!'

My R speaker gave hortatives that generally agreed with those given above (which are from T-ka). R examples are in (326). For C-final verbs, the R informant truncated and merged the usual 3MaPl -æn and 3FePl -næt as -n- before Hortative (\\)-et. The result is (\\)-n-et, arguably fused into a special 3Pl Hortative portmanteau (\\)-net (326.d). For unaugmented V-final verbs, he merged 3MaPl and 3FePl but used the normal 3MaPl subject form before (\\)-et (326.e). In (326.b) we see a homorganic semivowel w rather than h (as in T-ka) separating a stem-final V from the suffix-initial e.

(326) R Dialect Hortatives

- a. n-æ̀gl-et
1PlS-go.ShImpf-**Hort**
'Let's go!' (R)
- b. n-əs̀ùw-et
1PlS-cough.ShImpf-**Hort**
'Let's cough!' (R)
- c. t-ə̀jjə̀š-et
3FeSgS-enter.ShImpf-**Hort**
'Let her enter!'
- d. ə̀jjə̀š-n-et
enter.ShImpf-3MaPlS-**Hort**
'Let them (Ma or Fe) enter!'
- e. ə̀glə̀-n-et
go.ShImpf-3MaPlS-**Hort**
'Let them (Ma or Fe) go!'

The positive hortative forms illustrated here are negated by a special hortative negative, which is formed from the Prohib stem in the long imperfective system (§7.2.5.6).

7.2.4 Alternative 1Pl hortative construction using Imprt stem

In the regular hortative construction with suffix ($\tilde{\text{}}$)-et just described, the full set of entities exhorted or permitted to undertake the activity is indexed in the grammatical subject. For example, if there is one speaker and one addressee, ‘let’s go!’ has 1Pl subject.

In the alternative construction to which we now turn, a 1Pl dative clitic is added to an imperative. The overt subject of the imperative is Sg or Pl depending on the number of persons in question, excluding the speaker. This imperative verb is followed by a 1Pl dative clitic, even if only two persons (speaker and addressee) are present. The 1Pl dative can therefore be taken as subsuming the 2nd person subject of the imperative. In this construction, ‘let’s go!’ for two persons (1st dual inclusive) is expressed as ‘go!-Sg for us’. On the other hand, ‘let’s go!’ for three or more persons is expressed as ‘go!-Pl for us’, the imperative being 2MaPl or 2FePl according to the sex of the addressees (and any other included non-speaker referent). Data in (327) are valid for at least T-ka and R dialects.

(327) Alternative Hortative Construction

- a. ækš-æ̀t-\a-næɾ
eat.Imprt-MaPl.Imprt-\Dat-1Pl
‘Let’s-MaPl eat!’ [2+ persons not all female, plus speaker]
- b. ækk-\à-næɾ é-wet
go.Imprt-\Dat-1Pl Sg-market
‘Let’s go to the marketplace!’ [one person plus speaker]
- c. ækš-mæ̀t-\a-næɾ
eat.Imprt-FePl.Imprt-\Dat-1Pl
‘Let’s-FePl eat!’ [2+ females plus speaker]

This construction may have more of an imperative flavor than the type with suffix ($\tilde{\text{}}$)-et.

7.2.5 Long imperfective system

This system includes the LoImpfP, its negation the LoImpfN, and another stem that I call Prohib[itive]. Both the LoImpfN and the Prohib are used after Neg particle wæɾ. The Prohib stem is similar but (except for 3FeSg subject) not identical in form to a stripped-down version of the LoImpfP stem, with ablaut length formative $\tilde{\text{y}}$ -pc1 erased, that is used in definite relative clauses (§3.5.3).

The long imperfective stems are built from the basic form of a given verb stem by adding the ablaut melodies and local formatives listed in (328). The

local formatives in (328.d) are limited to the LoImpfP, while those in (328.b-c) occur throughout the long imperfective system.

(328) Long Imperfective Ablaut

symbol	description
a. <H>, <L>, or <HL>	vocalic melody (dialectally also <L H>)
b. Γ -c2 T-t- prefix	gemination of second stem C
c. $\bar{\chi}$ -f	lengthening of final V
d. $\bar{\chi}$ -pc1 $\acute{\chi}$ -pc1	lengthening of first postconsonantal V accent on first postconsonantal V

For each stem, the formatives in (328.b-c) are uniform throughout the long imperfective system. In underived stems, the two consonantal increments in (328.b) are in essentially complementary distribution, each stem having either Γ -c2 or T, but (usually) not both. As a result, there is always a difference in consonantism between stems of the long imperfective system and all other inflected stems of the same verb. In one verb class, the two consonantal increments Γ -c2 and T can co-occur (for some speakers). This is the same -vCvC- class mentioned above, with LoImpfP stems like -(t)- $\text{\textcircled{a}}\text{w}\acute{\text{a}}\text{t}$ - ‘hits’. Here, however, the -t- prefix is optional (i.e., dialectal, or in essentially free alternation with zero). Because 3FeSg and 2nd person subject prefix t- is deleted before a C, ‘she hits’ will always appear as [t $\text{\textcircled{a}}\text{w}:\text{a}'\text{t}$], which can be interpreted either as /t-t- $\text{\textcircled{a}}\text{w}\acute{\text{a}}\text{t}$ / or as /t- $\text{\textcircled{a}}\text{w}\acute{\text{a}}\text{t}$ /, so the difference between stem variants - $\text{\textcircled{a}}\text{w}\acute{\text{a}}\text{t}$ - and -t- $\text{\textcircled{a}}\text{w}\acute{\text{a}}\text{t}$ - is only audible for 1st person, 3MaSg, and 3Pl subjects.

For causative verbs with Causative prefix-s- (and variants), the prefixal C is not compatible with T (-t- prefix). For these derivatives, consonantism does not distinguish long from short imperfectives. Fortunately, the two are distinguished by vocalism (most reliably $\bar{\chi}$ -f).

The $\bar{\chi}$ -f formative in (328.c) lengthens the V of the final stem syllable.

The formatives in (328.d) occur only in the LoImpfP, and are absent from the LoImpfN and the Prohib. The LoImpfP is therefore particularly “marked” morphologically, more so than any other inflectable verb stem. $\bar{\chi}$ -pc1 lengthens the first postconsonantal V, and $\acute{\chi}$ -pc1 adds a marked accent to the same V. For purposes of calculating “first postconsonantal V,” the -t- prefix (if present) counts as part of the environment, except in the type -(t)- $\text{\textcircled{a}}\text{w}\acute{\text{a}}\text{t}$ - where the -t- is optional.

The two V-lengthening features, $\bar{\chi}$ -f (328.c) and $\bar{\chi}$ -pc1 (328.d), avoid clashing, i.e., they **cannot be implemented in adjacent syllables** (except in

causative verbs). They are both audibly implemented in trisyllabic and longer stems, but only one is audible in non-causative mono- or bisyllabic LoImpfP stems. A trisyllabic LoImpfP is *-t-ðbærɑj-* ‘boast’ from stem *-bvrɤj-*, with first and third V’s lengthened. A bisyllabic LoImpfP, from stem *-vjvš-*, is *-t-ájjæš-* ‘enter’ with only the first V lengthened (not *#-t-ájjɑš-*).

In *-(t-)əwwát-* ‘hits’, if we treat the optional *-t-* as irrelevant to the other ablaut features, the lengthened V could theoretically be due to either $\bar{\chi}$ -f or $\bar{\chi}$ -pɔ1, since the “first postconsonantal V” and the “V of final stem syllable” converge. In other verb classes, $\bar{\chi}$ -f (if audible at all) appears in LoImpfP, LoImpfN, and Prohib stems, whereas $\bar{\chi}$ -pɔ1 is confined to the LoImpfP. We should therefore be able to determine which of $\bar{\chi}$ -f or $\bar{\chi}$ -pɔ1 is operative in *-(t-)əwwát-*, by observing whether the second V remains a full V in the Prohib and LoImpfN stems. In *wær ð-t-əwwit* ‘he does not hit’ and *wær t-əwwat* ‘don’t-Sg hit!’, we do in fact see a full i or a, so I conclude that $\bar{\chi}$ -f instead of $\bar{\chi}$ -pɔ1 is at work in *-(t-)əwwát-*.

Each verb type has a **characteristic long imperfective melody**, observable in the LoImpfP and Prohib. (329) is organized around the melody of the LoImpfP (rightmost column), and also shows the ShImpf for reference.

(329) Characteristic Long Imperfective Melodies

stem shape	ShImpf	LoImpfP
stem-wide <L> melody		
a. light C-final stem with no full v		
-vPPvC-	-ðPPəC-	-t-áPPæC-
-vPQvC-	-ðPQəC-	-PáQQæC-
b. light V-final stem with initial short v and no lexical u or i		
-vPv-	/-æP1-/	/-t-áPPA-/
-vPPv-	/-æPP1-/	/-t-áPPA-/
-vPQv-	/-æPQ1-/	/-PáQQA-/
[LoImpfP dialectally /-PáQQ1-/ , -PáQQa-, -PáQQu-]		
c. -CiCvC- and -CiCv- (fluctuate with -CaCvC-, -CaCv-)		
-CiCvC-	-æCaCæC-	-t-àCaCaC-
[ShImpf sometimes -ðCiCəC-]		
-CiCv-	-æCaC-	-t-àCaCa-
-PiCv- (+ -t)	-æPPaCæ-t	-t-àCaCa-t

d. heavy stem subject to C₁-Gemination in ShImpf and perfectives

-PvCvC-	-æPPæCæC-	-t-àPæCaC-
-PvCCvC-	-æPPæCCæC-	-t-àPæCCaC-
-PvCCv-	/-æPPæCC ₁ -/	-t-àPæCCa-
-PaCCv-	/-æPPaCC ₁ -/	-t-àPæCCa-
-PvCu- (+ -t)	-æPPæCæ-t	-t-àPæCa-t
-PaCu- (+ -t)	-æPPaCæ-t	-t-àPaCa-t

stem-wide <H> melody

e. stem with lexical u or i, except -CiCvC- and -CiCv-, see (c) above

-iCi-	-iCi-	-t-íCi-
-vCu-	-əCu-	-t-íCu-
-vPQu-	-əPQu-	-PíQQu-
-uCvC-	-àCəC-	-t-íCəC-
-uPQvC-	-ùPQvC-	-PíQQuC-
[LoImpfP also -PúQQəC-, -t-ùPQaC-]		
-CuCvC-	-əCuCəC-	-t-íCuCuC-
-PuCu-	/-əP(P)uC ₁ -/	-t-íPəCCu-
-PuCu- (+ -t)	-əPPuCə-t	-t-íPuCu-t
-PuCCv- (+ -t)	-əPPuCCə-t	-t-íPəCCu-t
-PvQuCvC-	-əPQuCəC-	-t-íPQuCuC-
-PvQuCv-	/-əPQuC ₁ -/	-t-íPQuCu-
-PvQuCv- (+ -t)	-əPQuCə-t	-t-íPQuCu-t
-PvQiCvC-	-əPQiCəC-	-t-íPQiCiC-
-PvQiCv- (+ -t)	-əPQiCə-t	-t-íPQiCi-t
-PuCCvC-	-əPPuCCəC-	-t-íPəCCuC-
-PuCCvCu- (+ -t)	-əPPuCCəCə-t	-t-íPəCCəCu-t

f. light stem with initial full v (arguably underlying u)

-vCu-	/-aC ₁ -/	/-t-íC ₁ -/
[A-grm has LoImpfP /-t-áC ₁ -/]		
-vPPv-	/-aPP ₁ -/	/-t-íPP ₁ -/
-vPQu-	/-aPQ ₁ -/	/-t-íPQ ₁ -/
-vCvC-	-àCəC-	-t-íCəC-
[A-grm has LoImpfP -t-áCəC-]		
-vPQvC-	-àPQəC-	-t-íPQəC-
[A-grm has LoImpfP -t-áPQəC-]		

g. superheavy stem subject to Stem-Initial Syncope in ShImpf and perfectives

-PvQvCCvCvC-	-əPQəCCəCəC-	-t-íPQəCCəCiC-
-PvQvCCv-	/-əPQəCC ₁ -/	-t-íPQəCCi-
-PvQvCu- (+ -t)	-əPQəCə-t	-t-íPQəCi-t

composite <H L> melody

h. light C-final stem with no full V or CC cluster

-vCvC-	-əPəC-	-(t-)əPPáC-
--------	--------	-------------

i. mostly adjectival verbs with «u a» or «i a» imperfective melody (sometimes alternating with «ə u» or «ə i» as in perfectives)

-uCaC-	-ùCaC-	-t-úCaC-
	[LoImpfP also -t-íCuC-]	
-iCaC-	-ĩCaC-	-t-íCaC-
	[LoImpfP also -t-íCuC-]	
-uPQaC-	-ùPQaC-	-t-úPQaC-
-iPQaC-	-ĩPQaC-	-t-ípQaC-

composite <L H> melody

j. (none in T-ka, but for eastern dialects see comment in (f) above on -vCu-)

In (329.f), the light stems beginning with full *v* are tricky. The initial *V* appears as *o* in perfectives, *a* in short imperfectives, and *i* (except *a* in A-grm) in long imperfectives. Since perfective *o* can elsewhere behave as the overlay of <L> melody on lexical *u*, by combining the perfective and long imperfective data we can at least make a case that the lexical representations begin in *u* (or *i*), which would permit us to combine (329.f) with (329.e). However, the alternations in the stem-initial *V* in these verbs are far from transparent.

The mostly adjectival verbs in (329.i) are morphologically distinctive in many respects, and since their vocalism is constant throughout the short and long imperfectives (and often carries through to nominalizations), it is perhaps best to leave them outside the productive system for determining characteristic long imperfective melodies. The -vCvC- verbs in (329.h) are also rather isolated, since they fluctuate between prefixed and unprefixed LoImpfP and alone among all verbs allow $\bar{\chi}$ -f but not $\bar{\chi}$ -p_{cl} to be expressed audibly.

This leaves two broad alliances, one set with <L> and the other with <H> as characteristic long imperfective melody. There are two central axes on which the many stem-shape classes split (330).

(330) Basis for Choice Between <H> and <L> Characteristic Melodya. all stems: if stem contains a high full vowel *i* or *u*, or a stem-initial full *V* (which is arguably *u*), then <H> melody; otherwise continue to (b-c)

b. light stems unaffected by (a): <L>

c. heavy stems unaffected by (a):

<H> if stem onset is subject to Stem-Initial Syncope (i.e. superheavy stem beginning in -CvCV...)

<L> if stem onset is subject to C₁-Gemination (i.e. middleweight -CvCvC- or a stem that begins in -CvCC...)

The patterns in (330) are valid for prefixally derived stems as well. Since the prefixal C is counted in stem-shape assignment, all prefixally derived verbs are heavy. Again, an i or u in the basic form of the stem forces <H> melody, except that -C-iCvC- and -C-iCv- stems have an unstable i that becomes a in the LoImpfP, which has <L> melody. For stems with no full V, we again get <H> if the stem begins in -C-vCV..., and <L> if the stem begins in -C-vCV... and so permits C₁-Gemination.

Causative verbs with prefix -s- (or variant, §8.1) have many special paradigmatic features, including absence of Stem-Initial V-Insertion in the ShImpf, and a C₁-Gemination that targets the first post-prefixal C in the ShImpf (if this C is unclustered) and applies only to superheavy stems (this excludes -s-vCvC-). Caus prefix -s- does not permit the usual -t- prefix. Examples showing ShImpf and LoImpfP are in (331), using the same letter codes for subsections as in (329), above, though the light stems in (330) have no counterparts in (331).

(331) Characteristic Long Imperfective Melodies: Causatives

stem shape	ShImpf	LoImpfP
stem-wide <L> melody		
c. stems with i		
-s-iCvC-	-s-ĩCəC-	-s-áCaC-
-s-vPiCvC-	-s-əPPiCəC-	-s-àPaCaC-
d. heavy stem subject to C ₁ -Gemination in the perfective (not shown)		
-s-vCvC-	-s-əCəC-	-s-àCaC-
-s-vCCvC-	-s-əCCəC-	-s-áCCaC-
-s-vPvCvC-	-s-əPPəCəC-	-s-àPəCaC-
-s-vCCv-	/s-æCCɪ-/	-s-áCCa-
-s-vPvCCv-	/s-əPPəCCɪ-/	-s-əPəCCa-
-s-vCvCCvC-	-s-əPPəCCəC-	-s-àPəCCaC-
-s-vCvCCvCCvC-	-s-əPPəCCəCCəC-	-s-àPəCCæCCaC-

stem-wide <H> melody

e. stem with lexical u or i, except -CiCvC- and -CiCv-, see (c) above

-s-uCvC-	-s-ùCvC-	-s-íCuC-
-s-uCCvC-	-s-ùCCvC-	-s-íCCuC-
-s-uCCv-	/-s-ùCCɪ-/	-s-íCCu-
-s-vPuCvC-	-s-əPPuCaC-	-s-ĩPuCuC-
-s-vPvCuCvC-	-s-əPPəCuCaC-	-s-ĩPCuCuC-

g. superheavy stem subject to Stem-Initial Syncope in ShImpf and perfectives

-s-vPvCvCCvC-	-s-əPPəCaCCəC-	-s-ĩPCəCCiC-
-s-vPvCCv- (+ -t)	-s-əPPəCCə-t	-s-ĩPəCCu-t
	[LoImpfP also -s-əPæCCə-t]	
-s-vPvCCv-	/-s-əPPəCCɪ/	-s-ĩPəCCu
	[LoImpfP also -s-əPæCCə-]	

There are some minor differences between causatives and other stems. In causatives, the tendency of stems with i to have <L> LoImpfP extends to superheavy stems, and V-final stems tend to have final u rather than i in the LoImpfP (in the absence of a medial full V).

The comparisons between ShImpf and LoImpfP above are also useful in another connection, namely, specifying the precise input to long imperfective ablaut. When the -t- prefix is present, if the core stem is C-initial it is necessary to account for the vowel that appears between the two. In the LoImpfP, this V is targeted by $\tilde{\chi}$ -pɔ1 and $\acute{\chi}$ -pɔ1 (i.e. length and accent), and so appears as í or ó, but the corresponding LoImpfN always has ə, and the Prohib (which respects the verb's characteristic long imperfective melody) has ə or æ. So disregarding the special LoImpfP ablaut formatives we need to ensure that a short vowel ("v") occurs between -t- and the stem-initial C before ablaut (including vocalic melodies) takes place. One possibility is to argue that -t- is really -tv-. However, we have also identified a **Stem-Initial V-Insertion** that adds an initial short V to the perfectives and ShImpf (but not Imprt) of many verbs, and having a version of this rule apply to a C-initial stem as an input modification prior to applying long imperfective ablaut components is another possibility.

More serious **pre-ablaut reconfigurations** may be needed for the light verbs in (332), which have a vowel between C₁ ("P") and C₂ ("Q") in the long imperfectives but not in the perfectives or short imperfectives.

(332) Pre-Ablaut Stem Reconfigurations

	stem shape	Imprt	LoImpfP	LoImpfN	input
a.	-vPQvC-	əPQəC	-PáQQæC-	-PəQQəC-	-PvQvC-
b.	-vPQu-	əPQu	-PíQQu-	-PəQQu-	-PvQu-
c.	-vPQu-	/æPQɪ/	/-PáQQA-/	/-PəQQɪ-/	-PvQu-

The suggested input to long imperfective ablaut (rightmost column) involves **inserting a short v between P and Q**, and in (a) also removing the stem-initial V that appears in the other stems.

Pre-ablaut reconfigurations are a somewhat questionable morphophonological concept. The need to include such modifications to support an otherwise “regular” componential ablaut analysis should make us wonder whether long imperfectives of light stems might have template-like features. Certainly there is no overall prosodic template that could begin to capture the full range of long imperfective shapes, and the long imperfectives of heavy verbs are transparently constructed by applying ablaut components to the basic form of the stem, preserving the stem’s C and V positions. However, several types of light verb end up with long imperfectives based on a shape beginning -CvCC... (hence LoImpfP -CáCC...), and a templatic element in derivations is not out of the question.

7.2.5.1 Long Imperfective Positive stem (LoImpfP)

The LoImpfP is the only stem in the imperfective system, aside from the uncommon long imperative, that can be used clause-initially (i.e. without preverbal particles): *i-jáll* ‘he goes (regularly)’. It can denote recurring or habitual events, or a (present) progressive, as in *i-t-íhnæffi-t* ‘he often moans’ or ‘he is moaning’ and *i-t-úmad* (variant *i-t-ímud*) ‘he prays (regularly)’ or ‘he is praying’. I noted above that the Reslt, which is part of the perfective system, may also be used in present stative/resultative sense and for some verbs can be glossed with the English progressive: *i-ttás* ‘he is sleeping’ (better: ‘he went to sleep and is still asleep’; root √*ds*). The LoImpfP may be preceded by Future *əd* to denote future recurrent events: *əd i-jáll* ‘he will go (regularly)’; this combination is uncommon, the usual future being *əd* plus the ShImpf. The LoImpfP is replaced by the LoImpfN when directly preceded by Negative *wær*.

The LoImpfP is built from the basic lexical form of the stem by the full set of ablaut features listed in (328), above. The melody, which is diagnostic of the characteristic long imperfective melody (also used in the Prohib), depends on the stem-shape type. Except for the type *-(t-)əwwát-* ‘hits’ with compositive <HL> melody, all T-ka verbs have either stem-wide <L> or

stem-wide <H> as the characteristic long imperfective melody, but eastern dialects preserve some cases of <L H> with V-final non-augment verbs.

All LoImpfP stems have one of the two consonantal increments, Γ -c2 or T, and for some speakers (or dialects) the type $-(t)\text{-}\text{ə}\text{w}\text{w}\acute{\text{a}}\text{t}$ ‘hits’ has both.

(333) LoImpfP Ablaut

	symbol	description
a.	<H>, <L>, or <H L>	vocalic melody (dialectally also <L H>)
b.	Γ -c2 T	gemination of second stem C -t- prefix
c.	$\bar{\chi}$ -f	lengthening of final V
d.	$\bar{\chi}$ -pc1 $\acute{\chi}$ -pc1	lengthening of first postconsonantal V accent on first postconsonantal V

As noted in §7.2.5, above, $\bar{\chi}$ -f and $\bar{\chi}$ -pc1 can both occur audibly only if separated by an intervening syllable (“clash avoidance”), or in causatives (where clash avoidance is not enforced). If the LoImpfP has just two syllables, we get $\bar{\chi}$ -f in the type $-(t)\text{-}\text{ə}\text{w}\text{w}\acute{\text{a}}\text{t}$ for -vCvC- verbs, otherwise we get $\bar{\chi}$ -pc1. Also in the type $-(t)\text{-}\text{ə}\text{w}\text{w}\acute{\text{a}}\text{t}$, the optional -t- prefix is disregarded in calculating “first postconsonantal V” for purposes of associating the accent formative $\acute{\chi}$ -pc1.

Some examples of the LoImpfP are in (334), with the ShImpf for comparison. In each part of (334), the melody and the consonantal formatives are listed, along with any relevant (morpho-)phonological rules.

(334) LoImpfP Stems

	gloss	LoImpfP	ShImpf
a.	melody <L>, Γ -c2		
	‘fight’	-kánnaes-	-əknəs-
	‘vomit’	-báss- (/ -bássa- /)	-æbs (-æbsɪ-)
	‘hear’	-sáll- (/ -sállA- /)	-əsəl (-æslɪ-)
		[A-grm and Gao: LoImpfP also -sállu-, -sállu-]	
b.	melody <H>, Γ -c2		
	‘be split’	-fillu-	-əflu-

- c. melody <L>, T
- | | | |
|---------------|---------------------|----------------------|
| 'enter' | -t-ájjæš- | -əjjæš- |
| 'boast' | -t-əbærəj- | -əbbæræj- |
| 'go to' | -t-ákk- (/t-ákkA-/) | -ækk- (/ækkɪ-/) |
| 'do' | -t-ájj- (/t-ájjA-/) | -əj- (/æjɪ-/) |
| 'raise young' | -t-ərræbba- | -ærræbb (/ærræbbɪ-/) |
| 'be joyful' | -t-ədæwə-t | -əddæwə-t |
| 'witness' | -t-əjjæyhə- | -æjjæyh (/æjjæyhA-/) |
- [ShImpf dialectally -əjjæyh-]
- d. melody <H>, T
- | | | |
|---------------|---------------------|----------------------|
| 'stretch' | -t-íjj- (/t-íjjɪ-/) | -əjj (/əjjɪ-/) |
| 'bray' | -t-íru- | -əru- |
| 'arrive' | -t-ís- ((/t-ísɪ-/) | -əs (/əsɪ/) |
| 'cut up' | -t-íbləjbəlɪj- | -əbləjbəlɪj- |
| 'be confused' | -t-ímtəlli- | -əmtəll (/əmtəllɪ-/) |
| 'be dying' | -t-íjrəri-t | -əjrərə-t |
| 'be born' | -t-íwi- | -íwi- |
| 'dish out' | -t-íjəm- | -əjəm- |
| 'be calm' | -t-ízj- (/t-ízjɪ-/) | -əzj (/əzjɪ-/) |
- e. like (d), plus u-Spreading
- | | | |
|--------|-------------|-----------|
| 'gape' | -t-íblulur- | -əblulər- |
|--------|-------------|-----------|
- f. like (d), plus u-Spreading and Medial V-Shortening
- | | | |
|--------|-------------|------------|
| 'want' | -t-ídərhun- | -əddurhən- |
|--------|-------------|------------|
- g. like (d), plus resyllabification (§3.2.4, §3.3.2)
- | | | |
|---------------|--------------------|-----------------|
| 'be spacious' | -t-ílów (/t-ílw-/) | -əlów (/əlwɪ-/) |
|---------------|--------------------|-----------------|
- h. melody <H L>, Γ-c2 plus optional T
- | | | |
|-------|-------------|---------------|
| 'hit' | -(t-)əwwát- | -əwət-, -wət- |
|-------|-------------|---------------|
- [LoImpfP also -(t-)əggát-]
- i. irregular or suppletive
- | | | |
|---------|---------------------|------------------|
| 'say' | -jánna- | -ənn- (/ənnɪ-/) |
| 'eat' | -t-átt- (/t-áttA-/) | -ækš- (/ækšɪ-/) |
| 'drink' | -sáss- (/sássA-/) | -əsəw (/əsəwɪ-/) |
| 'give' | -hákk- (/hákkA-/) | -ækf- (/ækfɪ-/) |

The type -t-íCəC-, e.g. -t-íjəm- 'dish out' in (334.d), is valid for most dialects. However, A-grm has t-áCəC-, hence -t-ágəm- 'dish out'. Likewise, for 'wipe' (PerfP -òmæs-), most dialects have LoImpfP -t-íməs-, but A-grm has -t-áməs-. In other words, A-grm has stem-wide <L> rather than stem-wide <H> as the characteristic long imperfective melody for this class.

Returning to $-t-íCəC-$, especially in some dialects (I, R, some Kidal-area varieties) the ə is subject to Syncope before a V-initial suffix, with the further twist that <H> melody spreads into the vowel of a V-initial subject suffix, e.g. LoImpfP 3MaSg $i-t-íhər$ ‘share in common’ but 3MaPl $t-íhr-ən$. For metathesis in a few of the relevant R dialect forms, see §3.2.2.1. By contrast, T-ka has the same 3MaSg $i-t-íhər$, but 3MaPl $t-íhər-ən$ with no Syncope and no spreading of <H> melody into the suffixal vocalism. A-grm has $-t-úCəC-$ instead of $-t-íCəC-$.

Examples of the LoImpfP, including participles, are in (335).

- (335) a. $mí$ $i-t-àddəh-ən$
 who? 3MaSgS-LoImpf-pound.**LoImpfP-Partpl.**MaSg
 [à-ʌs $i-ja$ $á-wen$] ?
 [Dem-ʌInstr 3MaSgS-do.PerfP Dem-Dist] ?
 ‘Who was pounding (grain), when that happened?’
- b. $hànnəy-ær$ N
 see.**LoImpfP-1SgS** N
 [i-wwà-ʌədd $i-sə̀rər-ən$]
 [3MaSgS-bring.Result-Centrip Pl-firewood-MaPl]
 ‘I see (that) N (man’s name) has brought firewood here.’
- c. $t-amə̀tt$ $t-oráw-æt-š$
 Fe-woman 3FeSgS-give.birth.Result-Partpl.FeSg-as.for
 $má-ʌhà-s$ $Ø-t-ájjə-d$?
 what?-ʌDat-3Sg 2S-LoImpf-make.**LoImpfP-2SgS**
 ‘The woman who has given birth, what are you making for her?’
- d. $t-a-mə̀tt$ $t-oráw-æt,$
 Fe-Sg-woman 3FeSgS-give.birth.Result-Partpl.FeSg
 $á-xx$ $i-ràmməs-ʌtæt$
 milk 3MaSg-take.**LoImpfP-3FeSgO**
 ‘A woman who has (just) given birth, milk (often) takes her
 (=makes her feel bad briefly).’ [K]
- e. $àra-tən$ $mə̀dróy-nen$
 child-MaPl small-Partpl.Pl
 [s-arhàn-ən-ʌtən $erd-an$]
 [Caus-be.sick.**LoImpfP-3MaPlS** filth-MaPl]
 ‘Small children, filth (habitually) makes them sick.’ [K]

- f. kæmm Ø-s-àfal-æd i-læmaw-æn-næm
 2FeSg 2S-Caus-tan.LoImpfP-2SgS Pl-skin-MaPl-2FeSgPoss
 [a-ʌs-kæm oyye-ɾ]
 [Dem-ʌInstr-ʌ2FeSgO leave.PerfP-1SgS]
 ‘You-FeSg were tanning your hides when I left you.’ [K]

A habitual aspectual reading can be expressed using -ɾvymu- ‘sit, remain’ plus a LoImpfP, at least in K dialect.

- (336) æqqim-æɾ sáll-æɾ [e brouette-tæn]
 sit.Reslt-1SgS hear.LoImpfP-1SgS [Dat wheelbarrow-MaPl]
 gilluw-æɾ
 go.LoImpfP-1SgS
 ‘I would (=used to) hear about “wheelbarrows” and I would go away.’
 [K]

7.2.5.2 Long Imperfective Negative stem (LoImpfN)

The LoImpfN is used after Negative particle wær (wær before high V), as in wær i-t-ədubun ‘he does not marry’. The LoImpfN is constructed by applying the ablaut components in (337) to the basic form of a verb.

(337) LoImpfN Ablaut

	symbol	description
a.	<H>	vocalic melody
b.	Γ-c2 T	gemination of second stem C -t- prefix
c.	χ-f	lengthening of final V

The LoImpfN, like the Prohib, lacks two key ablaut features that characterize the LoImpfP: the marked accent (χ-pc1) and lengthening of the first postconsonantal V (χ-pc1). The LoImpfN also imposes its own invariant <H> melody, whereas the LoImpfP and Prohib share the characteristic long imperfective melody (<H>, <L>, or <HL>) of the particular stem-shape class. If the characteristic melody is <L> or <HL>, the <H> melody of the LoImpfN is distinctive, so the LoImpfN is audibly distinct from the Prohib. If the characteristic melody is already <H>, the LoImpfN and Prohib stems are indistinguishable.

Examples of the LoImpfN are given in (338), with the corresponding LoImpfP shown for comparison. The LoImpfN forms in (338.a) are unique to

the LoImpfN, while those in (338.b-d) are identical in form to Prohib stems. The cases in (338.c) involve three-way LoImpfN = Prohib = LoImpfP homophony at the segmental level, but the LoImpfP has fixed accent while the LoImpfN and Prohib are unaccented (and so permit a default accent on a syllable or on the preverbal Neg particle). Thus note the accents in *i-t-išəl* ‘he runs’ and its negation *wər i-t-išəl* ‘he doesn’t run’. (338.d) is like (338.c) but also involves Final-CC Schwa-Insertion (44) (i.e., resyllabification), and in T-ka this shifts accent onto the inserted schwa (§3.3.2).

(338) LoImpfN Stems

gloss	LoImpfN	LoImpfP
a. LoImpfN distinguishable from Prohib and from LoImpfP		
‘fight’	-kənnəs-	-kánnaəs-
‘stand up’	-bəddəd-	-báddəd-
‘hit’	-(t-)əwwit-	-(t-)əwwát-
	[also variants with gg for ww]	
‘do’	-t-əjj- (/t-əjji-/)	-t-ájj-
‘vomit’	-bəss- (/bəssi-/)	-báss-
‘eat’	-t-ətt- (/t-ətti-/)	-t-átt-
‘drink’	-səss- (/səssi-/)	-sáss-
‘load’	-t-əjəjja-	-t-ájəjja-
‘make run’	-š-išil-	-š-ášal-
‘die’	-t-əmətti-t	-t-ámətta-t
‘say’	-jənni-	-jánna-
‘move out’	-t-əhini-	-t-àhana-
‘make hate’	-s-əs-ikiḏ-	-s-às-akaḏ- (§8.1.3)
b. LoImpfN homophonous to Prohib (but not to LoImpfP)		
‘marry’	-t-ədubun-	-t-ídubun-
‘believe’	-rəddu-	-rídu-
‘make pound’	-s-əs-uduh-	-s-ís-uduh-
c. LoImpfN is homophonous to Prohib; LoImpfN (and Prohib) are segmentally homophonous to LoImpfP, but LoImpfP has fixed accent		
‘open’	-t-ir- (/t-iri-/)	-t-ír-
‘dish out’	-t-ijəm-	-t-íjəm-
‘run’	-t-išəl-	-t-íšəl-

- d. like (c), but (except before V-initial suffix or clitic) all the stems undergo resyllabification by Final-CC Schwa-Insertion (44), which entails (in T-ka) Epenthetic-Vowel Accentuation (70) overriding the ablaut accent

'be spacious'	-t-ilǫ́w (/t-ilwɪ-/)	-t-ilǫ́w (/t-ílwɪ-/)
'leave in PM'	-t-idǫ́w (/t-idwɪ-/)	-t-idǫ́w (/t-ídwɪ-/)

The <H> melody of the LoImpfN is pervasive in (338). The LoImpfN has no ablaut accent, and it preserves the underlying length of all stem V's. However, $\bar{\chi}$ -f does lengthen the final V in trisyllabic or longer LoImpfN stems (as in the LoImpfP and Prohib), e.g. -t-ə̀dubun- from stem -dubvn- 'marry'.

If the inflected word containing the LoImpfN stem has fewer than three syllables (or fewer than two, if a stem-final V has been deleted), a phrasal accent appears on the preceding Negative wær, as in wær Ø-bə̀ddəd 'she does not stand up' (with deleted /t-/ 3FeSg subject prefix).

In (338.d), the final /CC/ (after Stem-Final /A-Deletion) is resyllabified, and in T-ka has final-syllable accent (§3.3.2). Since the two known verbs of type (338.d), i.e. stems with shape -uPQu- where Q is a sonorant and P is not, have characteristic long imperfective <H> melody, the result is three-way homophony between LoImpfN, LoImpfP, and Prohib. When a V-initial suffix or clitic is added, the forms in (338.d) are realized as LoImpfN and Prohib unaccented -t-ílw- and -t-ídw-, theoretically distinct from LoImpfP -t-ílw- and -t-ídw- with marked accents, but the suffix or clitic V counts in Default Accentuation, so the underlying accentual distinction is overridden: t-ílwə-n 'they-Ma are spacious', negated as wær t-ílwə-n, with /t-ílwɪ-/ and /t-ílwɪ-/ respectively, plus 3MaPl -æn. Examples of the LoImpfN are in (339).

- (339) a. áywa ə̀nna-\\Ø-s hæræt rəréd
 well say.Imprt-\\Dat-3Sg thing all
 wær ǐ-rə̀lləl [á-šæl í-dær]
 Neg 3MaSgS-be.eternal.LoImpfN [Sg-day Prox-Anaph]
 'Well, tell him that nothing at all lasts forever nowadays.' [K]
- b. wær ə̀n-jə̀bbəs
 Neg 1PIS-tie.on.LoImpfN
 'We do not tie on (=wear wraps).' [K]

7.2.5.3 Prohibitive stem (Prohib) and negative imperative constructions

In this section I describe the form of the Prohib stem, then describe prohibitive (=negative imperative) constructions. The **Prohib stem**, part of the long imperfective system, has the ablaut features in (340). It differs from the

LoImpfP in not having the ablaut features $\bar{\chi}$ -pc1 (lengthening of first postconsonantal V) or $\acute{\chi}$ -pc1 (accent).

(340) Prohibitive Stem Ablaut

	symbol	description
a.	<H>, <L>, or <H L>	vocalic melody
b.	Γ -c2 T	gemination of second stem C -t- prefix
c.	$\bar{\chi}$ -f	lengthening of final V

The melody for the Prohib stem is the same **characteristic long imperfective melody** used in the LoImpfP of the same stem-shape class. The remaining features (340.b-c) are the same as those used in the LoImpfN. The unique ablaut formatives of the LoImpfP are not present in the Prohib.

The Prohib and LoImpfN stems are indistinguishable for verb types that have characteristic <H> melody (341.a). However, stems with <L> or <H L> characteristic melody distinguish the LoImpfN and Prohib by vocalism (341.b-c).

(341) Prohib Stems

gloss	Prohib	LoImpfN	LoImpfP
a. characteristic <H> melody			
'marry'	-t-ə̌dubun-	(=Prohib)	-t-ı̌dubun-
'believe'	-rə̌ddu-	(=Prohib)	-rı̌ddu-
'make pound'	-s-əs-uduh-	(=Prohib)	-s-ıs-uduh-
b. characteristic <L> melody			
'fight'	-kə̌nnəs-	-kə̌nnəs-	-kə̌nnəs-
'stand up'	-bə̌ddəd-	-bə̌ddəd-	-bə̌ddəd-
'do'	-t-ə̌jj-	-t-ə̌jj-	-t-ájj-
	[for /-t-ə̌jjA-/ , /-t-ə̌jji-/ , and /-t-ájjA-/]		
'vomit'	-bə̌ss-	-bə̌ss-	-báss-
'eat'	-t-ə̌tt-	-t-ə̌tt-	-t-átt-
'drink'	-sə̌ss-	-sə̌ss-	-sáss-
'load'	-t-ə̌jæjja-	-t-ə̌jæjja-	-t-ájæjja-
'make run'	-š-à̌sal-	-š-ı̌sil-	-š-ásal-

'die'	-t- <i>æmætta</i> -t	-t- <i>æmætti</i> -t	-t- <i>àmætta</i> -t
'say'	- <i>jænna</i> -	- <i>jènni</i> -	- <i>jánna</i> -

c. characteristic <H L> melody

'hit'	-(t-) <i>èwwat</i> -	-(t-) <i>èwwit</i>	-(t-) <i>əwwát</i> -
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I now consider the **clause-level prohibitive** (=negative imperative) constructions. There are two, both containing Negative preverb *wær*. Both constructions are widely distributed in Tamashek dialects.

In what I call the **PerfN prohibitive**, *wær* is followed by a PerfN stem with the usual (non-imperative) 2Sg, 2MaPl, or 2FePl subject affixes (2Sg *t-...-æd*, 2MaPl *t-...-æm*, 2FePl *t-...-mæt*, with the *t*- prefix generally deleted before a C). The entire construction is identical to the (2nd person) perfective negative construction. Examples in (342).

- (342) a. *wær t-àllez-æd*
 Neg 2S-insert.**PerfN**-2SgS
 'Don't-Sg insert!' or 'You-Sg did not insert.'
- b. *wær t-òšel-æd*
 Neg 2S-run.**PerfN**-2SgS
 'Don't-Sg run!' or 'You-Sg did not run.'
- c. *wær-~~t~~æn t-əreš-æd*
 Neg-~~3~~MaPlO 2S-dig.**PerfN**-2SgS
 'Don't-Sg dig them out!' or 'You-Sg didn't dig them out.'
- d. *wær t-əŋges-mæt*
 Neg 2Sg-sleep($\sqrt{\text{ds}}$).**PerfN**-2FePlS
 'Don't-FePl sleep (late)!' (K)

The alternative is an unambiguously prohibitive form that I call the **LoImpf prohibitive**. This construction consists of Negative *wær* plus a form of the Prohib stem with **imperative-type subject marking** (§7.4.3): zero for 2Sg, ($\grave{\text{~}}$)-*æt* for 2MaPl, and ($\grave{\text{~}}$)-*mæt* for 2FePl (both 2MaPl and 2FePl suffixes require word-penultimate accent). Examples are in (343). The *t*- prefix in some of the verbs is that of the long imperfective system, not the 2nd person (non-imperative) subject prefix.

- (343) a. *wær t-ællæz*
 Neg LoImpf-insert.**Prohib**
 'Don't-Sg insert!'

- b. wær bæddæd
Neg get.up.**Prohib**
'Don't-Sg get up!'
- c. wær ræjjæn-æt
Neg get.up.**Prohib-Imprt.2MaPl**
'Don't-MaPl get soiled!'
- d. wær ræjjæn-mæt
Neg get.up.**Prohib-Imprt.2FePl**
'Don't-FePl get soiled!'
- e. wær-\t əwwüt-æt
Neg-\3MaSgO hit.**Prohib-Imprt.2MaPl**
'Don't-MaPl hit him!'

An example of a Prohib stem ending in a is -jænna- 'say'. The LoImpf prohibitive clauses for this verb are 2Sg wær jænna, 2MaPl wær jænnð-hæt (note the h), and 2FePl wær jænnð-mæt. For 2MaPl, I once recorded wær jænnè-hæt.

The PerfN prohibitive and the LoImpf prohibitive were both verified for K-d: wær t-əŋker-æt = wær nækkær 'don't get up!'

A form **resembling the Prohib**, but (except for light verbs with 3FeSg subject) containing a marked accent, occurs in **definite relative clauses**. This is actually the LoImpfP after syntactically triggered erasure of \bar{x} -pcl (length), with or without an additional rightward shift in the accent (§3.5.3.1). Thus with 3MaSg subject we have ordinary LoImpfP i-báddæd 'he gets up', becoming i-bæddæd (erasing length but retaining accent) in definite relatives. Compare wær bæddæd 'don't-Sg get up!' with unaccented Prohib stem.

7.2.5.4 Long imperative

The LoImpfP stem is occasionally used as an imperative, with the usual imperative endings: zero for 2Sg, (˘)-æt for 2MaPl, and (˘)-mæt for 2FePl. This construction has the sense that we would expect, viz., an imperative with scope over multiple occurrences or over an extended time span, rather than a single immediate instance as with most imperatives. This form is therefore far less common than the regular imperative, which is built on the Imprt stem (short imperfective system). For example, the usual 2Sg imperative for 'get up!' is əbdæd (2MaPl əbdðd-æt, 2FePl əbdðd-mæt) with the Imprt stem, but if the command is intended to apply to an extended time span it can appear as báddæd 'get up! (regularly)' with the LoImpfP stem. The plural-subject forms are 2MaPl baddæd-æt and 2FePl baddæd-mæt. Textual examples are in (344).

- (344) a. t-attær-\ódd
 LoImpf-look.for.**LoImpfP**-\Centrip
 [à læ-n ʔØ-bòrɔr-æn]
 [Dem have.PerfP-3MaPIS Pl-wild.date-MaPl]
 'Look (around) for (and get) a few wild dates!' [K]
- b. kannæ-mæt-\ín
 make.**LoImpfP-2FePl.Imprt**-\Centrif
 í-dfar í-dær
 Pl-cushion.cover Prox-Anaph
 'Make-FePl some of those pillow covers (for him/her)!'

7.2.5.5 Long hortative

The combination of Hortative (¨)-et, after a full vowel (¨)-het, with the LoImpfP stem is not common, but can be used when the exhortation is to perform an action regularly.

- (345) nǝ-jǝll-et
 1PIS-go.**LoImpfP-Hort**
 'Let's go (every day)!'

 nǝ-t-àrvæymǝ-het
 1PIS-LoImpf-sit.**LoImpfP-Hort**
 'Let's sit (regularly)!'

7.2.5.6 Hortative negative

The negative hortative verb phrase consists of Neg wær plus a verb in the Prohib stem (long imperfective system) that ends in the Hortative suffix (¨)-et, or after a vowel (¨)-het).

- (346) a. wær nǝ-t-išǝl-et
 Neg 1PIS-LoImpf-run.**Prohib-Hort**
 'Let's not run!'

 b. wær nǝ-t-àrvæymǝ-het
 Neg 1PIS-LoImpf-sit.**Prohib-Hort**
 'Let's not sit!'

 c. wær nǝ-jǝll-et
 Neg 1PIS-go.**Prohib-Hort**
 'Let's not go!'

- d. wær-\kæy i-t-ibà-het
 Neg-\2MaSgO 3MaSgS-LoImpf-be.lost.**Prohib-Hort**
 ‘May you not be lost!’

The R speaker syncopated the schwa of the penultimate syllable in (346.a), hence wær nə-řišl-et.

7.3 Verb classes and irregular verbs

In the sections below I go over much the same material as in sections in §7.2, above, about stem types, this time drawing together the complete set of stems for each stem-shape class. Although there is considerable duplication, this dual perspective may be useful to readers who might otherwise be overwhelmed by the complexity of the Tamashek verbal system.

7.3.1 Regular classes

The formulaic labels in the subsections below are extrapolated chiefly from the PerfP (to the extent our formulae distinguish this from e.g. the ShImpfP).

7.3.1.1 Light short-V -vPQvC-, -vPPvC-, and -vCvC-

These three verb types -vPQvC- (PQ = nongeminate CC cluster), and -vPPvC- (PP = geminated C cluster), and -vCvC- (= -vPvC-) are quite common. “v” in these formulae represents a short vowel. While each of the three types has some individual idiosyncrasies, there are other respects in which they behave as a class in opposition to heavy short-V stems. For “light” and “heavy” see §3.4.1.4.

Stem shapes of these verbs for different MAN categories are summarized in (347).

(347) Light short-V Verb Paradigms

	-vPQvC-	-vPPvC-	-vPvC-
a. perfective system			
PerfP	-əPQæC-	-əPPæC-	-əPæC-, -PæC-
Reslt	-əPQáC-	-əPPáC-	-əPáC-, -PáC-
PerfN	-əPQeC-	-əPPeC-	-əPeC-, -PèC-

b. short imperfective system

ShImpf	-əPQəC-	-əPPəC-	-əPəC-, -æPC-
Imprt	əPQəC	əPPəC	əPəC, æPC-
	[(-)æPC- variant only in some dialects, before V]		

c. long imperfective system

LoImpfP	-PáQQæC-	-t-úPPæC-	-t-əPPáC-, -əPPáC-
LoImpfN	-PəQQəC-	-t-əPPəC-	-t-əPPiC-, -əPPiC-
Prohib	-PæQQæC-	-t-æPPæC-	-t-əPPaC-, -əPPaC-

d. nominalization

VbIN	α-PəQaC	úPəC	é-PeC
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These patterns are exemplified in (348). Note that γ has a geminated counterpart qq (the γ of 'go back' occurs as such only in the VbIN), and that w has geminated counterparts ww or gg.

(348) Examples

-vhlvk-	-vqqvl-	-vwwt-
'destroy'	'go back'	'hit'

a. perfective system

PerfP	-əhlæk-	-əqqæł-	-əwæt-, -wæt-
Reslt	-əhlók-	-əqqáł-	-əwát-, -wát-
PerfN	-əhleł-	-əqqel-	-əwet-, -wèt-

b. short imperfective system

ShImpf	-əhlæk-	-əqqəl-	-əwæt-, -æwt-
Imprt	əhleł	əqqəl	əwæt, -æwt-

c. long imperfective system

LoImpf	-hállæk-	-t-úqqæł-	-t-əwwát-, -əwwát-
			-t-əggát-, -əggát-
LoImpfN	-həllæk-	-t-əqqəl-	-t-əwwit-, -əwwit-
			-t-əggit-, -əggit-
Prohib	-hællæk-	-t-æqqæł-	-t-əwwat-, -əwwat-
			-t-əggat-, -əggat-

d. nominalization

VbIN	α-həllæk	úxel	é-wet
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The paradigms of the three types are very similar in the perfective and short imperfective systems. The **perfective** melody is <H L>, seen clearly in the PerfP vocalic sequence «ə æ», and (with the addition of V-length and

accent ablaut components, $\bar{\chi}$ -pc1 and $\acute{\chi}$ -pc1, targeting the first postconsonantal V) in the Reslt sequence «ə á». All three types show «ə e» in the PerfN, with the ϵ -pc1f ablaut component having audible realization as e in the first postconsonantal V that is also the final-syllable V.

The -vPvC- type (e.g. 'hit') shows **dialectal variation in the onset** of the perfective, based on whether the stem-initial v is present: 1Sg PerfP $\acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}r$ varying with $w\acute{\epsilon}t\text{-}\acute{\epsilon}r$ 'I hit'. The type $\acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}r$ is standard in T-ka, while $w\acute{\epsilon}t\text{-}\acute{\epsilon}r$ is standard for K-d and is attested for some other mainstream dialects such as R. In the ShImpf (including Imprt), the initial schwa occurs in all dialects. Thus the Imprt is always $\acute{\epsilon}w\acute{\epsilon}t$ rather than $\#w\acute{\epsilon}t$, even in K-d.

The same -vPvC- verbs also show an interesting alternation in some dialects between e.g. $\acute{\epsilon}w\acute{\epsilon}t\text{-}$ and **syncopated** $\acute{\epsilon}w\acute{\epsilon}t\text{-}$ in the ShImpf and Imprt. For speakers with this alternation, $\acute{\epsilon}w\acute{\epsilon}t\text{-}$ is obligatory before a C or word-finally, while $\acute{\epsilon}w\acute{\epsilon}t\text{-}$ is used at least optionally before a V (either a V-initial subject suffix, or a V-initial clitic, including 3MaSgO allomorph $\text{-}\acute{\epsilon}$). Thus, for a Kidal speaker, with Future particle $\acute{\epsilon}d$ we get $\acute{\epsilon}d$ $i\text{-}w\acute{\epsilon}t$ 'he will hit' and $\acute{\epsilon}d$ $t\text{-}w\acute{\epsilon}t$ 'she will hit', but $\acute{\epsilon}d$ $\acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}r$ varying with $\acute{\epsilon}d$ $\acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}r$ 'I will hit', and $\acute{\epsilon}d$ $\acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}n$ varying with $\acute{\epsilon}d$ $\acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}n$ 'they-Ma will hit'. For T-ka, only the fuller forms $\acute{\epsilon}d$ $\acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}r$ and $\acute{\epsilon}d$ $\acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}n$ are used. In the short forms like (Kidal) 1Sg $\acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}r$, the (surface) penultimate accent suggests a derivation $/\acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}r/ \rightarrow /w\acute{\epsilon}t\text{-}\acute{\epsilon}r/$ (Default Accentuation) $\rightarrow /w\acute{\epsilon}t\text{-}\acute{\epsilon}r/$ (Syncope) $\rightarrow \acute{\epsilon}w\acute{\epsilon}t\text{-}\acute{\epsilon}r$. However, the last step ($/\acute{\epsilon}/$ replaced by $\acute{\epsilon}$) is phonologically problematic, since «ə ə» sequences are usually allowed to surface as such. For more on Syncope, see §3.2.7.

In the **long imperfective** system, the three types in (347) diverge. In the LoImpfP, the stems are $\text{-P}\acute{\epsilon}Q\acute{\epsilon}C\text{-}$, $\text{-t-}\acute{\epsilon}PP\acute{\epsilon}C\text{-}$, and $\text{-(t-)}\acute{\epsilon}PP\acute{\epsilon}C\text{-}$, respectively. The first two show <L> melody, while the latter has <H L> (unless the schwa is taken to be inserted by low-level Schwa-Insertion). The first and third show gemination of the second consonant ($\Gamma\text{-c2}$). The second, whose medial C is already geminated (PP) in all inflected stems (including perfective and short imperfective) shows a -t- prefix (ablaut formative T) as an alternative to gemination.

This -t- appears dialectally in long imperfectives of -vPvC- verbs. The variation between e.g. LoImpfP $\text{-t-}\acute{\epsilon}w\acute{\epsilon}w\acute{\epsilon}t\text{-}$ and $\acute{\epsilon}w\acute{\epsilon}w\acute{\epsilon}t\text{-}$ seems to me to be free, with no semantic difference between forms with and without -t- . Leguil (1992:39-40) claims that there is a semantic difference between the form with -t- and that without -t- in certain dialects of the Adrar and of Tessalit in the north. In some dialects, he says, the form with -t- has a strongly habitual sense whereas the other form suggests sporadic repetition. However, he claims that in one other dialect of the same zone the semantic relationship is reversed. Informant intuitions appear to have been the basis for the alleged semantic distinctions, and I am skeptical.

The LoImpfP patterns in (347) do show some similarities to each other in the non-melodic, non-consonantal ablaut features. To begin with, all three verb types have a marked accent ($\acute{\chi}$ -pc1) in the LoImpfP (but not in the LoImpfN or

Prohib), as is true of long imperfectives in all stem classes. If the optional *-t-* in *-(t-)əPPáC-* is disregarded, we can save the generalization that the accent targets the first postconsonantal V (“pc1”) in all three cases. We also observe lengthening of the accented V in all three cases, from /æ/ to á. It appears, however, that *-PáQQæC-* and *-t-úPPæC-* show lengthening due to the $\bar{\chi}$ -pc1 component, which targets the first postconsonantal V; as usual with this component, it applies only to the LoImpfP (and is absent from the LoImpfN and Prohib stems). On the other hand, the lengthening in LoImpfP *-(t-)əPPáC-* for *-vPvC-* stems appears to be due to $\bar{\chi}$ -f (lengthening of the V of the final syllable), since (as with $\bar{\chi}$ -f in trisyllabic or longer stems) it is observed in LoImpfN *-(t-)əPPiC-* and Prohib *-(t-)əPPaC-* as well as in the LoImpfP.

Since the Prohib (like the LoImpfP) has a melody <L> or <HL> in all three types, the overlain stem-wide <H> of the LoImpfN is distinctive.

The three verb types have sharply different productive VbIN patterns: *α-PæQaC*, *úPæC*, and *é-PeC*. The prefixes in *α-PæQaC* and *é-PeC* are subject to Prefix Reduction in the dependent state (§3.5.1), and have MaPl suffixal plurals with *i...-æn*. The *úPæC* VbIN type has a productive Pl *úPCaw-æn* in T-ka (also attested in R and K-d). A-*grm* usually has *úPæC-æn* or *úPC-an*. This *úPæC* looks quite isolated in the context of (347-8), but the same *-vPPvC-* verbs also show *-uPvC-* shapes in prefixal derivatives such as the causative and agentive. For example, *-vqqvl-* ‘go back’ has a causative *-s-urvl-* ‘give back’ with Imprt *s-ùrvæl*, while *-vddvr-* ‘be alive’ has an agentive *ə-m-údær* (§8.8.1).

The alternation between *-vPPvC-* and derived *-ùPvC-* gives credence to Prasse’s view (MGT 6.69-70) that the verbs in question reconstruct as **-vwPvC-*, the semivowel sometimes fusing with P to form geminated PP, and sometimes fusing with the first v to form u. In further support of this is the fact that no *#-vwPvC-* verbs with surface w occur.

Prasse (MGT 6.72-3) also argues, less convincingly, that the *-vPvC-* type (exemplified above by *-vwvt-* ‘hit’) reconstructs as **-vPhvC-*. While this would result in a certain analytical unification, whereby all three types reconstruct as **-vPQvC-*, I see no evidence (direct or indirect) for the putative **h*. Synchronically this analysis is challenged by verbs like *-vdhvl-* ‘help’.

The three verb types are quite common. A few **further examples** (cited in the Imprt) follow. For the *-vPQvC-* type: *əbdəd* ‘stand’, *əbləj* ‘cross’, *əbsəy* [ə'bsi] ‘melt’, *ədhəl* ‘help’, *ədləl* ‘dance’, *əðləm* [əðləm] ‘harm’, *ərdær* [æ'rdær] ‘betray’, *əjrəh* [ə'jræh] ‘understand’, and *əjrəw* [ə'jrɹu] ‘get’. Note that the second and third C’s may be identical (this has no morphological consequence).

For *-vPPvC-*: *əddəh* [ə'd:æh] ‘pound (in mortar)’, *əffær* [ə'f:ær] ‘hide’, *əffəy* [ə'fi] ‘pour’, and *əmmær* ‘look for’. I know of no *-vPPvC-* verb with geminate ww (original **ww* would presumably be reflected as gg). Verbs with perfective *-æwwæC-* are variants of the *-vCvC-* stem class, see §7.3.1.6.

For -vPvC-: ədəd 'bite', əfəl 'leave, go from', əvrəʃ [æ'vrəʃ] '(insect) bite', əhəð [æ'hæð] 'swear', əhər [æ'hær] 'shut', əjər [ə'jær] 'throw', and əwəl 'turn'.

7.3.1.2 Heavy C-final short-V -Cv(C)CvC-, -CvCvCCvC-, etc.

Under this rubric I consider stems with Imprt shapes like the following (v = short vowel): bisyllabic -Cv(C)CvC- with three C-positions; trisyllabic -Cv(C)CvCCvC- with four C-positions; and the infrequent quadrisyllabic -CvCvCCv(C)CvC- with five C-positions. All of these are **heavy** verbs. Those with three C-positions are more specifically **middleweight**, and those with four or more C-positions are **superheavy** (§3.4.1.4).

The first and last C-positions in the Imprt in the verbs considered here are filled by single C's. In my lexicographic data, it appears that in superheavy stems the third C-position must be a cluster. Since few verbs with five C-positions are attested, there may be an accidental gap regarding C versus CC in the second C-position.

Superheavy stems may be full or partial reduplications, and may have an internal geminate, but internal structure is irrelevant to MAN stem formation and inflection.

Representative paradigm schemas are given in (349), again using P to index the stem-initial C, in order to make gemination and syncope effects transparent. Note that except for the Reslt of -Cv(C)CvC- verbs, the underlying marked grammatical accents of the Reslt and LoImpfP are in the third or fourth syllable from the right and are therefore overridden (or made redundant) by Default Accentuation.

(349) Paradigm Schemas

	middleweight	superheavy	
	-PvCvC-	-PvCvCCvC-	-PvCCvCCvC-
a. perfective system			
PerfP	-əPPəCæC-	-æPCæCCæC-	-əPPəCCæCCæC-
Reslt	-əPPíCæC-	-əP'íCəCCæC-	-əPP'íCCæCCæC-
		[Rslt forms dialectally with initial æ]	
PerfN	-əPPəCæC-	-æPCæCCæC-	-əPPəCCæCCæC-
b. short imperfective system			
ShImpfP	-æPPæCæC-	-əPCəCCəC-	-æPPæCCæCCæC-
Imprt	PæCæC	PəCəCCəC	PæCCæCCæC

c. long imperfective system

LoImpfP	-t-ðPæCaC-	-t-ÿPCəCCiC-	-t-aPæCCæCCaC-
LoImpfN	-t-ðPəCiC-	-t-əPCəCCiC-	-t-əPəCCəCCiC-
Prohib	-t-æPæCaC-	-t-əPCəCCiC-	-t-æPæCCæCCaC-

d. nominalization

VbIN	a-PáCəC	a-PCáCCəC	a-PəCCáCCəC
	a-PáCaC	a-PCáCCaC	a-PəCCáCCaC

In some dialects, the -PvCCvCCvC- type can have <H> rather than <L> vocalism in the short and long imperfective systems. So corresponding to PerfP -əffəršæššæn- 'hide) be coarse' we get Imprt fəršæššæn (T-ka) or fəršəššæn (A-grm, R), and LoImpfP -t-afəršæššæn- (T-ka) or -t-ifəršəššin- (A-grm, R).

The types in the three columns of (349) suffice to characterize the fuller set of heavy short-V verbs, whose morphophonological behavior points to the following subgroups. First, there is **middleweight** -CvCvC-. It begins with an open short-V syllable but does not undergo Stem-Initial Syncope because the stem is not superheavy. Second, there is the set of superheavy stems beginning in a short open syllable: -CvCvCCvC-, -CvCvCCv(C)vC-. These types do undergo Stem-Initial Syncope after Stem-Initial V-Insertion has applied (perfectives, inflectable ShImpf). Third, there are the stems, whether middleweight or superheavy, beginning in a closed syllable: -CvCCvC-, -CvCCvCCvC-, and in theory #-CvCCvCCvCCvC- (though I cannot cite a verb of this latter shape). Of course these stems do not syncopate for syllabic reasons, but they do undergo C₁-Gemination after Stem-Initial V-insertion (§3.4.8.1).

The **syncopating superheavy** types are illustrated in (350). Note that the PerfP has a surface stem-wide <L> melody, though one can make a fairly good case for deriving this from underlying <H L> by Stem-Initial V-Insertion, Stem-Initial Syncope, and Leftward L-Spreading (§3.2.7). The inflectable ShImpf also undergoes Stem-Initial V-Insertion and Stem-Initial Syncope. The short imperfectives and the LoImpfP have a stem-wide <H> melody.

(350) Syncopating Superheavy Stem with Initial Open Syllable

-mvlvwlvw-	-nvhvlvtvtvw-
'shine'	'sway'

a. perfective system

PerfP	-əmlæwlæw-	-ənhæltættæw-
Reslt	-əmilæwlæw-	-ənihæltættæw-
	[dialectally -æmi..., -æni...]	
PerfN	-əmlæwlæw-	-ənhæltættæw-

b. short imperfective system

ShImpfP	-əmləwləw-	-ənhəltəttəw-
Imprt	mələwləw	nəhəltəttəw

c. long imperfective system

LoImpfP	-t-ïmləwliw-	-t-inhəltəttiw-
LoImpfN	-t-əmləwliw-	-t-ənhəltəttiw
Prohib	-t-əmləwliw-	-t-ənhəltəttiw-

d. nominalization

VbIN	ɑ-mləwləw	ɑ-nhəltəttəw
	ɑ-mləwlaw	ɑ-nhəltəttaw

The **nonsyncopating** patterns are illustrated in (351). Stem-Initial Syncope applies only to superheavy stems, so *-PvCvC-* is too short to syncopate. The other types, *-PvCCvC-* and superheavy *-PvCCvCCvC-*, have an initial closed syllable that precludes syncope. In all these verbs, the perfectives have a composite <HL> melody, while the short imperfectives and the *LoImpfP* have a strict <L> melody. The perfectives and the inflectable *ShImpf* convert /-PvC.../ into *-vPPvC...* by Stem-Initial V-Insertion followed by *C₁-Gemination*.

(351) Nonsyncopating Middleweight and Superheavy Stems

	-bvrvj-	-kvykvy-	-zvlvbvby-
	'be boastful'	'shake off'	'be slippery'
a. perfective system			
PerfP	-əbbəɾæj-	-əkkəykæy-	-əzɹəlbæbbæy-
Reslt	-əbbíræj-	-əkkíykæy-	-əzɹíl bæbbæy-
PerfN	-əbbəɾæj-	-əkkəykæy-	-əzɹəlbæbbæy-
b. short imperfective system			
ShImpfP	-əbbəɾæj-	-əkkəykæy-	-əzɹəlbæbbæy-
Imprt	bəɾæj	kəykæy	zəlbæbbæy
c. long imperfective system			
LoImpfP	-t-əbəɾaj-	-t-əkəykay-	-t-azəlbæbbay-
LoImpfN	-t-əbərij-	-t-əkəykiy-	-t-əzəlbəbbiy-
Prohib	-t-əbəɾaj-	-t-əkəykay-	-t-əzəlbæbbay-

d. nominalization

VbIN	α-bárəj	α-káykəy	α-zəlbábbəy
	α-bárəj	α-káykəy	α-zəlbábbəy

Some features are shared by the paradigms in (350) and (351). The PerfN is always identical to the PerfP, unlike the case with light stems. The Reslt shows apparent insertion of *i* after the first C-position, representing underlying short /*v*/ subject to $\bar{\chi}$ -pc1 and to the H part of the <HL> perfective melody. The long imperfectives all have a -*t*- prefix, and show the lengthening feature $\bar{\chi}$ -*f* in the final syllable. The LoImpfP also shows $\bar{\chi}$ -pc1 which lengthens the first postconsonantal V; $\acute{\chi}$ -pc1 is presumably also at work but is overridden by Default Accentuation. The productive VbIN is masculine, begins with α-prefix, shows marked penultimate accent, and has <H> melody in the stem itself, with optional shift of ə to α in the final syllable.

Although the VbIN (and of course the LoImpfN) have a standard <H> stem melody in both cases, the vocalic melodies are different in perfective and some imperfective stems. In the perfectives, it may be possible to reduce the surface stem-wide <L> melody in (350) to the composite <HL> melody that is audible in (351). However, the short imperfectives and the LoImpfP have stem-wide <H> in (350) but stem-wide <L> in (351).

7.3.1.3 Light non-augment V-final -*v*(C)C*v*- (*α*/*ɪ* subclass)

Having covered light and heavy verbs with only short V's, we are now in the first of a long series of sections describing verbs that have at least one full V. In §7.3.1.3-6 I cover verbs whose only full V is the stem-final V. In §7.3.1.7 I turn to verbs whose only full V is the medial V. §7.3.1.8 covers non-adjectival verbs whose only full V is the stem-initial V. The verbs described in §7.3.1.9-16 have two full V's in at least some stems. In some cases these complex cases simply combine the vocalic alternations already seen in the different classes with just one full V, but there is also a large set including many adjectival verbs that have special idiosyncrasies.

There are three typical patterns for bisyllabic stems of basic shape -*v*(C)C*v*- ("v" is a full V or, in some classes alternating with an underspecified vowel). All verbs of this shape are non-augment, since the large class of verbs with Augment -*t*- requires that the core stem be heavy.

In the predominant **α/ɪ subclass**, which includes a number of very high-frequency verbs (e.g. 'eat', 'give', 'drink', 'go', 'go to', 'laugh', 'hear', 'kill', 'say', 'do', 'have', 'be in') the diagnostic stem shapes are PerfP -ə(C)Cα- and ShImpf /-æ(C)Cɪ-/. The ShImpf ends in a deletable high vowel /*ɪ*/, arguably equatable with /ə/, that appears word-finally as zero and before a C-initial subject suffix as ə. The verbs of this subclass can have any of the shapes -*v*C*v*-, -*v*PQ*v*-, or (with geminate cluster) -*v*PP*v*-.

In the **a/u subclass**, the PerfP is again $\text{-}\dot{\text{a}}\text{CCa-}$ but the ShImpf is $\text{-}\dot{\text{a}}\text{CCu-}$. All verbs of this type have a medial ungeminated cluster, i.e. -vPQu- . There are quite a few stems in this subclass, but individually their text frequency does not compare to those of the **a/i subclass**. In the fairly small **u/u subclass** (which includes some onomatopoeic verbs), both the PerfP and ShImpf stems are $\text{-}\dot{\text{a}}\text{(C)Cu-}$. There is an even mix of -vPQu- and -vCu- shapes, along with one case of -vPPv- in this subclass.

For **a/u** and **u/u** subclasses, nominal derivatives such as the VblN often show **stem-final w**, which could suggest an original final $*w$ lost in the inflected verb forms. There are also some cases of w in VblN's for the **a/i subclass**. In any event, a stem-final v is treated like a final vC synchronically for purposes of defining "heavy" versus "light." Thus -v(C)Cu- is light, as is -v(C)CvC- , while -CvCCu- is heavy (more specifically, middleweight), like -CvCCvC- . In other words, a stem-final v counts as though it contained an autonomous C-position (cf. §3.4.1.4). However, we cannot assign these verbs an underlying $C_3 = w$ synchronically, since w appears in C-final stems like -vjrvw- 'get'. Prasse's adventurous idea that at least the **a/i subclass** derives historically from stems with $C_3 = h$ (MGT 7.109) is also synchronically unimplementable because of C-final verbs like -vjdvh- 'be enough for'.

Verbs of the shapes -vCu- and -vCCv- , with initial as well as stem-final full V, treat the stem-final V either in the manner of the **a/i subclass** or in that of the **a/u subclass**, depending on the verb. See §7.3.1.15 for data and discussion.

For reference, the three bisyllabic patterns are presented schematically in (352), omitting some internal variation, using the most common shape -vPQu- . The -vPPv- and -vCu- shapes differ in the consonantism of long imperfectives, and some -vPQu- verbs of the **a/i subclass** have idiosyncratic long imperfectives as well.

(352) Verb Paradigms, **a/i**, **a/u**, and **u/u** subclasses of -vPQu- Verbs

	a/i	a/u	u/u
a. perfective system			
PerfP	$\text{-}\dot{\text{a}}\text{PQa-}$	$\text{-}\dot{\text{a}}\text{PQa-}$	$\text{-}\dot{\text{a}}\text{PQu-}$
Reslt	$\text{-}\dot{\text{a}}\text{PQá-}$	$\text{-}\dot{\text{a}}\text{PQá-}$	$\text{-}\dot{\text{a}}\text{PQú-}$
PerfN	$\text{-}\dot{\text{a}}\text{PQa-}$	$\text{-}\dot{\text{a}}\text{PQa-}$	$\text{-}\dot{\text{a}}\text{PQu-}$
b. short imperfective system			
ShImpf	$\text{/}\text{-}\dot{\text{a}}\text{PQI-}/$	$\text{-}\dot{\text{a}}\text{PQu-}$	$\text{-}\dot{\text{a}}\text{PQu-}$
Imprt	$\text{/}\dot{\text{a}}\text{PQI}/$	$\dot{\text{a}}\text{PQu}$	$\dot{\text{a}}\text{PQu}$

c. long imperfective system

LoImpfP	/-PóQQA-/	-PíQQu-	-PíQQu-
LoImpfN	/-PəQQI-/	-PəQQu-	-PəQQu-
Prohib	/-PæQQA-/	-PəQQu-	-PəQQu-

d. nominalization

VbIN [no standard pattern, see discussion below]

In the remainder of the present section I will cover the α/i subclass. §7.3.1.4 will consider the α/u and u/u subclasses. In §7.3.1.5 I turn to heavy non-augment V-final verbs, whose treatment of the stem-final V follows that of the α/i subclass. In §7.3.1.6 I discuss the rather different paradigm of V-final verbs (all heavy) that take the -t- augment.

The α/i subclass, alone of the light V-final subclasses, has no u vowels. One could experiment with either -v(C)Ca- or -v(C)Ci- as a basic lexical representation, but the choice between them is difficult because the vocalism in each actual stem can be attributed to overlain vocalic melodies, and since (as we have already seen in §7.3.1.2) lexical /i/ is rather unstable, often shifting to α .

Anyway, the α/i subclass respects the predominant <HL> perfective melody. Lacking a u, it has the expected <L> characteristic long imperfective melody. This could be an argument for taking the lexical stem-final V to be α , but there are other cases where a lexical i switches to α in the long imperfective, so the only thing we can conclude about the stem-final V is that it is not lexical u. The most unusual feature of the subclass, shared with heavy non-augment V-final stems (§7.3.1.5), is a composite <L H> melody in the short imperfective system.

In this short imperfective <L H> melody, and in the LoImpfN with its stem-wide <H> melody, the stem-final V is targeted by H. I transcribe the result as /i/, i.e. an underspecified high vowel (arguably identifiable with /ə/), in underlying representations. The /i/ has the manifestations summarized in (353).

(353) Manifestations of /i/

- | | |
|---|------------|
| a. word-final (with no subject suffix): | zero |
| b. before C-initial subject suffix: | ə |
| c. VV-Contraction with 1SgS /-æʎ/ or 2MaPl Imprt (˘)-æt | (˘)-æʎ/t |
| d. VV-Contraction with other /-æC/ suffix: | (˘)...ə-C. |

When VV-Contraction (37.c) (§3.2.3.3) occurs, /i/ is counted as a vowel in calculating the “antepenult,” so here Default Accentuation precedes VV-Contraction (§3.3.1.3). Likewise, a V deleted by Stem-Final i/A -Deletion (29) is counted (§3.3.1.2).

In (353.d), the schwa resulting from VV-Contraction triggers Short-V Harmony, changing /æ/ to ə in the preceding syllable. This fails to happen in (353.c), showing that 1Sg -æʀ has a “real” æ, not a /ə/ that has shifted to æ before the BLC ʀ. Short-V Harmony also applies in case (353.b) where the ə represents /i/ directly.

In T-ka and certain other dialects, the regular LoImpfP is /-PáQQA-/. The final /A/ is another deletable, underspecified stem-final V, this time low. Its manifestations are parallel to those of /i/ in (353). A summary is in (354). In some eastern dialects, instead of /A/ we can get /i/ or an overt full V (a or u) in the LoImpfP, see below.

(354) **Manifestations of /A/ (T-ka)**

a. word-final (no subject suffix):	zero
b. before C-initial subject suffix:	æ
c. VV-Contraction with 1Sg subject /-æʀ/:	(˘)-æʀ.
d. VV-Contraction with other /-æC/ subject suffix:	(˘)...æ-C.

As with /i/, /A/ is always counted for purposes of identifying the antepenult in Default Accentuation. There is no difference between (353.c) and (353.d) since /ææ/ contracts to æ in both cases, and the preceding syllable already has a harmonic æ.

MAN-stem paradigms for two a/i verbs are given in (355). ShImpf (and Imprt) are shown in the word-final form. For resyllabification in the short imperfective system of ‘go’, see discussion below.

(355) **Examples of a/i Subclass of -vCCu- Verbs (MAN Stems)**

	‘vomit’	‘go’	
a. perfective system			
PerfP	-əbsa-	-əjla-	
Reslt	-əbsá-	-əjlá-	
PerfN	-əbsa-	-əjla-	
b. short imperfective system			
ShImpf	-æbs	-əjəl	(</-æCCɪ-/)
Imprt	æbs	əjəl	(</æCCɪ/)
		[dialectally əgəl, əgəl, əglu]	
c. long imperfective system			
LoImpfP	-báss-	-jáll-	(</-CáCCA-/)
LoImpfN	-bæss-	-jəll-	(</-CəCCɪ-/)
Prohib	-bæss-	-jæll-	(</-CæCCA-/)

d. nominalization

VbIN [see discussion below]

To get the long imperfectives to come out correctly, it is useful to have a **pre-ablaut reconfiguration** (cf. §3.4.1.5) of -vPQv- to -PvQv-. The regular long imperfective melody and local formatives will convert this -PvQv- to e.g. LoImpfP /-PáQQA-/ , with the proviso that the stem-final V appears as deletable /A/ rather than a. This /-PáQQA-/ is parallel to LoImpfP -PáQQæC- for -vPQvC- verbs (§7.3.1.1). As noted elsewhere, this pre-ablaut reconfiguration has the effect of smuggling in a templatic element into long imperfective ablaut.

In some eastern dialects, especially A-grm, the LoImpfP of -vPQv- verbs has a <L H> **melody** similar to that of the short imperfectives. There is some fluctuation in the A-grm forms, but <L> -PáQQa- and <L H> -PáQQu- with overt final V are attested, and some other eastern dialects especially around Gao have /-PáQQr-/ with deletable high V, e.g. -PáQQə- rather than -PáQQæ- before C-initial suffix. Examples of the LoImpfP: for -vslv- ‘hear’ -sáll- (A-grm I R T-ka T-md) alongside -sáll- (Gao K-d) and -sállu- (A-grm Gao); for -vjlv- ‘go’ -jáll- or -gáll- (Im Gao R T-ka T-md) alongside -gáll- (A-grm), -gállu- (A-grm), and oddly Kidal-area -gállu- (K K-d K-f). The forms -sáll- and -j/gáll- are variably /-PáQQA-/ and /-PáQQr-/ when we add suffixes. Thus LoImpfP -t-áj- ‘do’ (see below) has 3MaPl t-ájjæ-n (e.g. T-ka) but t-ájjə-n (some Gao-area dialects).

Even in T-ka we get a stem-final V in the long imperfectives of syllabically comparable causatives, e.g. LoImpfP -s-áηηa- ‘cook’ (cf. Imprt s-æηη), causative of ‘be cooked, ripe’ (Imprt æηη, LoImpfP -náηη-, cf. A-grm LoImpfP -náηηa-).

The big difference between ‘vomit’ and ‘go’ in (355) is the **resyllabification** of ‘go’ in the short imperfective system. This resyllabification, required when the second C is a sonorant, involves Final-CC Schwa-Insertion (44) and (for T-ka but not other dialects) Epenthetic-Vowel Accentuation (70), accompanied by Short-V Harmony (§3.2.4, §3.3.2, §3.2.6). The derivation of əjál could be represented as /æjli/ → /æjál/ (Final-CC Schwa-Insertion and simultaneous Epenthetic-Vowel Accentuation) → əjál (Short-V Harmony). In other dialects we get forms like əglu (K Ts) with the final V retained, and forms like əgəl (R) where the loss of the final V forces Final-CC Schwa-Insertion but the accent does not shift.

In (356) I give complete **PerfP and Reslt paradigms** for another verb of the a/I type. Note the varying (morpho-)phonological treatments of the stem-final V.

(356) PerfP and Reslt Paradigms of *a/i* Verb -*vnšv-* ‘excuse’

	PerfP	Reslt
a. stem-final V appears as <i>a</i> with no subject suffix:		
1Pl	n-ənš <i>a</i>	n-ənš <i>á</i>
3MaSg	ĩ-nš <i>a</i>	i-nš <i>á</i>
3FeSg	t-ənš <i>a</i>	t-ənš <i>á</i>
b. contraction to <i>e</i> before suffixal / <i>æ</i> / (1Sg, 2Sg subjects)		
1Sg	ənš <i>e-ɾ</i>	ənš <i>é-ɾ</i>
2Sg	ənš <i>e-d</i>	t-ənš <i>é-d</i>
c. contraction to / <i>æ</i> / before suffixal / <i>æ</i> / (2MaPl, 3MaPl subjects)		
2MaPl	t-ənš <i>æ-m</i>	t-ənš <i>á-m</i>
3MaPl	ənš <i>æ-n</i>	ənš <i>á-n</i>
d. appears as shortened <i>æ</i> (PerfP) or full <i>a</i> (Reslt) before C-initial subject suffix		
2FePl	t-ənš <i>æ-mæt</i>	t-ənš <i>á-mæt</i>
3FePl	ənš <i>æ-næt</i>	ənš <i>á-næt</i>

While 1Sg, 2Sg, 2MaPl, and 3MaPl have subject suffixes of shape /-*æC*/, 1Sg and 2Sg contract the /*æ*/ with stem-final /*a*/ to give *e*, while 2MaPl and 3MaPl contract the same segments to *æ* (356.b-c). The *ə̇* accent in (356.c) shows that both the stem-final and suffix-initial V's are counted in Default Accentuation, which applies before VV-Contraction, so we end up with fixed penultimate accent. Other morphophonological interpretations of the derivations are possible (§3.2.3.3). Before a C-initial suffix, the /*a*/ is audibly shortened to *æ* by Presuffixal *a*-Shortening (§3.4.9.1) in the PerfP (356.d).

In the Reslt, the effects of Presuffixal *a*-Shortening are absent, either because the ablaut length formative *ɣ̣*-*pc1* prevents the shortening rule from applying (“protecting” the underlying full V), or because *ɣ̣*-*pc1* is applied (for light V-final verbs only) to the core stem plus the portion of a following subject suffix up to and including the first suffixal C. The two ways to derive Reslt 2MaPl t-ənš*á-m* (356.c) and 2FePl t-ənš*á-mæt* (356.d) are given in (357).

(357) Alternative Derivations for Suffixed Resultative Stems of -vnšv-
'excuse'

2MaPl	2FePl	comments
a. X#-pc1 protects stem-final V from Presuffixal α -Shortening		
/t-ənšá-æm/	/t-ənšá-mæt/	after ablaut
—	—	Presuffixal α -Shortening (blocked)
t-ənšá-m	t-ənšá-mæt	VV-Contraction
b. at least up to C ₁ of subject suffix in domain of ablaut (preferred analysis)		
/t-ənšá-æm/	/t-ənšá-mæt/	after basic perfective ablaut
/t-ənšæ-æm/	/t-ənšæ-mæt/	Presuffixal α -Shortening
/t-ənšæ-m/	—	VV-Contraction
/[t-ənšá-m]/	/[t-ənšá-m]æt/	Reslt ablaut ($\tilde{\chi}$ -pc1, $\acute{\chi}$ -pc1)
note: [...] shows rebracketing of ablaut domain		
t-ənšá-m	t-ənšá-mæt	surface forms

Accentuation is omitted in the first steps of these derivations (Default Accentuation is overridden by the ablaut accent formative and so has no audible effect.)

I prefer the analysis in (357.b). In effect, it teases apart two kinds of ablaut: the part that applies to all perfective stems (i.e. the vocalic melody and Melodic Attachment), and the local formatives ($\tilde{\chi}$ -pc1, $\acute{\chi}$ -pc1) that are unique to the Reslt stem. The Reslt-specific features are attached at a later point in derivations; in effect, they are attached to surface PerfP stems, with the proviso that for light V-final stems (and only these stems) at least up to the first C of a subject suffix is within the domain of ablaut. In the case of these light V-final stems, this **rebracketing** allows the Reslt forms with /-æP/ subject suffixes to create a /-v(C)CæP-/ unit that satisfies the requirements for non-vacuous application of the length formative $\tilde{\chi}$ -pc1, so for these suffixal categories the Reslt has a lengthened (as well as accented) stem-final V.

I will now show that the same rebracketing applies in the **PerfN**. For these same light V-final verbs, the PerfN differs audibly from the PerfP only in the nonsingular 2nd and 3rd person subject forms, which have the characteristic e vowel of the PerfN. In (358) I illustrate this with the PerfP and PerfN of another verb of this class, -vhlv- 'weep' (which metathesizes the two C's when they are adjacent, §3.2.2.1).

(358) PerfP and PerfN of a/ɪ Verb -vhlv- 'weep'

	PerfP	PerfN
a. PerfP = PerfN		
1Pl	n-əlha	wær n-əlha
3MaSg	ï-lha	wær i-lha
3FeSg	t-əlha	wær t-əlha
b. PerfP = PerfN (accidentally?)		
1Sg	əlhe-ɾ	wær əlhe-ɾ
2Sg	t-əlhe-d	wær t-əlhe-d
c. PerfP ≠ PerfN with /-æC/ subject suffix		
2MaPl	t-əlhæ-m	wær t-əlhe-m
3MaPl	əlhæ-n	wær əlhe-n
d. PerfP ≠ PerfN with /-Cæt/ subject suffix		
2FePl	t-əlhæ-mæt	wær t-əlhe-mæt
3FePl	əlhæ-næt	wær əlhe-næt

The PerfN differs from the PerfP only insofar as the PerfN ablaut formative ϵ -pc1f can produce an audible difference. This is only possible when the sequence to which ϵ -pc1f applies is a light stem ending in ...CæC-. If the stem is heavy, ϵ -pc1f does not attach audibly under any circumstances, and if the stem is light but does not have æ in its final syllable ϵ -pc1f can have no effect.

In (358.a-b), the stem is light but does not end in ...CæC-. Ironically, in (358.b) the final-syllable V is already e due to VV-Contraction. In (358.c), if we take the surface PerfP form including the suffix (and the results of VV-Contraction) as the domain of PerfN ablaut, we have the requisite light ...CæC- sequence (disregarding internal morpheme breaks), and the ϵ -pc1f formative can attach audibly. In (358.d), this is again true, if we allow only the suffix-initial C to be part of the ablaut domain. Suggested derivations, parallel to those in (357.b), above, are given in (359) for -vnšv- 'excuse'.

(359) Derivations for Suffixed PerfN Stems of -vnšv- ‘excise’

2MaPl	2FePl	comments
/t-ənša-æm/	/t-ənša-mæt/	after basic perfective ablaut
/t-ənšæ-æm/	/t-ənšæ-mæt/	Presuffixal α -Shortening along with Default Accentuation
/t-ənšæ-m/	—	VV-Contraction
/[t-ənše-m]/	/[t-ənše-m]æt/	PerfN ablaut (ϵ -pclf)
note: [...] shows rebracketing of ablaut domain		
t-ənše-m	t-ənše-mæt	surface forms

The **ShImpf** of this class has a stem that I represent as /-æCC₁-/ (see below for /-æj₁-/ from -vju- ‘do’). The phonology of /*l*/, cf. (353), above, is illustrated by the **ShImpf** paradigm of -vkšv- ‘eat’ in (360). The paradigm seems valid throughout the zone (including at least T-md, T-ka, K-f, R, and Ts).

(360) ShImpf Paradigm of -vkšv- ‘eat’

subject category	ShImpf form
a. stem-final V appears as zero with no subject suffix, surface «L» melody	
1Pl	n-ækš
3MaSg	Ø-ækš
3FeSg	t-ækš
b. / <i>l</i> + æ/ contract as æ before suffixal V	
1Sg	ækš-æʀ
c. / <i>l</i> + æ/ contract as æ before suffixal V, triggering Short-V Harmony	
2Sg	t-əkšə-d
2MaPl	t-əkšə-m
3MaPl	əkšə-n
d. V appears as ə before suffixal C, triggering Short-V Harmony	
2FePl	t-əkšə-mæt
3FePl	əkšə-næt

I recorded e.g. 3MaPl ækšə-n for some Kidal-area dialects.

In (360.b-c), the \tilde{v} accent indicates that accent does not shift to a preverbal Future particle *d*, as in *əd t-əkš-əd* ‘you-Sg will eat’. This is because the underlying stem-final /*l*/ and the suffix-initial V both count in Default Accentuation, which precedes VV-Contraction. In (360.a), even with /*l*/ the

forms are bisyllabic, so they yield their accent when Future òd is present, as in òd n-ækš 'I will eat'. In (360.d) the verb plus suffix add up to three syllables, so the default accent lands on the antepenult, and never shifts to a preceding particle.

Uncontracted stem-final /ɪ/ is realized as a surface V only in (360.d), where it appears as ə. In (360.b), /ɪ/ contracts with suffix-initial to give æ. By contrast, the same combination contracts to ə in (360.c). The difference between (360.b) and (360.c) in the form of the contracted V also affects the stem-initial syllable, since Short-V Harmony results in the ə...ə sequence in (360.c). The fact that we get æ not ə for the stem-initial V in (360.b) shows that the contracted V at the stem-suffix boundary is a genuine æ, not merely an underlying schwa that has been backed to æ before a BLC by a low-level process. In (360.d), the /ɪ/ occurs between two C's and so is realized as ə, again triggering Short-V Harmony to produce the ə in the first syllable.

In word-final position, ShImpf stems like -ækš 'eat' are phonologically stable since they have acceptable word-final CC clusters. If, however, the cluster is unacceptable, on the grounds that the final C is more sonorous than its predecessor, **resyllabification** applies. This takes the form of Final-CC Schwa-Insertion, adding epenthetic ə between the two C's. In T-ka but not other dialects, Final-CC Schwa-Insertion is accompanied by Epenthetic-Vowel Accentuation, so the epenthetic schwa has a marked accent.

Therefore ShImpf /-æjɪ-/ 'go' has the same paradigm as /-ækšɪ-/ 'eat' when a nonzero subject suffix is present. However, in the forms with no subject suffix, the two paradigms differ (361).

(361) Unsuffixed ShImpf of -vjɪv- 'go' and -vkšv- 'eat'

	subject	underlying	surface
a.	-vkšv- 'eat' (no resyllabification)		
	1Pl	/n-ækšɪ/	n-ækš
	3MaSg	/i-ækšɪ/	Ø-ækš
	3FeSg	/t-ækšɪ/	t-ækš
b.	-vjɪv- 'go' (resyllabification present, T-ka also shifts accent)		
	1Pl	/n-æjɪ/	n-əjəl
	3MaSg	/i-æjɪ/	Ø-əjəl
	3FeSg	/t-æjɪ/	t-əjəl
	[in other dialects n-əjəl, etc.]		

The regular **Imprt** Sg for -vCCv- stems of the α/ɪ subclass is æCC, exactly parallel to the ShImpf -æCC. The MaPl **Imprt** is æCC-æt, and the FePl **Imprt** is əCCə-mæt. The only oddity is that the MaPl **Imprt**, theoretically underlying /æCCi-æt/, contracts /ɪ + æ/ to æ rather than ə. In effect, the MaPl **Imprt** suffix is added directly to the surface Sg **Imprt**. The same resyllabification processes

that work in the unsuffixed ShImpf also affect the Sg Imprt. For ‘eat’ the imperatives are Sg ækš, MaPl ækš-æt, and FePl ækšə-mæt. For ‘go’ we get (with T-ka accentuation) Sg əjəl, MaPl əjl-æt, FePl əjlə-mæt. However, the Imprt (unlike the inflectable ShImpf) can be directly followed by clitics, including V-initial clitics like 3MaSgO -\e. These V-initial clitics block resyllabification: Imprt Sg /æʀrɪ/ ‘read!’ appears in isolation as æʀér, but with a V-initial clitic as æʀr-\e ‘read it!’. The exception is that in several dialects /-æswɪ-/ ‘drink’ remains resyllabified as -əsú- even before clitics, which in this event must take postconsonantal allomorphs, hence əsú-\tt ‘drink it’ alongside the regular but less common əsw-\e ‘drink it!’. For more detail on resyllabification see §3.2.4 and §3.3.2.

As noted above, **long imperfective** stems of the α/ɪ subclass require a pre-ablaut reconfiguration from -vPQv- to -PvQv-, whereupon the regular processes of long imperfective ablaut will work. Since there is no u vowel, the characteristic long imperfective melody is <L> in T-ka. The consonantal modification for this class is Γ-c2.

The regular **LoImpfP** for stems of the α/ɪ subclass that have a nongeminate PQ cluster is /-PúQQA-/. /A/ is a deletable stem-final low V; see (354), above, for its manifestations. A sample paradigm is in (362), using -vbsv- ‘vomit’ (PerfP -əbsa-).

(362) LoImpfP Paradigm of ‘vomit’

a. stem-final V is deleted word-finally

3FeSg	Ø-báss, rarely tə-báss
1Pl	nə-báss
3MaSg	i-báss

b. stem-final contracts with suffix-initial /æ/ to give æ

1Sg	báss-æʀ
2Sg	Ø-bássæ-d, rarely tə-bássæ-d
2MaPl	Ø-bássæ-m, rarely tə-bássæ-m
3MaPl	bássæ-n

c. Final V appears as æ before C-initial subject suffix

2FePl	bássæ-mæt, rarely tə-bássæ-mæt
3FePl	bássæ-næt

The /A/ is “counted” in Default Accentuation, in theory. This is moot in the LoImpfP, with its marked accent. In e.g. sàssæ-n-\tæt ‘they-Ma drink it-Fe’, from /sússæ-æn-\tæt/, arguably Default Accentuation produces /sassæ-æn-\tæt/. If so, when /æ + æ/ contract, the accent shifts to the next syllable to the left, so in the end there is no audible evidence here for counting stem-final /A/. I am also unable to find a context where a Prohib stem like -bæss- (/bæssA-/ shows concrete evidence that the /A/ is counted. The Prohib

occurs in contexts where clitics attach to the preceding Neg particle, and in combinations either with no suffix or with an *Impprt*-type *MaPl* or *FePl* suffix that imposes its own accent. However, the stem-final deletable /i/ in the *LoImpfN* is counted, hence *wær ð-bæss* 'he does not vomit' (from /wær i-bæssi/) and *wær bæssæ-n* 'they-Ma do not vomit'. For this reason, in suffixed *LoImpfP* cases like [sásssæn] from /sásssA-æn/ 'they-Ma drink', one could transcribe either *sæssæ-n* or *sásssæ-n*. I choose the latter, somewhat arbitrarily.

There are a number of **lexical idiosyncrasies** within the *a/I* class, mainly having to do with the formation of the long imperfectives. This is not surprising, since some of these verbs are very common. (363) summarizes basic data on regular and irregular members of this subclass that have a medial cluster. There are suggestions of a **template** /-CáPPA-/ in the *LoImpfP*, with C and PP filled in various ways.

(363) -v(C)Cv- Verbs of *a/I* Type

	gloss	PerfP	Impprt	LoImpfP (word-final)
a.	'vomit'	-əbsa-	æbs	-básss-
	'be poured'	-əʃfa-	æʃf	-ðáʃff-
	'laugh' (√dʒ)	-əʃsa-	æʃs	-ðáʒzz-
	'be implanted'	-əʁta-	æʁt	-ʁátt-
	'kill'	-əŋʁa-	æŋʁ	-náqq-
	'lie down'	-ənsa-	æns	-násss-
b.	'study'	-əʁta-	əʁár [æʁáér]	-ʁárr-
	'go away'	-əjla-	əjál	-jáll-
c.	'weep' (√hl)	-əlhɑ-	ælh	-háll-
d.	'excuse'	-ənša-	ənš	-nášš-, -názz-
	'be sold'	[same forms as for 'excuse']		
e.	'go to'	-əkka-	æk	-t-ákk-
f.	'eat'	-əkša-	əkš	-tátt- (or -t-átt-)
	'give'	-əkfa-	ək	-hákk-
g.	'drink'	-əswɑ-	əséw (əsú)	-sásss-
h.	'weave'	-əzzɑ-	əzz	-zátt-
	'be ripe'	-əŋŋɑ-	əŋŋ	-náŋŋ-
i.	'say'	-ənna-	ənn	-jánn-

The examples in (363.a-b) are fully regular. Those in (363.b, g) show resyllabification in the Imprt (and ShImpf). In (363.c), the only wrinkle is consonantal metathesis (§3.2.2.1). In (363.d), we have an alternation of š and z, the latter appearing optionally when reduplicated (§3.1.1.6). With the Imprt parenthesized, other stems belonging in (363.a) are -vksv- (æks) ‘sprout’, -vlsa- (æls) ‘get dressed’, -vlza- (ælz) ‘shave’, -vnda- (ænd) ‘collapse’, -vnta- (ænt) ‘begin’, -vrva- [æ'rvɑ-] (ærv) ‘be on fire’, -vrha- (ærh) ‘want’, -vrza- (ærz) ‘break’. Other verbs showing Resyllabification and so belonging in (363.b) are -vklɑ- (əkál) ‘spend the mid-day’, -vknɑ- (əkón) ‘make, do well, do much’, and -vsla- (əsól) ‘listen to’.

‘Go to’ (363.e) has LoImpfP -t-ákk-. This is arguably “regular” for the *a*/*i* subclass in the special case of a geminate cluster (-vPPv-), on the theory that the geminate cannot divide into two “autosegments” as do the P and Q of nongeminated -vPQv- in ablaut. A -t- prefix is common in long imperfectives of other verb classes, especially where the gemination ablaut feature (Γ-c2) is absent. One might argue that the initial t in -tátt- ‘eat’ is also this -t- prefix. However, -tátt- is so irregular we cannot tell, and one could equally well compare it to -sáss- ‘drink’ and suggest a minor pattern -PáPP- with a repeated C.

This leaves a number of (mostly high-frequency) verbs in (363.f-i). Their irregular long imperfectives have the same -CáPP- shape as the others. The verbs in (363.f) have stable CC clusters, the one in (363.g) has a CC cluster requiring resyllabification in the Imprt, and those in (363.h-i) have geminate clusters throughout.

For Timbuktu-area dialects the only case I recorded of V-final LoImpfP -CáPPv- was -jánnɑ- ‘say’, which is also irregular in other respects (PerfP -ənnɑ-). See §7.3.2.5 for more detail. Eastern dialects have a few more cases of -CáPPv-, though for no informant did I find this pattern consistently for the whole class.

In the **Kidal** area, -CáPP- is regular (-sáss-, -hákk-, -háll-, -sáll-, and -tátt- as in T-ka), but ‘go away’ in this dialect belongs to the *a*/*u* rather than *a*/*i* subclass and therefore has LoImpf -gíllu- (attested for K, K-d, K-f).

In **A-grm**, -CáPPv- (-CáPPɑ- or -CáPPu-) is regular when the geminated PP is a sonorant (liquid or nasal): -gállɑ or -gállu- ‘go’, -rárɑ- ‘read’, -hálla- ‘weep’, -náŋŋɑ- ‘be ripe’, -sállu- ‘hear’, and the irregular -gánnɑ- ‘say’. I also recorded -sássa- ‘drink’, -t-ákkɑ- ‘go to’, and -táttɑ- ‘eat’ for A-grm, but the other verbs with final obstruent lack the extra final V.

In the **Im dialect**, LoImpfP stems of some relevant verbs with medial sonorant preserve the final V: -hálla- ‘weep’, -xállɑ- ‘be dirty’, -jánnɑ- ‘say’, consistent with A-grm. However, the remaining attested LoImpfP forms for Im dialect show Stem-Final *i*/*A*-Deletion: -tátt- ‘eat’, -sáss- ‘drink’, -hákk- ‘give’, -gáll- ‘go’, -sáll- ‘hear’. The Im dialect is therefore intermediate between A-grm and T-ka.

Returning to T-ka and similar dialects, the LoImpfN corresponding to e.g. LoImpfP -káll- (/kállA-/) ‘spend mid-day’ is -kəll- (/kəllɪ-/), as in 3MaSg

wær ì-kəll ‘he doesn’t spend the mid-day’ and 3MaPl counterpart wær kəllə-n. The dialects with LoImpfP -CáPPa- have LoImpfN -CəPPi-, e.g. -kəlli-.

There is no completely productive masculine VblN form for a/i verbs. A type e-PæQQi, e.g. e-sælli ‘hearing’ for -vslv- ‘hear’, is common in eastern dialects but quite rare in T-ka. I can cite T-md e-bóssi for ‘vomit’, but MaPl èbs-an (unaccented) is the form in wider use. Many verbs use a feminine nominal as a VblN. t-è-CæPPE varying lexically with t-è-CæPe (in either case with Pl t-i-CáPP) is fairly common, as in t-è-ðæffe ‘pouring’ (Pl t-i-ðáff) and t-è-zæte ‘weaving’ (Pl t-i-zátt), but there are also some minor variations on this pattern, as in t-à-ðəzza, t-à-hæla (Pl t-i-háll), and t-a-jəllaw-t. For ‘go to’ the VblN is t-ìkaw-t.

There is one -vCu- verb, with just one stem C, that has a complete inflected paradigm that belongs in the a/i subclass (364).

(364) -vCu- Verb of of a/i Type (-vju- ‘do’)

gloss	PerfP	Imprt	LoImpfP
‘do’	-əja-	əj (/æjɪ/)	-t-ájj- (-t-ájjA-)

Other than lacking a medial cluster, this verb behaves exactly like e.g. -vkšv- ‘eat’ throughout the perfective and short imperfective systems. Since the stem has only one C, the long imperfectives use the -t- prefix to achieve the -PvQQ- shape from which the various long imperfective stems are generated. In most derivatives, the j is geminated, e.g. agentive e-m-æjj ‘doer’, so the difference between -vCCv- and -vCu- is neutralized. For more detail see §7.3.2.14.

Defective -vllv- ‘exist’, -vhv- ‘be in’, and -vlv- ‘have’ (§7.3.2.11-13), which have perfective-system stems only, belong to the general class of light V-final verbs. It is reasonable to think that they belong to the a/i subclass, but in the absence of imperfectives it is impossible to tell whether they are a/i or a/u verbs (see below for the latter). In Tawellemmett at least some of these verbs have imperfective paradigms, and for ‘be in’ I did record Imprt ìhi and LoImpfP -t-ìhi- in A-grm dialect, showing that the paradigm of at least this verb belongs rather with that of ‘be born’, which is quite isolated structurally in most of Malian Tamashek (§7.3.2.17).

7.3.1.4 Light non-augment V-final -v(C)Cu- (a/u and u/u subclasses)

Schematic paradigms were given in (352), above. MAN stem paradigms of specific verbs are given in (365) below. Here -vbðu- ‘be separated’ represents the a/u subclass, while -vndu- ‘be churned’ illustrates the u/u subclass.

(365) Examples of *ɑ*/u and u/u Subclasses of -vCCu- Verbs

	<i>ɑ</i> /u 'be separated'	u/u 'be churned'
a. perfective system		
PerfP	-əbɔ̄ɑ-	-əndu-
Reslt	-əbɔ̄ɑ-	-əndú-
PerfN	-əbɔ̄ɑ-	-əndu-
b. short imperfective system		
ShImpf	-əbɔ̄u-	-əndu-
Imprt	əbɔ̄u	əndu
c. long imperfective system		
LoImpfP	-bíɔ̄ɔ̄u-	-níɔ̄ɔ̄u-
LoImpfN	-bəɔ̄ɔ̄u-	-nəɔ̄ɔ̄u-
Prohib	-bəɔ̄ɔ̄u-	-nəɔ̄ɔ̄u-
d. nominalization		
VbIN	t-ɑ-bəɔ̄ɔ̄aw-t	t-ɑ-nəɔ̄ɔ̄aw-t

The u-final stems are unproblematic with reference to VV-Contraction. The u always surfaces, since it survives under contraction with initial /æ/ in subject suffixes: bíɔ̄ɔ̄u-n 'they-Ma are separated' (3MaPl -ǣn), t-əsu-m 'you-MaPl will cough' (2MaPl -ǣm)

The major difference between the *ɑ*/u and u/u subtypes is the final V of the perfective system stems. Another difference is that the *ɑ*/u subclass is limited to stems with a medial PQ cluster, while the u/u subclass has stems with either CC or C. Note in particular the consistent <H> vocalism throughout the imperfectives. Both types have a LoImpfP pattern -PíQQu- involving Γ-c2 (gemination) in addition to the usual V-length and accent features (χ̄-pc1, χ̄-pc1). Since <H> vocalism in light verbs is normally associated with a lexical high full V, this suggests that the lexical stem-final *v* is u in both subclasses, in contrast to the *ɑ*/t subclass. The difference between the two subclasses is that the *ɑ*/u subclass but not the u/u subclass allows the lexical u to be overridden by the L part of the perfective <H L> melody.

A fuller list of verbs of the *ɑ*/u type is in (366). All examples known to me have a nongeminate CC cluster.

(366) -vCCu- verbs, a/u subclass

gloss	PerfP	Imprt	LoImpfP
a. from Arabic			
'create'	-əbna-	əbnu	-bīnnu-
'have mercy'	-əʃfa-	əʃfu	-ʃīffu-
'not need'	-əʁna-	əʁnu	-ʁīnnu-
'benefit'	-ənfa-	ənfu	-nīffu-
'consent'	-ərɖa	ərɖu	-rīɖɖu-
'complain'	-əʃka-	əʃku	-ʃīkku-
'err'	-əxɖa-	əxɖu	-xīɖɖu-
'be dirty'	-əxla-	əxlu	-xīllu- (K)
b. PQ with Q more sonorous			
'be split'	-əfla-	əflu	-fillu-
'be sick'	-əkma-	əkmu	-kīmmu-
'go'	-əgla-	əglu	-gīllu- (K)
	[elsewhere a/i subclass, e.g. T-ka -vjlʊ-, LoImpfP -jáll-]		
'apply henna'	-əʁma-	əʁmu	-ʁīmmu-
'inherit'	-ətra-	ətru	-tīrru-
'tire easily'	-əzra-	əzru	-zīrru- (R)
'wring'	-əzma-	əzmu	-zīmmu-
c. other PQ			
'be separated'	-əbɖa-	əbɖu	-bīɖɖu-
'be complete'	-əmda-	əmdu	-mīɖɖu-

Quite a few of these are Arabic loans (366.a). Of the remaining stems, most have PQ clusters with Q more sonorous than P (366.b); I cannot say whether this is significant in any way.

The common VbIN pattern is the feminine nominal t-a-CəCCaw-t, hence t-a-bəɖɖaw-t, t-a-bənnaw-t, t-a-fəllaw-t, t-a-xəmmaw-t, and t-a-xənnaw-t. The final w here is possible evidence of an original stem-final w, but other interpretations are possible, and synchronically it would make more sense to say that the lexical u is mapped onto a C position as w.

There are some indications of leakage over time from this subclass into the more conspicuous a/i subclass. For -əkta- (Imprt əktu or ækt, LoImpfP -kīttu-) 'remember', -əʁna- (əʁnu varying with ærn, -rīnnu-) 'triumph', and -əʃla- (əʃlu or əʃəl, -ʃīllu-) 'distract', my data show variable Imprt (=ShImpf) forms: either əCCu, or else æCC (if necessary resyllabified to əCəC) as with the a/i subclass.

All verbs known to me with final u in both perfective and imperfective stems are in (367).

(367) -v(C)Cu- verbs, u/u subclass

gloss	PerfP	Imprt	LoImpfP
a. PQ cluster			
‘be churned’	-əndu-	əndu	-níddu-
‘bellow’	-ərku-	ərku	-ríkku-
‘moo, roar’	-ənju-	ənju	-níjju-
b. single C			
‘(dog) bark’	-əšu-	əšu	-t-íšu-
‘bray’	-əru-	əru	-t-íru-
‘be ancient’	[same forms as ‘bray’]		
‘cough’	-əsu-	əsu	-t-ísu-
c. PP cluster			
‘gag (vomit)’	-əqqu-	iqqu	-t-íqqu-
	[R dialect: PerfP also -əqqə-, Imprt also əqq]		

Several of the verbs denote noises or noisy bodily emissions and have an onomatopoeic flavor (‘bellow’, ‘moo’, ‘bark’, ‘bray’, ‘cough’, ‘gag’). Those in (367.a) have a nongeminate PQ cluster, in all cases with P more sonorous than Q. Those in (367.b) have a single C, and the one stem in (367.c) has a geminate. The latter stem (‘gag’) also occurs dialectally with an initial full V.

When stem-final u contracts with e.g. 3MaPl -æn, both underlying V’s are counted in connection with Default Accentuation, thus PerfN wər əsu-n ‘they-Ma barked’ from /əsu-æn/.

VbIN’s are t-ɑ-nəddaw-t, t-ɑ-ræko-t-t, t-ɑ-næjo-t-t, t-əqqu-t-t, t-əšu-t-t, t-ə-ru-t-t (‘braying’ and ‘being ancient’), t-ə-su-t-t.

One possible analysis of a/u and u/u verbs is that the **u** originates as a stem-initial V. This would mean taking e.g. PerfP -əndu-, Imprt əndu ‘be churned’ as having a basic representation -undv- rather than e.g. -vndu-. This might well work at least for those stems with a medial cluster. In this view, the u-final forms are the result of **u-Spreading** and **Medial V-Shortening** (§3.4.9.3). The best evidence for this is causative -s-undv- ‘churn’ (PerfP -əss-unda-, etc.), see §8.1.6. However, this is the only causative I can cite that is clearly connected, in form and meaning, with an underived a/u or u/u verb.

7.3.1.5 Heavy non-augment V-final -CvCCv- and -CvCvCCv-

There are also some non-augment heavy V-final verbs. The number of such stems is low, and they are dwarfed in number by the open-ended class of heavy augmented verbs (§7.3.1.6, below). Schematic MAN-stem paradigms are in (368). P denotes the first C, in order to make C₁-Gemination transparent.

(368) Verb Paradigms, Unaugmented -CvCCv- and -CvCvCCv- verbs

	middleweight -PvCCv-	superheavy -PvCvCCv-
a. perfective system		
PerfP	-əPPəCCα-	-æPCæCCα-
Reslt	-əPP íCCα-	-əP íCæCCα-
	[in dialects except T-ka and A-grm, Reslt begins with æ]	
PerfN	-əPPəCCα-	-æPCæCCα-
b. short imperfective system		
ShImpf	/-æPPæCCi-/	/-PəCəCCi-/
Imprt	PæCC	PəCəCC
c. long imperfective system		
LoImpfP	-t-əPæCCα-	-t-íPCəCCi-
LoImpfN	-t-əPəCCi-	-t-əPCəCCi-
Prohib	-t-æPæCCα-	-t-əPCəCCi-
d. nominalization		
VbIN	α-PəCC	α-PCəCC

The long imperfectives show both χ -pcl and $\bar{\chi}$ -f audibly, since the two targeted syllables are separated by another syllable.

The middleweight stems and the superheavy stems have quite distinct perfective and imperfective melodies. The middleweight type shows C₁-Gemination in the perfectives and in the inflectable ShImpf, while the superheavy type shows Stem-Initial Syncope (§3.4.8.1). In melodies and treatment of the initial C ("P"), the middleweight type -PvCCv- matches such C-final types as -Pv(C)CvC- and -PvCCv(C)CvC-, while the superheavy type -PvCvCCv- matches C-final types like -PvCv(C)CvC- (§7.3.1.2, above).

In (369) I give all verbs known to me of the types in (368). 'Resemble' in (369.b) is historically a reciprocal derivative.

(369) Heavy V-Final Verbs (without Resyllabification)

gloss	PerfP	Imprt	LoImpfP	VbIN
a. middleweight				
'harm'	-ə ərra-	lærr	-t-ə ærra-	α- ərr
'be searched'	-əffəyka-	fəyk	-t-əffəyka-	α-fəyk
'be spread'	-əfʃəmma-	fəmm	-t-əfʃəmma-	α-fəmm
'raise young'	-ərrəbba-	rəbb	-t-ərəbba-	α-rəbb

'have a scare'	-ərræfta-	ræft	-t-àræfta-	ɑ-rəft
'take care of'	-əwwəlla-	wəll	-t-àwəlla-	ɑ-wəll
'be disgraced'	-əzzəlla-	zəll	-t-àzəlla-	ɑ-zəll

b. *superheavy*

'be confused'	-əmtælla-	mətəll	-t-ĩmtəlli-	ɑ-mtəll
'be spicy'	-əvrærha-	vərərɥ	-t-ĩvrərhi-	ɑ-vrərɥ
'be fewer'	-əlkænsa-	ləkəns	-t-ĩlkənsi-	ɑ-lkəns
'deserve'	-ənhæjja-	nəhəjj	-t-ĩnhəjji-	ɑ-nhəjj
'resemble'	-ən-fæqqa-	n-əfəqq	-t-ĩn-fəqqi-	ɑ-n-fəqq

The inflected ShImpf forms are of the types -əffæyk 'be searched' (3MaPl Future ad æffæykæ-n 'they will be searched'), and -əmtəll (3MaPl Future ad əmtəllə-n 'they were confused'). Underlyingly, the ShImpf forms have a final /A/ for middleweight 'be searched' and a final /I/ for superheavy 'be confused'. The 3MaPl forms cited illustrate the contractions /A + æ/ to æ, and /I + ə/ to ə, respectively.

The VbIN forms are compatible with those of other heavy stems, with a-vocalic prefix in the Sg, stem-wide <H> melody, and (underlying) penultimate accent χ-pen.

The superheavy stems in (369.b), which begin in /CəCə.../ and are therefore subject to Stem-Initial Syncope, have surface <L> melody in the perfective. As noted elsewhere, a case can be made for underlying <H L> melody. This would directly account for the surface <H L> in Reslt stems like (T-ka) -əmtəlla- 'be confused', from /-əmətəlla-/ plus the Reslt ablaut formatives χ-pc1 and (in this case vacuous) χ-pc1. In this view, PerfP -əmtəlla- is from the same /-əmətəlla-/, via Stem-Initial Syncope and Leftward L-Spreading (§3.7.2). However, other dialects have Reslt forms of the type -əmitəlla- with initial ə, which may require a three-part <L H L> melody, or a vowel-height dissimilation targeting the initial vowel.

'Harm' (369.a) is denominative from əj|ləróra 'harm', an Arabic loan; several other dialects have ɖ for T-ka | in this word family (Arabic ɖ has a lateral articulation in some Hassaniya Arabic dialects, especially in Mauritania, and T-ka may have borrowed directly from one such dialect). 'Be fewer' in (369.b) also has an alternative augmented paradigm (Imprt ləkənsə-t, PerfP -əlkənsə-t).

The verb 'catch fever', cf. §7.3.1.7, has a paradigm of type (369.a) coexisting with a different paradigm.

When the stem ends in ...vPQv- where Q is a sonorant (and PQ are a nongeminate cluster), we get resyllabification behavior in the (unsuffixed) short imperfectives (such as the Imprt) and in the VbIN, parallel to resyllabification in other types of verbs. I illustrate with -lvjwv- 'bend' in (370).

(370) Heavy V-Final Verbs (with Resyllabification)

gloss	PerfP	Imprt	LoImpfP	VbIN
'bend, veer'	-əlləjwə-	læjæw	-t-ə̀ləjwə-	ɑ-ləjəww

Imprt *læjæw* is from /læjwɪ/, and *ɑ-ləjəww* is from /ɑ-ləjwɪ/. When the /ɪ/ drops, the *w* forces resyllabification. As usual, the sonorant is additionally geminated in the VbIN. In T-ka but not other dialects, accent shifts to the epenthetic *V* in the Imprt (and other *ShImpf* forms) and the VbIN. For other dialects I can cite K-d Imprt *ləjəw*, and A-grm VbIN *ɑ-ləjgwi*. For details on resyllabification see §3.2.4.

7.3.1.6 Augmented -CvCvCCv- (+ -t-), etc.

There are hundreds of verbs that take an suffixal Augment -t-, which is added directly to the final *V* of the stem. As noted in §7.1, some augment verbs are denominal in origin. The Augment appears when the stem has no subject pronominal suffix, and also appears before C-initial subject (and Participial) suffixes. The Augment is absent when the stem is followed by a V-initial subject suffix, and is absent in all nominals. See §7.1 for more on the Augment. I often use the notation (+ -t) after the basic form of a stem to indicate membership in the augment class.

The set of stems for representative augmented verbs is given in (371). The forms shown are those used with no subject suffix.

(371) Augment Verbs

	'moan'	'gallop'
a. perfective system		
PerfP	-ə̀hnæffæ-t	-ə̀ddərbæ-t
Reslt	-ə̀h̃næffæ-t	-ə̀dd̃ərbæ-t
PerfN	-ə̀hnæffæ-t	-ə̀ddərbæ-t
b. short imperfective system		
ShImpf	-ə̀hnəffə-t	-ə̀ddərbæ-t
Imprt	h̃ənəffə-t	dərbæ-t
c. long imperfective system		
LoImpfP	-t-̃hnəffi-t	-t-ə̀dərbə-t
LoImpfN	-t-ə̀hnəffi-t	-t-ə̀dərbi-t
Prohib	-t-ə̀hnəffi-t	-t-ə̀dərbə-t

d. nominalization

VbIN

à-hnœffi

à-dærbi

Aside from the Augment itself, these verbs have ablaut patterns similar to those of other verbs.

The vocalic melodies and stem-initial modifications of augmented verbs are consistent with those already discussed for heavy C-final stems. In the perfectives and the inflectable ShImpf, Stem-Initial V-Insertion applies. For superheavy stems whose basic form begins with a short-V open syllable, Stem-Initial Syncope applies. For middleweight stems (which never syncope), and for superheavy stems whose basic form begins with CvCC... or Cv..., we get C₁-Gemination instead of Stem-Initial Syncope. The vocalic melodies are also sensitive to overall heaviness and to the structure of the initial syllable of the basic form, as for C-final stems.

The long imperfectives have a final full V (due to the $\bar{\chi}$ -f ablaut formative). When the final full V of these forms has <H> melody, it may appear as i or u, depending on the verb, with considerable interdialectal variation for some verbs. The verbal noun ends in the same lexically basic vowel.

More examples of augment verbs are given in (372), showing representative MAN stem forms. Augment verbs that have a medial full V in addition to the stem-final V are covered later (§7.3.1.16).

(372) Augmented V-Final Verbs

gloss	PerfP	Imprt	LoImpfP
middleweight			
a. -CvCv- (+ -t), <L> in LoImpfP			
'be spotted'	-əbbəkæ-t	bəkæ-t	-t-əbəkæ-t
'be plump'	-əddæræ-t	dæræ-t	-t-ədæræ-t
'be joyful'	-əddəwæ-t	dəwæ-t	-t-ədəwæ-t
'be cut'	-əqqræ-t	qæræ-t	-t-əqæræ-t
'coil up'	-əlləkæ-t	ləkæ-t	-t-ələkæ-t
'scatter'	-əwwəšæ-t	wəšæ-t	-t-əwəšæ-t
'run off w'	-əzzəwæ-t	zəwæ-t	-t-əzəwæ-t
'be hard'	-əzzəwæ-t	zəwæ-t	-t-əzəwæ-t
b. -CvCv- (+ -t), <H> in LoImpfP			
'lie low'	-əbbəkæ-t	bəkæ-t	-t-ībəkæ-t
'be slave'	-əkkəlæ-t	kəlæ-t	-t-īkəlæ-t
'gather'	-əkkəmæ-t	kəmæ-t	-t-īkəmæ-t
'curdle'	-əkkæræ-t	kæræ-t	-t-īkæræ-t
			[LoImpfP also -t-əkæræ-t]

'report'	-əlləvæ-t	lævæ-t	-t-ɪləvʉ-t
'(fire) die'	-əmməkæ-t	mækæ-t	-t-ɪməku-t

c. -CvCCv- (+ -t)

'gallop'	-əddərbæ-t	dærbæ-t	-t-ədærbə-t
'farm'	-əqqərhæ-t	værhæ-t	-t-əværhə-t
'haggle'	-əttərmæ-t	tærmæ-t	-t-ətærmə-t
'carry'	-əllənʒæ-t	lənʒæ-t	-t-ələnʒə-t

d. -CvCv- (+ -t), adjectival (all known exx.)

'be brown'	dæmə-t	dæmæ-t	-t-ədæmə-t
'be brown'	dævə-t	dævæ-t	-t-ədævə-t
'be speckled'	kæʃə-t	kæʃæ-t	-t-əkæʃə-t
'be spotted'	mæʒə-t	mæʒæ-t	-t-əmæʒə-t

superheavy (syncopating)

e. -CvCvCv- (+ -t)

'be dying'	-æjvævæ-t	ʒəvævæ-t	-t-ɪjvævæ-t
'wail'	-æʃvævæ-t	ʃəvævæ-t	-t-ɪʃvævæ-t
'squeal'	-ækzæzæ-t	kəzæzæ-t	-t-ɪkzæzæ-t

f. -CvCvCCv- (+ -t), with i in LoImpfP

'moan'	-əhnæffæ-t	hənæffæ-t	-t-ɪhnæffi-t
'crouch'	-əbkæyyæ-t	bəkæyyæ-t	-t-ɪbkæyyi-t
'roll up'	-æjləŋkæ-t	ʒələŋkæ-t	-t-ɪjləŋki-t
'comb'	-æʃləŋkæ-t	ʃələŋkæ-t	-t-ɪʃləŋki-t

g. -CvCvCCv- (+ -t), with u in LoImpfP; less common than (f)

'be dipped'	-ælbæqqæ-t	ləbæqqæ-t	-t-ɪlbæqqu-t
'be shut'	-æŋkæbbæ-t	nəkæbbæ-t	-t-ɪŋkæbbu-t

[LoImpfP also -t-ɪŋkæbbi-t]

h. -CvCvCCvCv- (+ -t)

'nibble'	-æjmænʒæmæ-t	ʒəmənʒæmæ-t	-t-ɪjmənʒæmi-t
'cover self'	-əbkæmbækæ-t	bəkəmbækæ-t	-t-ɪbkəmbæki-t
'press on'	-ædmændæmæ-t	dəməndæmæ-t	-t-ɪdməndæmi-t
'curl up'	-æknənnæwæ-t	kənənnæwæ-t	-t-ɪknənnæwi-t

superheavy (geminating)

i. -CvCCvCv- (+ -t)

'growl'	-əhhənʒæmmæ-t	hænʒæmmæ-t	-t-ahænʒæmma-t
'rinse'	-əlləllæwæ-t	ləllæwæ-t	-t-aləllæwa-
'file'	-əzzəzzæwæ-t	zæzzæwæ-t	-t-azəzzæwa-t

lexical full *v* is specifically identified as a high vowel, *i* or *u* depending on the verb. For verbs with both medial and final full V's, e.g. -CvCv-, -CvCCv-, and -CvCCvCCv- (+ -t), see §7.3.1.14-15.

The simplest cases are those with medial *a* in the perfective, versus a lexical choice of *u* or *i* in the imperfective stems and in the VblN. This is typical of **superheavy** -CvCvCvC- with no medial CC clusters. MAN paradigms for two representative verbs are given in (373).

(373) -CvCvCvC- (-CvCuCvC-) and -CvCiCvC-) Verbs

	‘gape’	‘do sorcery’
	-bvlulvɣ-	-kvrikvw-
a. perfective system		
PerfP	-æblalæɣ-	-ækɾakæw-
Reslt	-əb̥ilalæɣ-	-ək̥ɾakæw-
	[Reslt dialectally -æb̥i..., -æk̥i...]	
PerfN	-æblalæɣ-	-ækɾakæw-
b. short imperfective system		
ShImpf	-əblulæɣ-	-əkɾikæw-
Impɾt	b̥əlulæɣ	k̥əɾikæw
c. long imperfective system		
LoImpfP	-t-ɪblulur-	-t-ɪkɾikiw-
LoImpfN	-t-əblulur-	-t-əkɾikiw-
Prohib	-t-əblulur-	-t-əkɾikiw-
d. nominalization		
VblN	a-blulæɣ	a-kɾikæw
	a-blulæɣ	a-kɾikaw

Using the Impɾt for citation purposes, other verbs with medial *u* like b̥əlulæɣ include dəkukəm ‘walk softly’, dərurəm ‘(liquid) run’, fərurəd ‘eat voraciously’, gərurəs ‘sing’, ɣəlurəl ‘(liquid) gurgle’, hərurəɣ ‘migrate’, and k̥əɾukəɾ ‘rotate’. Counterparts with *i* instead of *u* are considerably less common, but parallel to k̥əɾikæw I can cite nəmirək ‘be in order’ and wəlɪwəl ‘be in motion’. The verb ‘need’ can go either way, both məɣutər and məɣitər being attested.

Since one set has medial *u* while the other has medial *i* in the imperfectives and VblN, it seems clear that this V is lexical. It shows up overtly in stems with <H> melody. The *a* in the perfectives is therefore due to superimposition of a <L> melody, or (in my preferred analysis) the L component of an underlying <HL> perfective melody whose H component is squelched by Stem-Initial Syncope and Leftward L-Spreading (§3.2.7). In

contrast to some other verb shapes to be discussed below, with -CvCvCvC- stems the medial high V is stripped of its lexical vowel-quality features under perfective ablaut and becomes a pure α .

Perfectives and the inflectable ShImpf show Stem-Initial V-Insertion, and the stem-initial CvCv... makes these stems eligible for Stem-Initial Syncope. Long imperfective ablaut audibly expresses all local ablaut formatives, including both length formatives $\bar{\chi}$ -pcl and $\bar{\chi}$ -f. Since there is a lexical high V, the long (as well as short) imperfective has <H> melody. The verbs with medial lexical u are also eligible for u-Spreading (§3.4.9.3), hence the double u in LoImpfP -t- \bar{i} blulur- in (373). Medial V-Shortening, which often co-occurs with u-Spreading, fails to apply since the medial u is not followed by a CC cluster. In A-grm dialect, u-Spreading does not exist, hence -t- \bar{i} blulir-.

Having dealt with the superheavy verbs, I now turn to **middleweight** verbs. I begin with those that have a **medial CC cluster**, i.e. -C \bar{u} CCvC-. I know of no such verb with medial i, but there are a number with medial u, like -huššvl- in (374).

(374) Sample -CuCCvC- Verb

‘be obligatory’
-huššvl-

a. perfective system

PerfP	-əhhuššæl-
Reslt	-əhhúššæl-
PerfN	-əhhuššæl-

[in most non-T-ka dialects, perfectives begin with æ not ə]

b. short imperfective system

ShImpf	-əhhuššəl-
Imprt	hùššəl

c. long imperfective system

LoImpfP	-t- \bar{i} həššul-
LoImpfN	-t-əhəššul-
Prohib	-t-əhəššul-

d. nominalization

VbIN	α -húššəl
------	------------------

Other verbs of this set, cited in the Imprt, are *bùmbəy* ‘lie face-down’, *ɽùrhəs* ‘freeze’, *hùjjəj* ‘perform the pilgrimage to Mecca’, *hùnnəj* ‘have an eye ailment’, and *hùnnəɽ* ‘(nose) bleed’ (LoImpfP -t- \bar{i} hənšur-, etc.), among others. For *dùrhən* ‘desire’, the LoImpfP is recorded as either t- \bar{i} dərhun- with

<H> melody or as t-àdærhan- with <L> melody; the latter may be influenced by the related noun dèrhan '(a) wish'.

After the usual stem-initial changes in the perfective and inflectable ShImpf, the perfective melody <H L> operates on /-vhhuššvl-/ to produce (T-ka) -əhhuššæl-, consistent with the regular «H H L» surface melody found in other perfectives with three syllables. In most dialects, we get -əhhuššæl-, suggesting a variant tripartite <L H L> melody, as in other stems with a medial high V.

In the long imperfectives, the basic ablaut rules produce e.g. LoImpfP /-t-ihuššil-/, which actually surfaces as such in A-grm -t-ihuššil-. In T-ka and most other dialects, however, /-t-ihuššil-/ must undergo u-Spreading to /-t-ihuššul-/ and then Medial V-Shortening due to the medial CC cluster to /-t-ihəššul-/ before surfacing as -t-ihəššul-.

I now turn to **middleweight verbs with no CC cluster**, i.e. -CuCvC-. Both full high V's are possible, hence -CuCvC- and -CiCvC- types. The latter type has unstable vocalism as i alternates with a, so I begin with the more straightforward -CuCvC- type. It is exemplified by the MAN stem paradigm of 'marry' in (375).

(375) -CuCvC- Stems

		'marry'
		-dubvn-
a. perfective system		
	PerfP	-ədobæn-
	Reslt	-ədóbæn-
	PerfN	-ədobæn-
b. short imperfective system		
	ShImpf	-ədubæn-
	Imprt	dùbæn
c. long imperfective system		
	LoImpfP	-t-ìdubun-
	LoImpfN	-t-ədubun-
	Prohib	-t-ədubun-
d. nominalization		
	VbIN	a-dúbæn, a-dúban

Others of this type, cited in the Imprt, are búbəš 'be a cousin', búbər 'be rude', dùkəl 'have sore feet', hùnən 'have pity', hùrər [ho'rær] 'fear', jùðəy 'express thanks', jùrəj 'be free to move', kùfər 'be a non-Muslim', kùyəs

'plod on wearily' (K-d), lùløy 'preach', mùrød 'crawl', rùrød 'rush', šùhər or zùhər 'be stocky, well fed', šùšəb or žùžəb 'be marvelous', and tùrər 'crave'.

The long imperfectives and VbIN's are unremarkable. The syllabic structure permits full expression of the local formatives including both length formatives. The lexical u triggers <H> long (as well as short) perfective melody.

There are two notable features in (375). The first of these can be seen in the onsets of the perfectives and of the inflectable ShImpf. These stems show Stem-Initial V-Insertion, and (because of the full V) are not eligible for Stem-Initial Syncope, so we would expect C₁-Gemination to take place (§3.4.8.1). However, **C₁-Gemination fails to apply**, as in e.g. PerfP -ə̀mørəd- 'crawl'. Once again, A-grm dialect is exceptional, since it allows C₁-Gemination in these verbs: PerfP -ə̀mmørəd- 'crawl'.

The other striking feature about this verb class is the vocalism of the perfectives. To get from /-vCuCvC-/ (after Stem-Initial V-Insertion) to the observable PerfP -ə̀CoCæC-, we need a **stem-wide perfective <L> melody**. Usually, a surface perfective <L> melody can be reduced to <HL> by assuming that Stem-Initial Syncope and Leftward L-Spreading have applied §3.4.3.2, (§3.4.8.1), but here there is no syncope. We are therefore compelled to assume an idiosyncratic stem-wide <L> for these verbs. Moreover, when this <L> combines with lexical u, the result in this case is not ɑ as in e.g. -ə̀bləlæɾ- from lexical -bvlulvɾ- in (373), above. Instead, we get a **mid-height vowel o** that is intermediate between the lexical u and the ideal melodic target ɑ. I refer to this as **V-Height Compromise** (§3.4.7), and in verbs it applies specifically to middleweight verbs beginning in Cu... or Ci...

I now discuss the even trickier verbs for which a lexical representation -CiCvC- seems appropriate, though even this is subject to debate. Consider the two MAN stem paradigms in (376), noting their differences in the vocalism of the short imperfective system, and their identical characteristic long imperfective <L> melody.

(376) -CiCvC- Stems (T-ka)

	'gesture' -šiwvj-	'flee' -jiwvɖ-
a. perfective system		
PerfP	-ə̀šewæj-	-ə̀jewæɖ-
Reslt	-ə̀šéwæj-	-ə̀jéwæɖ-
PerfN	-ə̀šewæj-	-ə̀jewæɖ-
b. short imperfective system		
ShImpf	-ə̀šiwəj-, -ə̀šawəj-	-ə̀jawæɖ
Imprt	šiwəj, šawəj	jəwæɖ

c. long imperfective system

LoImpfP	-t-àšawaj-	-t-àjawad-
LoImpfN	-t-əšiwij-	-t-əjiwiḍ-
Prohib	-t-əšawaj-	-t-əjawad-

d. nominalization

VblN	a-šiwəj, a-šiwaj	a-jīwəḍ, a-jīwad
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If we focus first on the perfectives and the VblN, both ‘gesture’ and ‘flee’ are exactly parallel to -CuCvC- stems like ‘marry’ in (375), above. The common features are: a) the lexical high V is visible in the VblN; b) the perfectives (and here we can throw in the ShImpf) show Stem-Initial V-Insertion but no C₁-Gemination; and c) the perfectives have stem-wide <L> vocalism but respect V-Height Compromise, resulting in medial e in e.g. PerfP -əšewəj- in (376) parallel to medial o in e.g. PerfP -ədobæn- (375).

For ‘gesture’ in (376), the parallelism with the -CuCvC- stems extends into the short imperfective system; compare Imprt šiwəj ‘gesture!’ to dūbən ‘marry!’. However, for ‘flee’ in (376), the vowel-quality features of the lexical i are absent in Imprt jəwəḍ, which has strict **short imperfective <L> melody** and does not compromise on V-height. Even ‘gesture’ has variants of this type. Moreover, in the long imperfectives both ‘gesture’ and ‘flee’ show a **characteristic <L> melody**, in contrast to the <H> melody for long imperfectives of -CuCvC- stems (-t-īdubun- ‘marry’).

For T-ka, I can cite no other verb of the ‘gesture’ type in (376). The ‘flee’ type, with its more radical generalization of <L> melodies in short as well as long imperfectives, is also found with the following underived stems, cited in the diagnostic Imprt: bəwəs ‘be wounded’, məšəl ‘be sent’ (frozen passive), məwəḍ ‘be young’, žəhəd ‘fight holy war’, and žəwəb ‘reply’. Including ‘flee’ and ‘gesture’, five of the seven synchronically underived stems known to me **have w as medial C**, suggesting that -CiCvC- is basically a variant of -CuCvC- when C₂ is w. This is a **dissimilatory** phenomenon on a par with others considered in §3.4.10. The remaining two ‘flee’ type stems are məšəl ‘be sent’, a frozen -m- mediopassive (cf. -ušvl- ‘run’), and the Arabic loan žəhəd ‘fight holy war’ whose lexical i was probably suggested by the Arabic noun jihaad- (borrowed as Tamashek əlžihəd) which likely suggested the vocalism of Tamashek VblN a-žihəd.

There is some interdialectal instability in the vocalism of these -CiCvC- verbs. For ‘gesture’, Imprt šiwəj is attested for T-ka and K-d, but other dialects merge this verb with the ‘flee’ type and allow only <L> melody in short imperfectives, hence Imprt šəwəj (or šəwəg) not only as a variant in T-ka but also in A-grm, I, and R. Some dialects do allow C₁-Gemination in perfectives and the inflectable ShImpf. C₁-Gemination is standard in A-grm, e.g. PerfP -əššewəg- ‘gesture’, and I can cite K-d -əššewəj-, cf. ungeminated -əšewəj- in I, R, and T-ka.

For **-biwvs-** ‘be wounded’, the PerfP is T-ka -æbewæs- and A-grm -æbbewæs-. However, for R and K-d I got an alternative basic stem **-buyvs-**, hence PerfP -æboyæs-. For other cases of **metathesis** see §3.2.2.1.

Another irregular verb is ‘**go north**’ (also ‘look up’ and other senses), whose basic form seems to hesitate between **-juzvvy-** and **-jizvvy-**. Most of the data point to **-juzvvy-** (e.g. PerfP attestations are widespread -æjozæy- or -ægozæy-, and A-grm -əgguzzæy-; LoImpfP attestations are widespread **-t-ijuzuy-** and A-grm **-t-iguzziy-**). However, **α-jízay** is attested (T-md) as an uncommon term for ‘north’, the regular VbIN is attested both as **α-júzay** and **α-jízay**, and Imprt **jûzæy** was recorded for T-ka (versus **jûzæy** in most dialects, A-grm **gûzæy**). That **jûzæy** with short imperfective <L> melody, usually a sign of lexical *i*, was once more widespread is suggested by the archaic phrasal compound **jûzæy t-á-fukk** ‘*Heliotropium* plant’ (originally “look/go up to the sun!”), cf. §5.2.4.8.

As throughout this chapter, the data here are from underived verbs. However, in the case of **-CvCvC-** verbs it is important to mention that causative **-s-vcvC-** and mediopassive **-m-vcvC-**, whether derived from **-vPPvC-** or **-vcvC-** stems, have their own idiosyncracies with respect to vocalism. Specifically, **mediopassive -m-vcvC-** strongly favors *i* as medial full V and avoids C₁-Gemination, hence **-m-icvC-** (PerfP **-æm-eCæC-**, Imprt **m-àCæC**), while **causative -s-vcvC-** (at least in T-ka) strongly favors *u* and implements C₁-Gemination in the perfectives (but not in the ShImpf), hence **-s-ucvC-** (PerfP **-æss-oCæC-**, Imprt **s-àCæC**). See chapter 8 for details including dialectal variation.

It can also be mentioned that non-augment V-final **-CvCv-** verbs, which generally treat the medial vowel in the same way as **-CvCvC-** stems, include a few **-CvCv-** verbs with lexical *u* (as well as some **-CvCv-** verbs with medial *i*) that have <L H> melody in imperfectives: **-hunv-** ‘move out’, PerfP **-æhona-**, Imprt **/hɑn1/**. A greater number of **-CvCv-** verbs, however, have <H> imperfective melody (§7.3.1.14).

7.3.1.8 Full-V-initial C-final -vcvC- and -vCCvC-

Verbs with final V, and verbs with medial full V, have now been covered. It remains to cover verbs with initial full V, before proceeding to verbs with more than one of these characteristics, and to adjectival verbs that have their own special features.

Initial full V’s occur **only in light stems**. The basic stem-shapes for this section are therefore **-vcvC-** and **-vCCvC-**. (For verbs with both initial and final full V’s, i.e. **vcvC-** and **-vCCvC-**, see §7.3.1.15). Heavy stems (excluding imperfectives of adjectival verbs) are all C-initial.

The major set of **-vcvC-** and **-vCCvC-** verbs has a complex vocalism, where the initial full V appears as *o* in perfectives, *α* in short imperfectives, and (in most dialects) *i* in long imperfectives. I will present this class first.

Later, in (379), I will present a handful of -vCvC- and -vCCvC- verbs that have different paradigms featuring initial u at least in the perfectives.

In (377), 'tie' represents the bulk of -vCvC- verbs, 'go up' represents the special cases of -vCvC- where C₁ is w, and '(animal) die' represents -vCCvC- with medial cluster.

(377) -vCvC- and -vCCvC- Stems

	'tie'	'go up'	'(animal) die'
	-ujvy-	-uwvn- (w-medial)	-uʁsvy-
a. perfective system			
PerfP	-òjæy-	-æwwæn-	-òʁsæy-
Reslt	-ojáy-	-æwwán-	-oʁsáy-
PerfN	-òjey-	-æwwen-	-òʁsey-
	[for dialectal variants of the 'go up' type, see (378), below]		
b. short imperfective system			
ShImpf	-àjəy-	-àwən-	-àʁšəy-
Imprt	àjəy	àwən	àʁšəy
c. long imperfective system			
LoImpfP	-t-íjəy-	-t-íwən-	-t-íʁsəy-
LoImpfN	-t-íjəy-	-t-íwən-	-t-íʁsəy-
Prohib	-t-íjəy-	-t-íwən-	-t-íʁsəy-
d. nominalization			
VbIN	íjjuy	óggan	íʁsəy [e'ʁsi]

Since the PerfP forms end in ...æC- (with short V), the PerfN ablaut formative ϵ -pCf audibly converts /æ/ to e, and the Reslt accent and length formatives are also audible. Since the stems are light, there are not enough syllables to allow long imperfective formative $\bar{\chi}$ -f to apply, but $\bar{\chi}$ -pC1 and $\bar{\chi}$ -pC1 in the LoImpfP are evident.

Leaving aside the perfectives of 'go up' for the moment, we observe perfective o, short imperfective a, and characteristic long imperfective i. These alternations are difficult to make sense of in terms of normal Tamashek verb ablaut and associated phonology. The following points may help.

First, PerfP -ò(C)CæC- might be derived from /-u(C)CvC-/ if we overlay a perfective <L> melody and allow V-Height Compromise to combine lexical u with <L> to give mid-height vowel o. PerfP -ædobæn- 'marry' (§7.3.1.7, above) is a much clearer case of u plus <L> becoming o in the same ..._CvC- position in a stem. The derivation is much less transparent for the perfectives in (377) because there is much less evidence from other MAN stems and derivatives for a lexical stem-initial u in 'tie' or '(animal) die'.

The short imperfectives in (377) clearly have an overlaid <L H> melody, which is also found with non-augment V-final verbs including -v(C)Cv-, a/i subclass, e.g. *Imprt æŋɾ* 'kill!' from /æŋɾɪ/ (§7.3.1.3).

The <L> characteristic melody of the long imperfectives suggests the presence of a lexical high V (i or u). There is no actual u in these long imperfectives, which normally points to i as the default. The VbIN type *ijjuy* does have a u, but transposed to the second syllable; the other VbIN's in (377), *ággan* and *ĩrsəy*, do not have a u.

The evidence points to lexical representations with initial high V, i.e. -i(C)CvC- or -u(C)CvC-, but it is difficult to make the call between these two. Given that there are some other verbs with a stronger claim to be u-initial, see below, I would incline toward -i(C)CvC- as basic form for the verbs in (377). The puzzling o in the perfective has an (admittedly distant) echo in the strong preference for perfective o in causative verbs of the basic shape -s-iCvC-, see §8.1.5.

The LoImpfP pattern -t-íCəC- occurs in all dialects checked except A-grm. In R dialect, the schwa undergoes Syncope before V-initial suffix, and V-initial subject suffixes (all of which have the shape -æC) show ə instead of æ, as in *t-ĩhr-ən* 'they-Ma share in common'. In other words, in this dialect, when a schwa is deleted in the final syllable of the stem, its <H> melody is transferred to the suffixal V. R dialect also metathesizes the two C's brought together by Syncope in certain cases (§3.2.2.1). By contrast, T-ka does not syncopate and does not spread the <H> melody: *t-ĩhər-æn*. In A-grm, instead of -t-íCəC- we generally get LoImpfP -t-úCæC- with <L> melody.

Using the PerfP for citation, all other examples of the type -òCvC- known to me are -òbær- 'grab a handful', (dialectal) -òbæz- 'take', -òðæn- 'be missing', -òðær- 'push down', -òðær- 'soak (hide)', -òfæl- '(hide) be tanned', -òxəy- 'strangle', -òhæx- 'snatch', -òhær- 'have in common', -òhæz- 'approach', -òjæð- 'tap (donkey)', -òjæl- 'decline to accept', -òjær- 'surpass', -òjæs- 'sew coarsely', -òjæz- 'encounter (by chance)', -òkæð- 'be disgusted', -òkæl- 'step on', -òkær- 'steal', -òkəy- 'go past', -òlæh- 'resemble', -òlæj- 'set up', -òlæl- 'become lodged', -òlæs- 'repeat', -òləy- 'cut off' and homonym 'dangle', -òmæd- 'gather (wild grain)', -òmæs- 'wipe', -ònæf- 'pull by the tail', -ònæn- '(camel) be trained', -ònæs- 'hobble', -òræj- 'contribute', -òræm- 'test', -òræw- 'give birth', -òrəy- 'cede', -òsæx- 'unite', -òsæm- 'be jealous of', -òsæs- 'squeeze', -òšæl- 'run' (VbIN *ázzal*, cf. §3.1.1.5), -òtæs- 'intend', -òyæs- 'sneak up on', and -òzær- 'suffer'. None of these verbs has w as first C. Many of these verbs are very basic lexical items. While íPPuC is the most common VbIN, some of the stems have a different VbIN. One is t-íCCa, e.g. *t-íkla* 'stepping on', *t-íkra* 'theft', and *t-inna* 'being trained'. Another is of the form m-íCCaw, with prefix m-, as in *m-íkðaw* 'being disgusted' and *m-ĩlhaw* 'resemblance'.

Other verbs of the -vCCvC- subtype, like '(animal) die' in (377) are (PerfP) -òjdæh- 'be equal' (specialized VbIN *m-ijdæhaw*), -òskæn- 'stand on hind legs', -òšmæm- '(trap) be about to spring', -òšwæl- 'be marked' (noun

éšwæl ‘mark, brand’; A-grm PerfP -èšwæl- with e), and -òzrær- ‘lie on one’s back’ (VblN ízrær).

The **w-medial type** ‘go up’ in (377) differs from the usual -vCvC- type (‘tie’) only in the perfectives and in the VblN. The gg for *ww in the VblN is archaic (§3.1.1.7). In the perfectives, expected #-òwæC- surfaces as -èwwæC-, as the boundary between the rounded o and the more or less homorganic semivowel slides to the left, and what remains of o dissimilates slightly by lowering to æ (favored by the <L> perfective melody). Note that the resulting ww does not follow the archaic pattern of hardening to gg. No similar boundary sliding occurs after a in the short imperfectives or after i in the long imperfectives. The 3MaSg subject PerfP in T-ka is therefore Ø-èwwæC-, with the usual surface Ø- before stem-initial low V (§7.4.1.4, §3.2.3.1). A T-ka example is Ø-èwwæy ‘he conveyed’.

Other verbs of the w-medial subtype, cited in the PerfP, are -èwwæd- ‘manage carefully’ (VblN t-ïwdi-t-t), -èwwæɖ- ‘reach’ (VblN ággəɖ), -èwwær- ‘keep back’ (ággær), -èwwæl- ‘guard’ (ággəl), and -èwwæy- ‘take (convey)’ (ággay).

Data showing the treatment of the initial vowel in the perfective of these stems, in a wider range of dialects, are given in (378). Here I include Malian Tawellemmett (W), which is outside of the scope of this grammar.

(378) -vwwC- Stems in Various Dialects

dialect	PerfP stem	1Sg PerfP	3MaSg PerfP
a. with consistent æ			
T-ka	-èwwæC-	èwwæC-ær	Ø-èwwæC
b. with i or e in 3MaSg only, æ or ə elsewhere			
R, K-d	-èwwæC-	èwwæC-ær	è-wwæC
R	-èwwæC-	èwwæC-ær	è-wæC
Gao, K, I	-èwwæC-	èwwæC-ær	ï-wwæC
Gao	-èwæC-	èwæC-ær	ï-wwæC
A-grm	-èwæC-	èwæC-ær	ï-wæC
c. with consistent i or e			
W, Gao, A-grm	-èwæC-	èwæC-ær	Ø-èwæC

Except for some dialects that may have been influenced by Tawellemmett, the predominant pattern is actually (378.b), with either æ or ə as the usual perfective initial. In the case of ə, 3MaSg i- combines regularly to produce i (Gao, K, I, A-grm). However, in this verb class only, 3MaSg i- combines with initial æ to produce e in R and K-d. In W, some Gao dialects, and optionally in A-grm, the e is an intrinsic part of the stem.

Forms with *e* also occur in other Tuareg varieties. For Niger, LTF2 424-5 gives 3MaSg perfective “*ewăḍ*” (Tawellemmett) or “*yewăḍ*” (Tayert, with 3MaSgS *y-*) for ‘atteindre’ (i.e. ‘reach’), but does not give forms with other subject categories. For Algeria, DTF 3.1461 gives “*ieoueḍ*” (omitting diacritics), probably *y-èwăḍ*. Overall, this is clearly an area of considerable dialectal instability.

There is one verb whose PerfP is *-òwæC-* in T-ka and Kidal-area dialects rather than *-æwwæC-*. This is PerfP *-òwæs-* ‘pay tribute (or taxes) to’. Given the sense, I suspect this may be an inter-dialectal borrowing. In the past, tribute was paid by vassal clans to warrior clans, who often came from the north or east. I have recorded 3MaSg PerfP *ì-wæs* and *è-wæs* in the Gao area, suggesting that the stem has been integrated into the productive *-uwvC-* pattern in these dialects.

In (379) I present two verbs that differ from all of the above in beginning with *u* at least in the perfective. There are no others of this type.

(379) *-ujvj-* and *-unjvy-*

	‘be far away’	‘refuse’
	<i>-ujvj-</i>	<i>-unjvy-</i>
a. perfective system		
PerfP	<i>-ùjəj-</i>	<i>-ùnjæy-</i>
Reslt	<i>-ujəj-</i>	<i>-unjáy-</i>
PerfN	<i>-ùjəj-</i>	<i>-ùnjey-</i>
b. short imperfective system		
ShImpf	<i>-àjəj-</i>	<i>-ùnjəy-</i>
Imprt	<i>àjəj</i>	<i>ùnjəy</i>
c. long imperfective system		
LoImpfP	<i>-t-ìjəj-</i>	<i>-nìjjuy-</i>
		[dialectally <i>-núggəy-</i> or <i>-t-únjay-</i>]
LoImpfN	<i>-t-ìjəj-</i>	<i>-nìjjuy-</i> , <i>-nèjjuy-</i>
Prohib	<i>-t-ìjəj-</i>	<i>-nìjjuy-</i> , <i>-nèjjuy-</i>
d. nominalization		
VbIN	<i>ìjəj</i>	<i>t-ùnji-t-t</i>

With ‘**be far away**’, we have a verb whose imperfectives show the same shapes as those of ‘**tie**’ in (377), above. The VbIN is irregular but does show the same stem-shape as in the long imperfectives. The perfective forms are based on *-ùjəj-*. The PerfN is identical to the PerfP. The Reslt *-ujəj-* shows the effects of $\acute{\chi}$ -p1 (accent), but not of $\bar{\chi}$ -p1 (V-lengthening). The irregular perfectives and the avoidance of $\bar{\chi}$ -p1 in the Reslt are typical features of

adjectival verbs, and the sense ‘be far away’ is in this semantic area. Therefore the irregularities in the perfective and VbIN do not justify setting this up as another “type” on a par with the types described earlier in this section.

As for ‘**refuse**’, its perfective and short imperfective forms are fairly normal, except for the initial *u*. We can take the basic form as *-unjvy-*, and let the relevant melodies do the rest (<H L> for perfective, <H> for short imperfective). The dialectally variable long imperfectives suggest that speakers have some difficulty applying long imperfective ablaut to this stem. In *-níjjuy-* (T-ka, T-md), one can see an <H> melody (justified by the lexical *u*), and Γ -c2 (gemination); the immediate model is probably *-PíQQu-* (§7.3.1.4). One can argue that *-níjjuy-* is from */-nújjiy-/*, having undergone *u*-Spreading and Medial V-Shortening to */-nəjjuy-/*, with late application of LoImpfP formatives to produce *-níjjuy-*. The variability in the LoImpfN and Prohib suggests that speakers are unsure whether this interpretation of *-níjjuy-* with \acute{i} from */ə/* is correct (if so, *-nəjjuy-* is appropriate for LoImpfN and Prohib), or whether the \acute{i} of *-níjjuy-* is a lexical full V (if so, *-níjjuy-* is appropriate for LoImpfN and Prohib). A-grm has *-núggəy-* (arguably phonemicizable as *-núggiy-*), while K-d has *-t-únjay-* with *-t-* prefix.

7.3.1.9 *Verbs with perfective -v̇(C)CuC- or -v̇(C)CiC-*

In this and the following two sections, I discuss verbs with imperfective vocalic sequence <*i a*> or <*u a*>. Many are “adjectival” verbs, but those treated in the present section are, for the most part, non-adjectival in sense. They are characterized by a shape *-V(C)CuC-* (“V” = either short or full vowel), more specifically *-v(C)CuC-* or *-v(C)CiC-* in the perfective and *-v̇(C)CuC-* in the imperfectives. Since none of the verbs we have considered so far have the shape *-VCuC-*, it is possible to analyse the MAN paradigms for these verbs as the “regular” pattern for this *-VCuC-* shape.

However, these verbs cannot be easily handled using the ablaut melodies and local formatives that we have identified for the stem-chape classes considered so far. In these other classes, we have seen perfective melodies <H L> and (surface) <L>, the latter perhaps reducible to <H L>. In these other classes the short imperfectives are <L>, <H>, or (for V-final stems) <L H>, and (in T-ka) the long imperfectives have a characteristic melody <H> or <L> (in some dialects, also <L H>). It is difficult to reconcile these melodies with the perfective <H> and imperfective <H L> vocalism of the verbs in the present section.

Forced to make the call, I opt for basic lexical representations modeled on the perfectives: *-vCuC-*, *-vCCuC-*, *-vCiC-* and *-vCCiC-*. For the **perfectives**, it suffices to account for the stem-initial V, which is ə in T-ka and A-grm, but æ in the other dialects (T-md, R, K-d, etc.). For T-ka, Short V-harmony would enforce ə in any event. For T-md and the other dialects, æ here is consistent with the occurrence of æ rather than ə in perfectives of verbs with a high full V

(i or u) in the following syllable, e.g. -æbbuffæ-t ‘be abundant’ versus T-ka -æbbuffæ-t (§7.3.1.16). So, we can analyse T-ka -əCuC- as respecting perfective melody <HL> (or even <L>), and other dialects’ -æCuC- as respecting perfective <L>, provided we specify that the full high V in this position is immune to modification by an L melody.

To account for the **imperfectives**, where e.g. -vCuC- becomes -ùCaC-, we need a somewhat ad hoc ablaut process, whereby a is introduced into the medial vowel slot, and the lexical u or i appears in stem-initial position. The long imperfectives have prefix -t-. The VblN is generally a feminine nominal based on either the perfective -ə(C)Ci/uC- or the imperfective -ï/ù(C)CaC-.

At least for the -vCuC- verbs (with u rather than i, and with no CC cluster), a further peculiarity must be mentioned. This is that the “perfective” pattern, e.g. T-ka -əCuC-, can spill into the imperfectives (and VblN) to constitute variants of the regular pattern -ùCaC-.

The verbs with basic shape -v(C)Ci/uC- are illustrated in (380).

(380) Perfective -v̇(C)CuC-, Imperfective -ù(C)CaC-

	‘swell’	‘be scratched’
	-vkuf-	-vkmuš-
a. perfective system		
PerfP	-əkuf-	-əkmuš-
Reslt	-əkúf-	-ək múš-
PerfN	-əkuf-	-əkmuš-
b. short imperfective system		
ShImpf	-ùkaf-, -əkuf-	-ùkmaš-
Imppt	ùkaf, əkuf	ùkmaš
c. long imperfective system		
LoImpfP	-t-úkaf-, -t-íkuf-	-t-úkmaš-
LoImpfN	-t-ùkaf-, -t-əkuf-	-t-ùkmaš-
Prohib	-t-ùkaf-, -t-əkuf-	-t-ùkmaš-
d. nominalization		
VblN	t-ùkaf-t, t-əkuf-t	úkmaš

Others like ‘swell’ in the -vCuC- type (cited in the PerfP) are -əduɣ- ‘watch for’, -əðum- ‘drain’, -əðub- ‘drip’, -əkun- ‘be amazed’, -əmud- ‘pray’, -əmmum- ‘be sucked’, -əttub- ‘submit to God’, -əzzum- ‘fast (abstain)’, and -əzzun- ‘share’. Not all of these are attested in my data in the full set of stem variants shown in (380). As noted above, several dialects have initial æ wherever T-ka has initial ə. The VblN’s for the stems listed are variable in form: t-ùdaq-q, éddam or údəm, t-ùðab-t or t-əkub-t, t-əkuf-t, t-əkun-t,

ə-mud or ə-mudd (<Arabic), t-ümam-t, t-ə-tub-t, əzukk, əzummm, and t-ə-zune.

Others like 'be scratched' from the -vCCuC- type are (PerfP) -əjruy- 'belch' (dialectally -əjruk-), (K-d) -əggum- 'be in love with', -ənnur- 'be interrupted before finishing', -əsruij- 'sneeze', -əzzur- 'be winnowed', and -əksuḍ- 'be afraid'. For dialects other than T-ka and A-grm, replace initial ə by æ. The attested imperfectives are based on -uCCaC- rather than the -əCCuC- seen in the perfective (for 'be afraid' -ùksaḍ- varies with -ìksaḍ-). The common VbIN patterns are also often based on -ùCCaC-, and in any event are usually feminine (t-ùjray-t or t-əjray-t, t-ùsrak-k or t-ùsrek-k, t-əzzəfe, t-ə-ksəḍa).

The stems with i instead of u are exemplified in (381). The only structural difference is that the -əCiC- stem is not recorded as a variant in the imperfectives or VbIN's, so the break between perfective and imperfective is sharper here. As usual, dialects other than T-ka and A-grm have initial æ instead of ə in the perfective.

(381) Perfective -v̇(C)CiC-, Imperfective -i̇(C)CaC-

	'wrestle'	'feel pain'
	-vzil-	-vsnin-
a. perfective system		
PerfP	-əzil-	-əsnin-
Reslt	-əzil-	-əsnin-
PerfN	-əzil-	-əsnin-
b. short imperfective system		
ShImpf	-izal-	-isnan-
Imprt	izal	isnan
c. long imperfective system		
LoImpfP	-t-izal-	-t-isnan-
LoImpfN	-t-izal-	-t-isnan-
Prohib	-t-izal-	-t-isnan-
d. nominalization		
VbIN	t-izal-t	t-isnan-t

Others of the -vCiC- type (like 'wrestle') are, in the PerfP, -əḍin- 'be counted', -əvil- 'believe' (dialectally also -ævel- with e), and -əwid- 'increase'. The VbIN's are of the t-īCaC-t type, except for t-àvel-t 'belief'.

Others of the -vCCiC- type (like 'feel pain') are -əɾwis- 'yelp', -əstik- 'be empty', (K-d) -əšriw- 'be happy', -əswid- 'be duped', -əḍriw- (iḍraw) 'be a co-wife', -ərrid- (iḥrad) varying dialectally with -ərid- (iḥrad) '(child) be very

rude', -ənnid- (innad) 'be sick', and -əlšin- 'be crazy' (<Arabic>). For K-d I can add -æsrīw- 'be happy'. The VbIN's are t-ḿCCaC-t except for t-ḍrhənnə (arguably t-ḍrhənnə) 'sickness', t-ḍ-næde 'fever', and á-lšin 'craziness'. For both -vCiC- and -vCCiC- types, dialects other than T-ka (and A-grm) have initial æ in the perfective corresponding to ə in T-ka.

In the remainder of this section I describe the small number of semantically non-adjectival verbs that have an «i a» imperfective melody like that in (381), but have a medial V other than i or u in the perfective. The data are in (382).

(382) Perfective -ḿ(C)Ce/oC-, Imperfective -ḿ(C)CaC-

	'be sick'	'be softened'	'believe'	'intend'
	-vrhen-	-vḿḿeḍ-	-vḿel-	-vbok-
		[K-d]	[dialectal]	
a. perfective system				
PerfP	-ərhən-	-æḿḿeḍ-	-æḿel-	-əbok-
Reslt	-ərhén-	-æḿḿéḍ-	-æḿéḍ-	-əbók-
PerfN	-ərhən-	-æḿḿeḍ-	-æḿel-	-əbok-
b. short imperfective system				
ShImpf	-ḿrhan-	-ḿḿḿaḍ-	-ḿḿal-	-ḿbak-
Imprt	ḿrhan	ḿḿḿaḍ	ḿḿal	ḿbak
c. long imperfective system				
LoImpfP	-t-ḿrhan-	-t-ḿḿḿaḍ-	-t-ḿḿal-	-t-ḿbak-
LoImpfN	-t-ḿrhan-	-t-ḿḿḿaḍ-	-t-ḿḿal-	-t-ḿbak-
Prohib	-t-ḿrhan-	-t-ḿḿḿaḍ-	-t-ḿḿal-	-t-ḿbak-
d. nominalization				
VbIN	t-ḍrhənnə	t-ḿḿḿan-t	t-æ-ḿil-t	t-əbuk-k

All four stems in (382) have a medial mid-height V in the perfective. Three have e, one has o. Only the first ('be sick') is recorded in my T-ka data with the perfective shown; 'believe' occurs there but in the form -əḿil- which belongs to (381) rather than to (382), and 'intend' is not attested for this dialect. All three verbs have initial i in the imperfectives; the back rounded o in 'intend' is not enough to force initial u.

For 'be sick', the perfective melody is <HL> in T-ka, T-md, and A-grm, the H being apparent in the initial ə. Other dialects have PerfP -ərhən-, with stem-wide <L> melody. The dialectal PerfP -æḿel- of 'believe', and the dialectally attested 'intend' verb shown, also show <L> perfective melody. All dialects have «i a» vocalic sequence in the imperfectives.

In view of the <L> and <HL> perfective melodies, both of which assign L melodic component to the medial full V, one could argue that the perfective e or o vowel represents V-Height Compromise, i.e. the combination of lexical high V (i or u) with L. The VblN t-æ-ɾil-t with i is suggestive in this regard. However, recognizing V-Height Compromise for these verbs would contrast starkly with the behavior of the more numerous verbs of the types in (381) and (382), above, which simply shrug off the L melodic component in the perfective. Because of this discrepancy, it is perhaps best to take e and o in (382) as lexical.

There are two verbs with medial *ɑ* in the imperfective that may be relevant here. However, they are clearly adjectival in sense and I prefer to treat them in the following section (§7.3.1.10). They are (PerfP) -æynɑy- ‘be new’ and -ærah- ‘be raw’. There are also some other verbs in that same section, like (PerfP) -æddew- ‘accompany, be with’, that differ from the verbs considered here only in geminating the medial C in perfectives.

Summarizing the data in this section, the analysis in (383) is suggested.

(383) Analysis of Non-Adjectival -v(C)CvC- Verbs

- a. basic lexical representations: -v(C)CvC- with v = {i u e}, and for some dialects one case of o ;
- b. perfective has <L> or <HL> melody, but L melodic component does not affect the medial full V;
- c. imperfectives and VblN replace the initial short V by u if the stem has a lexical u, otherwise by i, and convert the medial full V to *ɑ*.

For Gao I have recorded a verb ‘ferment’ (said of a meal with dried meat marinated in butter): PerfP -æqqum-, Imprt æqqum (arguably əqqum phonemically), LoImpfP -t-ĩqumu-t, VblN ĩqqum.

For A-grm dialect I recorded PerfP -næfaf-, Imprt nəfuf, and LoImpfP -t-ĩnəfuf- ‘compare (two things, to determine which is best)’. In other dialects this is a V-final stem -nvyufv-, e.g. PerfP -ænyafa- and Imprt nəyuf (attested for R and T-ka). All these forms have an obscure historical connection to -ufv- (PerfP -ðfa-) ‘be better than’.

7.3.1.10 Verbs (mostly adjectival) with Imprt ɨ(C)CaC and PerfP -ɨCCvC-

The verbs in this section, mostly adjectival in sense, have MAN stem paradigms that resemble those of the non-adjectival verbs in §7.3.1.9, above. The imperfectives and (usually) VblN’s again show the «i ɑ» vocalic sequence, while the perfectives begin with a short V and have either <L> or <H> stem-wide melody.

An important difference is that verbs in this section with an ungeminated medial C in the imperfectives geminate it in the perfectives, unlike the case in

§7.3.1.9. We therefore need an unusual **gemination formative** Γ -m to geminate the medial C of the stem, in the perfective only. The medial C is C₁ in these verbs, but I will present another type of adjectival verb in §7.3.1.11 where it is C₂, so the common feature is that the geminated C is the medial C (alternatively, the penultimate C). When the verb already has a (nongeminate) cluster, Γ -m is not audibly present.

A second difference is that, for the verbs in this section, we get imperfective «i a» (rather than «u a») even when there is a u in the perfective. This holds for T-ka and K-d but not for A-grm or R.

Consider the data in (384). All stems here show Γ -m, though this is moot for stems of the same general type that already have a CC cluster. The verb ‘be thirsty’ shows that the u in the perfective does not affect the «i a» imperfective vocalic sequence (for T-ka and K-d). ‘Follow’ is not adjectival semantically but belongs morphologically to this group.

(384) Adjectival -iPaC- Imperfective, Geminated -vPPuC- Perfective

	‘be thirsty’	‘follow’	‘be heavy’	‘be sweet’
	-vfud-	-vlil-	-vṣay-	-vzed-
a. perfective system				
PerfP	-əffud-	-əllil-	-æzzay-	-æzzed-
Reslt	-əffúd-	-əllil-	-æzzáy-	-æzzéd-
PerfN	-əffud-	-əllil-	-æzzay-	-æzzed-
b. short imperfective system				
ShImpf	-ifad-	-ilal-	-izay-	-izad-
Imprt	ifad	ilal	izay	izad
c. long imperfective system				
LoImpfP	-t-ifad-	-t-ilal-	-t-izay-	-t-izad-
LoImpfN	-t-ifad-	-t-ilal-	-t-əzay-	-t-əzad-
Prohib	-t-ifad-	-t-ilal-	-t-əzay-	-t-əzad-
d. nominalization				
VblN	[various lexical nouns and feminine nominals]			

For dialects other than T-ka and A-grm, i.e. the set of dialects {I K-d R T-md), we get initial æ rather than ə in the perfectives of ‘be thirsty’ and ‘follow’, as in other verb classes where a high full V occurs in the following syllable.

For A-grm and R dialects, the imperfectives of the -əffud- ‘be thirsty’ subtype have u rather than i in the imperfectives: Imprt ùfad, LoImpfP -t-úfad-, etc.

Other verbs like ‘be thirsty’ with medial u in the perfectives, cited in the T-ka PerfP (with Imprt in parentheses) are -əkkul- (ikal) ‘take charge’, -əkkus- (ikas) ‘be hot’, -əlluz- (ilaz) ‘be hungry’, -əmmuy- (imay) ‘praise God’, and -əzzuy- (izay) ‘be nostalgic’. We might add -əksud- (iksad) ‘**be afraid**’, which has a lexical CC cluster and so shows no audible gemination. For dialects other than T-ka, the Imprt is ùksaḍ, so for these dialects this verb belongs in the preceding section, cf. (380) (§7.3.1.9).

T-ka has PerfP -əzzuf-, Imprt ùzzaf, and LoImpfP -t-úzzaf- for ‘**be black**’, but R has -əzzof-, ùzaf, and -t-úzaf-. R but not T-ka shows Γ-m in the perfective but simple C in the imperfectives. The more common ‘be black’ verb is √kwl, PerfP kəwal-.

Another verb of this general type is -əqqor- (Imprt ʔrar) ‘**be dry**’, though here T-ka has <L> melody in the perfective (influenced perhaps by the BLC’s qq and r). A-grm PerfP -əqqur- and R PerfP -əqqor- both have Imprt ʔrar.

Another verb like ‘follow’ in (384) with medial i in the perfectives is its homonym -əllil- (ilal) ‘**follow**’.

The other verb like ‘be heavy’ in (384) with medial a in the perfectives is PerfP -əynay- ‘**be new**’, which has a lexical CC cluster. The Imprt is ʔynay, which is hard to distinguish phonetically from -inay-. The VbIN is t-əynay-t.

The verb ‘be sweet’ in (384) with medial e in the perfective has a parallel in -əddew- (idaw) ‘**accompany, be with**’, VbIN t-əddaw-t. There is also an irregular verb ‘(day) break’ that has a PerfP -əffew- and Imprt ʔfaw in some dialects (for more on this verb see §7.3.2.15).

An adjectival verb meaning ‘be unripe, raw’ has a PerfP -ərah- (without gemination) and Imprt -ərah- or -ʔrah-. For more on this somewhat irregular verb see §7.3.2.18.

7.3.1.11 Adjectival verbs with Imprt ʔPQaC and unprefixes C-initial PerfP

Just above, I described one type of (mostly) adjectival verb with short and long imperfectives based on -ʔC(C)aC- and perfectives beginning in a short V (with a following unclustered lexical C geminated). In the present section I describe a number of adjectival verbs whose imperfectives are based on -ʔCCaC-, specifically -ʔPQaC- with medial nongeminate cluster PQ.

I showed in the preceding section (§7.3.1.10) that perfectives of the relevant adjectival verbs were morphologically unusual (medial gemination) and rather lexicalized (<L> or <H> melody). In the present section, the following characteristics are observable. First, the **perfectives are now C-initial**, meaning that P and Q, while clustered in imperfective -ʔPQaC-, are separated by a short vowel in the perfective. Second, **gemination Γ-m** applies in some perfective stems but not others. Third, most (but not all) of the perfectives have a **full V** in the second syllable, hence PʔQ(Q)uC-. There are two analytical possibilities here. One is to recognize a **length formative ʔ̄-f**, similar to ʔ̄-f already recognized for long imperfectives of heavy verbs. This

would point to a basic lexical shape like PvQvC-, becoming PvQvC- (or geminated PvQQvC-) after association of $\tilde{\chi}$ -f. The alternative is to take the perfective as a **separate, lexicalized stem**, not directly connected (by regular ablaut processes) to the corresponding imperfectives, or related to the imperfectives by a partly templatic ablaut process (mapping the more variable perfective stem onto a relatively rigid imperfective template).

Another notable feature is that perfectives of these C-initial adjectival verbs **avoid subject pronominal prefixes**, not just 2nd person or 3FeSg t- (whose absence before a C-initial stem is expected anyway), but also 3MaSg i-, which would be easy to pronounced before a C. Both 3FeSg and 3MaSg subjects are therefore expressed by the bare perfective stem. Perfectives with the remaining nonzero subject prefix, 1Pl n-, are problematic; some informants accept them (grudgingly), others favor a paraphrase with a 'be' verb and a nominalized participle (§7.4.2). I therefore omit the usual initial hyphen in the citation form of the perfective. Adjectival verbs like these always allow subject suffixes (1Sg, 2Sg, and all non-1st person plural categories), so the only real neutralization with adjectival perfectives is 3MaSg with 3FeSg (neutralized to an unmarked form interpreted as having 3Sg subject).

Avoidance of subject prefixes is noted even with a few V-initial perfective stems if they are strongly adjectival in nature. See §7.3.2.2 for 3MaSg PerfP əjjət 'it became many', though this verb does allow audible prefixes for other categories. 'Be yellow' has participles like æræɣ-æt without 3FeSg t- (§7.3.1.4).

For most of these adjectival verbs, the closest approximation to a "VblN" is really a feminine Abstractive nominal, such as t-æPPæCæC-t or t-ə-CCəCe (§8.6.5).

I begin with cases of **L perfective melody** in (385). I use the term "melody" loosely here, since it may be that the perfective stems are fully spelled-out in the lexicon, rather than being created compositionally by ablaut. The imperatives in (385) are all based on -iC(C)aC-, so the focus should be on the PerfP column.

(385) Adjectival Perfective with <L> Melody

gloss	PerfP	Imppt	LoImpfP	VblN/Abstr
a. «æ a» vocalic sequence, no Γ-m				
'be grey'	bæhaw-	ibhaw	-t-ibhaw-	t-æbbæhæw-t
'be licit'	hælal-	ihlal	-t-ihlal-	—
'be illicit'	hæram-	ihram	-t-ihram-	—
			[LoImpfP also -t-əhæram-]	
'be black'	kæwal-	ikwal	-t-ikwal-	t-ækkæwæl-t
'be bad'	læbas-	ilbas	-t-ilbas-	t-ællæbæs-t
'be wide'	hæraw-	ihraw	-t-ihraw-	t-əhhəru-t-t

b. «æ a» vowel sequence, Γ-m, some w/gg alternations (§3.1.1.7)

‘be brown’	ɾæggal-	ɪɾwal	-t-ɪɾwal-	t-ə-ɾule
‘be red’	ʃæggar-	ɪʃwar	-t-ɪʃwar-	t-ə-ʃure
‘be old’	wæššar-	ɪwšar	-t-ɪwšar-	t-ə-wšere

c. «æ e» vowel sequence, Γ-m

‘be cold’	sæmmed-	ɪsmaɖ	-t-ɪsmaɖ-	t-ə-səmɖe
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Since both <L> and <H> perfectives occur among adjectival verbs, it is not clear that we should speak of “melodies” in the sense of isolable ablaut components that are overlaid on basic stems.

All of the <L> perfectives in (385) show a full V in the final syllable. For possible dialectal forms with all short V’s, see discussion of mæqqær- ‘be big’ and mællæl- ‘be white’, later in this section.

The stems not shown are predictable from those that are shown. Thus, for ‘be grey’, we have Reslt bæhâw-, PerfN bæhaw-, ShImpf ɪbhaw-, LoImpfN -t-ɪbhiw-, Prohib -t-ɪbhaw-.

In (385.a), ‘be licit’ and ‘be illicit’ refer to Islamic law and, and the word families in question are borrowed from Arabic. The other verbs in (385) appear to be native Berber terms.

There are many terms denoting shades of color associated prototypically with particular animals, particularly in the red/brown and grey regions. Therefore glosses like ‘be brown’ and ‘be grey’ may appear in this grammar for multiple items.

Examples of stems like those in (385) but with <H> instead of <L> **perfective melody** (at least in T-ka), are given in (386). Again, the term “melody” is used loosely. The imperfective forms are identical in vocalism to those in (385).

(386) Adjectival Perfective with <H> Melody

gloss	PerfP	Imprt	LoImpfP	VblN/Abstr
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full vowel in PerfP

a. «ə u» vowel sequence, no Γ-m

‘be few’	dərus-	ɪdras	-t-ɪdras-	t-ə-drəse
‘be light’	fəsus-	ɪfsas	-t-ɪfsas-	t-ə-fəsse
‘need clothes’	ɾəllul-	ɪɾlal	-t-ɪɾlal-	ɾəlləl

[PerfP also ɾəllul-]

b. «ə u» vowel sequence, Γ-m

‘be tame’	bəlluh-	ɪblah	-t-ɪblah-	t-ə-bləhe
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c. «ə i» vowel sequence, no Γ-m				
‘be thin’	səd̩d̩d-	ʔsdad	-t-ʔsdad-	t-ə-səd̩de
‘be smooth’	səl̩l̩l-	ʔslal	-t-ʔslal-	t-ə-səl̩le

d. «ə i» vowel sequence, Γ-m				
‘be cheap’	rə̀q̩q̩s-	ʔrvas	-t-ʔrvas-	t-ə-rvəse

short vowels only in PerfP

e. «ə ə» vowel sequence, no Γ-m				
‘be sour’	səm̩m̩m-	ʔsmam	-t-ʔsmam-	t-ə-səm̩me

f. «ə ə» vowel sequence, Γ-m				
‘be short’	jə̀zz̩əl-	ʔjzal	-t-ʔjzal-	tə-jə̀zz̩əl-t
‘be short’	kə̀š̩š̩əl-	ʔkšal	-t-ʔkšal-	t-ə-kšəle
‘be feeble’	rək̩k̩əm-	ʔrkam	-t-ʔrkam-	t-ərræk̩əm-t

The **Reslt** stems, not shown here, are expressed by the ablaut formative χ -pc1 with no sign of the usual **Reslt** length formative $\bar{\chi}$ -pc1. This is seen in the **Reslt** forms for the short-V stems in (386.e-f), e.g. *səm̩m̩m-*, *jə̀zz̩əl-*. In verbs whose postconsonantal V is short, the absence of $\bar{\chi}$ -pc1 is diagnostic of status as adjectival verb. The **Reslt** form is very common with adjectival verbs, since e.g. stative ‘be red’ is expressed in the **Reslt** (rather than an imperfective).

Having presented the clear cases of <L> perfective melody in (385) and those of <H> melody in (386), I now turn to some cases involving phonological ambiguity due to BLC’s, complicated by dialectal variation in the perfective. Consider (387), where the **LoImpfP** is omitted (it is predictable from the **Imprt**, as in the preceding tables).

(387) Adjectival Perfective with Ambiguous <L> or <H> Melody Due to BLC’s

gloss	PerfP	Imprt	VblN/Abstr
a. ‘be big’	mæ̀qqær- (mə̀qqər-) mæ̀qqor- (mə̀qqur-)	ʔmvar	t-ə-mvəre
b. ‘be useful’	fæ̀ror- (fə̀rur-)	ʔfrar	t-ə-fərre
c. ‘be narrow’	kæ̀rroꝛ- (kə̀rruꝛ-) kæ̀roꝛ- (kə̀ruꝛ-)	ʔkraꝛ	t-ə-krəꝛe

For ‘be big’ (387.a), since both qq (geminated \mathfrak{r} , §3.1.1.3) and r are BLC’s (§3.1.2.2), I cannot determine whether the vocalic sequence is «æ æ» or «ə ə»

in the first PerfP variant, which occurs in most dialects including T-ka, or whether it is «æ o» or «ə u» in the second, which is attested for T-md and K-d. Since this verb for ‘be big’ is often contrasted with PerfP *məḍrəy* ‘be small’ (see §7.3.1.12, below), I favor recognition of <H> vocalism in ‘be big’ (*məqqər-*, *məqqur-*) on grounds of parallelism.

The same phonological ambiguity occurs in (387.b-c) due to double BLC’s. Here there are no compelling external arguments for one representation or the other. On the whole, I again favor recognizing <H> vocalism, e.g. *fəru-* and *kəru-*. The reason for this is that this vocalism has parallels, including the u vowel, in the clear <H> melody cases in (386.a-b), above. There are no clear cases (not involving a BLC) with o in the second PerfP syllable, though there is one case of the other mid-height vowel e, namely *səmməd-* ‘be cold’ in (385.c), where (in T-ka) the Q in the first syllable shows that the second V is phonemic e rather than i.

There are also some verbs that have audible dialectal melodic variation in perfectives (388).

(388) Verbs with Alternative Perfectives

	gloss	PerfP	Imprt	LoImpfP	VblN
a.	‘be soft’	<i>ləmməd-</i> <i>ləmmiḍ-</i>	<i>ḷmaḍ</i>	<i>-t-ḷmaḍ-</i>	<i>t-ə-ləmḍe</i>
b.	‘be white’	<i>məlləl-</i> <i>məlləl-</i> <i>məllul-</i>	<i>ḷmlal</i>	<i>-t-ḷmlal-</i>	<i>t-ə-məlle</i>
c.	‘be clean’	<i>šəddij-</i> <i>šəddij-</i> (A-grm <i>šəddig-</i>)	<i>ḷšdaj</i>	<i>-t-ḷšdaj-</i>	<i>t-ə-šdaje</i>
d.	‘be wide’	<i>həraw-</i> <i>həraw-</i>	<i>ḷhraw</i>	<i>-t-ḷhraw-</i> <i>-t-əhəraw-</i>	<i>t-əhhəru-t-t</i>

‘Be soft’ (388.a) has PerfP *ləmməd-* in most dialects, but I transcribed *ləmmiḍ-* for T-md. There is no difference between i and e before ḍ, so æ versus ə in the first syllable is diagnostic. For ‘be white’ (388.b), *məlləl-* is widespread, *məlləl-* was recorded for T-md, and *məllul-* occurred in A-grm and Im, and as a variant in K-d. For ‘be clean’ (388.c), T-ka has *šəddij-* but other dialects have *šəddij-* (A-grm *šəddig-*), indicating that T-ka has applied Short-V Harmony (but there is no evidence within T-ka for an underlying /æ/). For ‘be wide, spacious’ (388.d), both *həraw-* and *həruw-* are fairly widespread; there are also variants of the imperfectives that suggest the influence of a non-adjectival verb, *-hvrw-* ‘forge (metal)’, PerfP *-əhhəraw-*.

See also the somewhat irregular adjectival verbs ‘be many, much’ (§7.3.2.2), ‘forget’ (§7.3.2.3), and ‘be yellow’ (§7.3.2.4).

7.3.1.12 Adjectival verbs without *i...a* imperfective vocalism

The verbs in §7.3.1.10-11, above, have no more than three distinct lexical C’s, and so they are readily amenable to an imperfective stem-shape like -i(C)CaC-. There are, however, other adjectival verbs that have four C’s, and these verbs cannot fit into this imperfective pattern. Consider the data in (389).

(389) Adjectival Verbs with -CvPQvC- and -CvPQvC- PerfP

	gloss	PerfP	Imprt	LoImpfP
a.	‘be blind’	ɖæ̃rʁal-	ɖæ̃rʁæl	-t-àɖæ̃rʁal-
	‘be spotted’	ʃæ̃rbay-	ʃæ̃rbæy	-t-àʃæ̃rbay-
b.	‘be thick’	jæ̃rməm-	jæ̃rmæm	-t-àjæ̃rməm-
	‘be small’	mət̃kəy-	mət̃kəy	-t-àmət̃kəy-
				[LoImpf also -t-ìmət̃kuy-]
c.	‘be a runt’	mæ̃ymər- (R) mə̃ymər- (T-ka)	mæ̃ymær	-t-àmæ̃ymər-
				[PerfP also -èmmə̃ymær- (T-ka)]

In the imperfectives, all of these behave like ordinary -CvCCvC- verbs, cf. -kvykvvy- ‘shake off’ in §7.3.1.2. In the inflectable ShImpf, we get Stem-Initial V-Insertion and C₁-Gemination as usual, e.g. *ad t-æ̀ɖɖæ̃rʁæl* ‘she will become blind’. However, we get C-initial adjectival perfectives, which do not allow subject prefixes. In (389.a) we have <L> melody and a full V (suggesting χ -f) in the second syllable, compare e.g. PerfP *ʁæ̀ggal-* ‘be brown’ in (385.b), above. In (389.b) the PerfP has <H> melody and short V’s, compare e.g. PerfP *jə̀zzəl-* ‘be short’ in (386.f), above. For ‘be a runt’, both of these PerfP shapes are attested, along with another (-èmmə̃ymær-) typical of non-adjectival verbs of the same -CvCCvC- shape.

Since the verbs in (389) all have CæCCæC as Imprt Sg shape, it is notable that the PerfP, including the 3MaSg or 3FeSg PerfP with no audible subject affix, differs from CæCCæC in vocalism, either by having a full *a* instead of *æ* in the second syllable, or by having H vocalism (two schwas). Thus *ɖæ̃rʁæl* ‘be blind!’ versus *ɖæ̃rʁal* ‘he/she became blind’, and *jæ̃rmæm* ‘be thick!’ versus *jæ̃rməm* ‘he/she became thick’.

Abstractive nominals are typical for these adjectival verbs: *t-ə̀mmət̃ki-t-t*, *t-ə̀mmæ̃ymær-t*, *t-æ̀ɖɖæ̃rʁæl-t*, and *t-ə̀jjæ̃rmæm-t* or *t-ə̀jjæ̃rməm-t*.

The verbs in (390) have lexical medial geminates and therefore arguably have only three distinct C's. They too behave like -CvCCvC- verbs in the imperfective, and (in variant forms) sometimes in the perfective. This behavior contrasts with the verbs covered in the preceding section, where the geminated CC occurred only in the perfective.

(390) Adjectival Verbs with -CvPPvC- PerfP

	gloss	PerfP	Imprt	LoImpfP
a.	'be deaf'	məzzəj- [PerfP also -əmməzzəj-, Imprt also ɪmzɑj]	mæzzæj	-t-əməzzɑj-
b.	'be weak'	ləqqəw- [PerfP also -əlləqqəw-]	ləqqəw	-t-əlæqqaw-

Abstractives: t-əmmæzzæk-k or t-əmməzzək-k, t-əllæqqəw-t or t-əlləqqəw-t.

There are also some adjectival verbs with just three C's that follow the basic pattern in (389). That is, although their phonological structure is compatible with a theoretical -iCCaC- as the basis for imperfective stems, they in fact have imperfectives of the same type seen with non-adjectival -CvCvC- stems (§7.3.1.2). They differ from these non-adjectival stems in having a clearly "adjectival" PerfP CəCaC-, not allowing pronominal subject prefixes. In two cases, a variant LoImpfP based on -iCCaC- is attested, and further dialectological work would probably dig up other similar examples. Data are in (391).

(391) Adjectival -CvCvC- Verbs with PerfP PəCaC-

		PerfP	Imprt	LoImpfP
a.	'be brown'	bənaw- [PerfP also -əbbənaw-]	bənæw	-t-əbənaw-
b.	'be brown'	bəzaw-	bəzæw	-t-əbəzaw- -t-ibzaw-
c.	'be grey'	dəbar-	dəbær	-t-ədəbar-
	'be sloppy'	həray-	həræy ihray	-t-əhəray- -t-ihray-

The Abstractive nominals are t-əbbæn n n æ w - t, t-əbbəzæw-t, t-əddəbær-t, and t-əhhəræy-t, all typical adjectival Abstractive forms.

There are a modest number of semantically adjectival verbs belonging to other “regular” stem-shape classes, whose “adjectival” character shows up in occasional imperfective variants based on -i(C)CaC-, and/or in that Reslt stems show $\acute{\chi}$ -pcl (i.e. accent) but omit a phonologically possible $\bar{\chi}$ -pcl (length) formative. Consider (392).

(392) -vPQvC- Verbs with Some “Adjectival” Forms

	gloss	PerfP	Imprt	LoImpfP	VblN/Abstr
a.	‘be skinny’	-əlbæk-	əlbæk ĩlbak	-lábbaek-	ləbək ləbbək
b.	‘be wet’	-əbdæj-	əbdəj ĩbdaj	-báddæj- -t-ĩbdaj-	á-bduj
c.	‘be behind, lag’	-əšræy-	əšrøy ĩšray	-šárræy-	á-šærøy

These are simple -vPQvC- verbs (§7.3.1.1) in the PerfP, but are attested both with regular (non-adjectival) imperfectives and with adjectival imperfective -iPQaC-. The **Reslt forms** in some cases show $\acute{\chi}$ -pcl (accent) but not $\bar{\chi}$ -pcl (length): i-lbæk ‘he is (=has become) skinny’. However, ‘be wet’ does allow ablaut lengthening: i-bdáj ‘it is (=has become) wet’.

A case similar to those in (392) is -vrvd- ‘be straight’, with PerfP -ðræd-, and either regular non-adjectival imperfectives (Imprt ðræd, LoImpfP -t-ĩræd-), or (for T-md) adjectival imperfectives (Imprt ĩræd, LoImpfP -t-ĩræd-).

-vmsvd- ‘be sharp’ has unlengthened Reslt -əmsæd- as in i-msæd ‘it-Ma is (=has become) sharp’, though I have no attestations of #-imsad-. For -vlvš- ‘be ugly’ the usual Reslt is likewise unlengthened -əlæš- in i-læš ‘he is (=has become) ugly’. The verb -ulvu- ‘be spacious’ (§7.3.1.15) is semantically adjectival, but it already has a final full V in the PerfP -ðlwa-, so Reslt -olwá- has a full V.

7.3.1.13 Augmented verbs with “adjectival” perfective

Most augmented verbs are non-adjectival in sense.

The verb -dvru- (+ -t) ‘be plump’ is an exception. It has regular non-adjectival stems, except for the telltale omission of $\bar{\chi}$ -pcl in the Reslt: i-ddáræ-t ‘it-Ma has become plump’.

The majority of adjectival augmented verbs are those with PerfP CæCa-t or CðCa-t, i.e. with a **full V** (by $\bar{\chi}$ -f) in the second syllable; compare

perfectives of the shape CæC(C)αC- (§7.3.1.12). Several of these are color verbs (393).

(393) Augment Verbs with Adjectival PerfP

	'gloss'	PerfP	Imprt	LoImpfP
a.	'be brown'	dæma-t-	dæmæ-t	-t-àdæma-t
	'be brown'	dæra-t-	dæræ-t	-t-àdæra-t
	'be speckled'	kæša-t-	kæšæ-t	-t-àkæša-t
	'be spotted'	mæja-t-	mæjæ-t	-t-àmæja-t
b.	'be green'	dàla-t-	dàlæ-t	-t-àdala-t
		[PerfP also -æddala-t (T-ka, T-md)]		
c.	'be brown'	fàwa-t-	fàwæ-t	-t-àfawa-t
		[PerfP also -æffewæ-t (T-ka), see end of §7.3.1.16]		

The variant PerfP forms showing C₁-Gemination are modeled on PerfP forms of non-adjectival verbs.

Ordinarily -t- requires shortening of a preceding stem-final full V (Pre-Augment V-Shortening, §3.4.9.1), but this shortening conspicuously fails to take place in the adjectival PerfP CæCa-t- or CàCa-t-. The fact that the adjectival full V in the second perfective syllable overrides the shortening could be taken as evidence that the full V is due to a special adjectival perfective ablaut formative.

Moreover, whereas Augment -t- is normally omitted before V-initial subject pronominal suffixes, in the paradigms of the PerfP CæCa-t- or CàCa-t- shown above, the -t- may be optionally (but often) present throughout. For example, with 3MaPl suffix -æn we get e.g. kæša-t-æn 'they-Ma became speckled', and with 2Sg suffix -æd we get e.g. dàla-t-æd 'you-Sg became green'. It is as though CæCa-t- or CàCa-t- has been reanalysed (in the perfective only) as having stem-final (not suffixal) t, so they are just special cases of adjectival PerfP CæCaC- or CàCaC-, cf. (385, 389, 391). However, I have also recorded "regular" contractions with these V-initial subject suffixes, as seen in dæme-n 'they-Ma became brown' alongside dæma-t-æn.

The Reslt stem is regularly derived by accent shift from the PerfP stems: Reslt dalá-t 'it-Ma has become green'.

7.3.1.14 Non-augment -Cv(C)Cv- and -CvCvCv- verbs

In §7.3.1.3-8 I described regular (non-adjectival) verbs with exactly one full V (counting stem-final V's as full). In this section I describe non-augment verbs with both a medial full V and a stem-final V. These verbs essentially combine

the features of verbs with a medial full V (§7.3.1.7) and those of heavy non-augment verbs with a stem-final V (§7.3.1.5). Sections §7.3.1.15-16, below, cover other types of verbs with two full V's, viz., verbs with both an initial full V and a final V, and augmented verbs with both a medial full V and a final V.

The basic shapes covered in this section are middleweight -CuC(C)v- and superheavy -CvCuCv-. I begin with the middleweight subtype -CuCCv- with **medial cluster**. The lexical medial V is always u rather than i (or a) in my data. Examples are in (394).

(394) -CuCCv- Stems

	‘load’	‘go south’
	-jujjuv-	-jussu-
a. perfective system		
PerfP	-əjjujja-	-əjjussa-
Reslt	-əjjújja-	-əjjússa-
PerfN	-əjjujja-	-əjjussa-
b. short imperfective system		
ShImpf	-æjjajj- (/ -æjjajjɪ- /)	-əjjuss- (/ -əjjussɪ- /)
Imprt	jàjj	jùss
c. long imperfective system		
LoImpfP	-t-àjæjja-	-t-ìjæssu-
LoImpfN	-t-əjæjji-	-t-əjæssu-
Prohib	-t-æjæjja-	-t-əjæssu-
d. nominalization		
VbIN	a-jójj, jæjjá	a-júss

In both ‘load’ and ‘go south’, we have perfectives based on -əPPuCCa-, produced from -PuCCv- by application of <HL> melody, plus **Stem-Initial V-Insertion**, and **C₁-Gemination** (§3.5.8). As usual with perfectives that have a stem-initial short V followed by a syllable containing a full high V, dialects other than T-ka and A-grm have initial æ instead of ə, thus -æjjujja- and -æjjussa- in those other dialects.

The two verbs in (394) diverge in the melodies used in the short and long imperfectives. ‘Load’ has an imperfective <L> melody while ‘go south’ has <H>. In the short imperfective, the /ɪ/ at the end of /-æjjajjɪ-/ is deleted stem-finally (without subject suffix), appears as ə before C-initial subject suffix, and contracts with /æ/ at the beginning of V-initial subject suffixes to produce ə. Sample inflected ShImpf forms are 3MaSg ad Ø-æjjajj ‘he will load’, 2Sg ad t-æjjàjjə-d, and 3FePl æjjàjjə-næt. In the long imperfectives, both verbs show **Medial V-Shortening**, and the final u of -t-ìjæssu- is due to **u-Spreading**

(§3.5.9). The two verbs diverge again in the VbIN's, where only 'load' applies Medial V-Shortening. The 'go south' type is more consistent with the vocalism of -CuCCvC- verbs like -huššvl- 'be obligatory' (§7.3.1.7).

The other verb of the 'load' type (394) is -bubbu- 'carry (baby) on back' (PerfP -əbbubba-, Imprt bābb, LoImpfP -t-əbæbba-, VbIN α-bább or bæbbá (also α-búbb for K-d). The verbs 'sit' and 'testify' in §7.3.2.9-10 have some idiosyncracies but have similar MAN stem paradigms.

The other verbs of the 'go south' type (394) are -fuggu- 'be detached' (e.g. LoImpfP -t-ɪfəɡɡu-, VbIN α-fúɡɡ) and -jurhu- 'end up' (e.g. LoImpfP -t-ɪjərhu-, VbIN α-júrh).

'Load' and 'be detached' have reported cognates in Niger Tamajak, where they appear to have the same conjugation (LTF2: 59, 83, 441), including VbIN "aCCəCCi," ShImpf "əCCăCCu," and LoImpfP "-taCăCCu." For Algeria, DTF 1.406 has forms for 'load' including 3MaSg PerfP "ieǵoǵǵa" and Imprt "ǵaǵǵ", and similar forms are given for 'carry (baby) on back' DTF 1.16, while 'be detached' has Imprt "fougou" DTS 1.308, so Algeria at least has a split like that in Malian Tamashék. 'Load' has a counterpart in Songhay (jeeje), and 'carry (baby) on back' is a widespread West African word found in most Malian languages; I am not sure which language is the original source of either item.

A verb meaning 'be sterile' has a related paradigm, but my T-ka data show a mix of non-augment and augmented forms: PerfP -əjjujra- or augmented -əjjujræ-t, Imprt jùjræ-t, LoImpfP -t-ɪjəjru- or augmented -t-ɪjəjru-t, abstractive nominal əjjəjru. The imperfective vocalism links this verb with 'go south' in (394). The instability is due to the fact that jr is an unstable word-final cluster, in that the r is more sonorous than the j. This would be a particular problem in the Imprt, where non-augment /jʊjrɪ/ should appear as #jujr after Stem-Final /A-Deletion (29) (§3.1.2.4). This would require resyllabification by Final-CC Schwa-Insertion and (in T-ka) Epenthetic-V Accentuation to #jujér. Adding Augment -t makes it possible to avoid this resyllabification.

The A-grm speaker gave a different paradigm for 'be sterile', not involving Stem-Final /A-Deletion: PerfP -əǵǵəǵra-, Imprt ǵəǵru, and LoImpfP -t-əǵəǵra-. For K-d I elicited PerfP -əjjujræ-t but could not elicit imperfectives (the verb denotes a stative quality and therefore appears most often in the Reslt, in the perfective system). The R informant did not recognize the word.

I now turn to verbs that have a basic middleweight shape -CuCv- with **ungeminated medial C**. These verbs cannot undergo Medial V-Shortening, which requires a CC cluster after the medial full V. Most of the verbs also fail to apply C₁-Gemination in the wake of Stem-Initial V-Insertion (perfective system, ShImpf). The most striking feature of these verbs, however, is a mid-height V {o e} in the perfectives. The avoidance of C₁-Gemination and the perfective mid-height V link these verbs to -CuCvC- verbs.

I begin with those that have *o* in the perfective, and basic form **-CuCv-** with medial *u*. Consider (395).

(395) -CuCv- Stems with Medial *o* in Perfectives

	'move out'	'(skin) dry'	'inherit'
	-hunu-	-husu-	-kusu-
a. perfective system			
PerfP	-æhona-	-æhosa-	-ækkosa-
Reslt	-æhóna-	-æhós-a-	-ækkós-a-
PerfN	-æhona-	-æhosa-	-ækkosa-
b. short imperfective system			
SHImpf	-æhan	-əhus-	-əkkus-
	[= /-æhanɪ-/]	[= /-əhusɪ-/]	[= /-əkkusɪ-/]
Imprt	hàn	hùs	kùs
c. long imperfective system			
LoImpfP	-t-àhana-	-t-ìhusu-	-t-ìkusu-
LoImpfN	-t-əhini-	-t-əhusu-	-t-əkusu-
Prohib	-t-æhana-	-t-əhusu-	-t-əkusu-
d. nominalization			
VbIN	[see below]	α-hús	α-kús

The big break here is between 'move out' and the other two, since 'move out' has <L H> **short imperfective melody** (becoming <L> as characteristic melody in long imperfectives). Its vocalism is comparable to that in 'load' in (394), above. By contrast, '(skin) dry' and 'inherit' have **imperfective <H> melody**. '(Skin) dry' and 'inherit' have the same vocalism as -CuCvC- stems like -dubvn- 'marry' (PerfP -ædobæn-, Imprt dùbən), see §7.3.1.7. The difference between '(skin) dry' and 'inherit' is that only the latter shows **C₁-Gemination** in the perfective.

The other verb of the 'move out' type (395) is 'take a long time' (PerfP -æhoja-, Imprt hàj, LoImpfP -t-àhaja-). There is no "regular" VbIN for this subtype; ì-han-an 'moving out' is Pl in form, while t-æ-hàji-t-t 'taking a long time' is a feminine nominal. Note that both 'move out' and 'take a long time' are h-initial (h often fails to geminate audibly in positions calling for gemination).

'(Skin) dry' (395) is paralleled by 'calm down' (-ædoka-, dùk, -t-ìduku-), 'fail' (-æfota-, etc.), 'be rubbed' (-ækoša-), and '(grains) be cleaned' (-æloša-, but variant -ælloša- for A-grm). The VbIN's are all of the regular shape α-CúC. I know of no other stem paralleling 'inherit' including C₁-Gemination

in the perfective. The subtype '(skin) dry' is therefore the "productive" pattern among this smallish set of verbs.

All three verbs in (395) have medial o in the perfectives. As indicated in the parallel PerfP *-ædobæn-* 'marry' (§7.3.1.7), we seem to have a stem-wide <L> melody here, with L combining with lexical u to give mid-height o by V-Height Compromise (§3.5.7).

The <L H> short imperfective melody for 'move out' (395), though valid for only two of the verbs covered here, resembles the regular <L H> short imperfective melody in other non-augment V-final verbs, including light V-final verbs of the a/t subclass (§7.3.1.3), heavy V-final verbs (§7.3.1.5), and -v(C)Cv- verbs (§7.3.1.15).

In (396) I present parallel cases involving e instead of o in the perfectives. The basic form is **-CiCv-** with medial i. I know of no cases with C₁-Gemination. The two verbs in (396) have identical stem paradigms, except for the variant short imperfectives for 'be balanced'.

(396) -CiCv- Stems with Medial e in Perfectives

	'be in agony'	'be balanced'
	-nišv-	-misv-
a. perfective system		
PerfP	-æneša-	-æmesa-
Reslt	-æneša-	-æmésa-
PerfN	-æneša-	-æmesa-
b. short imperfective system		
ShImpf	-ænaš (/ -ænaši- /)	-æmas (/ -æmasi- /)
		[variant -əmis-]
Imprt	nāš	mās
		[variant mīs]
c. long imperfective system		
LoImpfP	-t-ānaša-	-t-āmasa-
LoImpfN	-t-əniši-	-t-əmisi-
Prohib	-t-ænaša-	-t-æmasa-
d. nominalization		
VblN	a-nīš	a-mīs

The e in the perfective is parallel to the o of (395), and can be explained as L plus lexical i plus V-Height Compromise. The usual short imperfective melody is <L H>, becoming <L> characteristic long imperfective melody. There is a variant short imperfective <H> melody seen with 'be balanced'. The strong association of lexical i with imperfective <L> melody (shifting i to a) is

also seen in -CiCvC- verbs, see -jiwvɔ- ‘flee’ (PerfP -æjewæɔ-, Imprt jàwæɔ), see §7.3.1.7.

I know of no other underived stems of the type illustrated in (396). The pattern is, however, also attested in mediopassive derivatives (prefix -m- or -n-) of -vCu- verbs, e.g. -æm-era- ‘be opened’ (Imprt m-àr). It is possible that ‘be balanced’ in (396) is a frozen mediopassive, judging from its m and its sense.

Verbs with superheavy shape -CvCuCu-, more specifically -CvCuCu- with medial u, are illustrated by ‘go down’ in (397).

(397) -CvCuCu- Stem

	‘go down’
a. perfective system	
PerfP	-ætrara-
Reslt	-ætrára-
PerfN	-ætrara-
b. short imperfective system	
ShImpf	-ə̀trur (/ -ə̀trurɪ -/)
Imprt	tə̀rur
c. long imperfective system	
LoImpfP	-t-ìtruru-
LoImpfN	-t-ə̀truru-
Prohib	-t-ə̀truru-
d. nominalization	
VblN	a-trúr

The vocalism and stem-initial consonantal alternations are identical to those of the type -bvlulvɣ- ‘gape’ (PerfP -æblalæɣ-, Imprt bə̀lulæɣ), see §7.3.1.7. The same paradigm occurs with Mediopassive -m-vsuku- ‘spread’ (§8.3). The perfectives and inflectable ShImpf show Stem-Initial V-Insertion followed by Stem-Initial Syncope.

7.3.1.15 Full-V-initial V-final -vC(C)v- (a/ɪ and a/u types)

I now turn to verbs (all of them happen to be of the non-augment type) with both an initial full V and a stem-final V. Since initial full V’s occur only in light stems, the only relevant shapes are -vCu- and -vCCv-. The initial V is treated like that of -vCvC- and -vCCvC- verbs, including initial o in the perfectives (§7.3.1.8). The final V is treated, depending on the verb, as in the

α/i subclass or as in the α/u subclass of light V-final verbs, i.e. with final α in perfectives and final $/i/$ or u (depending on the verb) in imperfectives (§7.3.1.3). I know of no verb of $-vCv-$ and $-vCCv-$ shape that has final u in perfectives.

I begin with the majority α/i subtype with $\langle L H \rangle$ short imperfective melody (the $\langle H \rangle$ component appears as the final $/i/$).

(398) $-vC(C)v-$ Stems with $\langle L H \rangle$ Short Imperfective Melody

	‘fold’ -vðhu-	‘stretch to look’ -ujju-	‘leave’ -uyyu-	‘open’ -uru-
a. perfective system				
PerfP	-ððha-	-ðjja-	-ðyya-	-ðra-
Reslt	-oðhá-	-ojjá-	-oyyá-	-orá-
PerfN	-ððha-	-ðjja-	-ðyya-	-orá-
b. short imperfective system				
ShImpf	-àðh	-àjj	-æyy	-àr
	[= /-aðhi-/]	[= /-ajji-/]	[= /-æyyi-/]	[= /-ari-/]
Imprt	àðh	àjj	æyy	àr
c. long imperfective system				
LoImpfP	-t-ìðh-	-t-ìjj-	-t-ìyy-	-t-ìr-
	[= /-t-ìðhi-/; etc.; ‘leave’ has variants -t-éyy-, -t-æyy-]			
LoImpfN	-t-ìðh-	-t-ìjj-	-t-ìyy-	-t-ìr-
Prohib	-t-ìðh-	-t-ìjj-	-t-ìyy-	-t-ìr-
d. nominalization				
VblN	ìðh	ìjj	áyy	árr

Here ‘fold’ exemplifies the $-vPQv-$ subtype with nongeminate PQ cluster. Others are $-vzju-$ ‘be tranquil’ (PerfP $-ðzja-$, Imprt $\grave{a}zj$, LoImpfP $-t-ìzj-$), dialectally attested $-vðku-$ ‘be lost’ (PerfP $-ððka-$, Imprt $\grave{a}ðk$, LoImpfP $-t-ìðk-$), and two verbs discussed below in connection with resyllabification, $-ulwu-$ ‘be spacious’ and $-vdwu-$ ‘leave in afternoon’. $-vzju-$ has a variant paradigm of the α/u type, see below. In (398), ‘stretch to look’ and ‘leave’ illustrate the $-vPPv-$ subtype with geminate cluster. The paradigm of ‘stretch to look’ is matched by that of $-vqqv-$ ‘discourage’ (PerfP $-ðqqa-$, Imprt $\grave{a}qq$, LoImpfP $-t-ìqq-$, VblN $\grave{ì}qq$ or feminine $t-ìqqi-t-t$). The verb ‘leave’ differs from ‘stretch to look’ and ‘discourage’ in audibly shortening the initial V from $/a/$ to æ in the short imperfectives, and arguably in the long imperfectives (there is no reliable difference between $-t-ìyy-$ and $-t-éyy-$ since $/\text{æ}y/$ in this position monophthongizes phonetically to $[i]$). Perhaps the long imperfectives of ‘leave’ were reinterpreted as having a short V and this pattern spread into the

the short imperfectives. In (398), ‘open’ represents the -vCv- subtype with unclustered C; the other verbs of this type are -ušv- ‘butcher’ (PerfP -òša-, Impf áš, VbIN ášš or ázz, with š/z alternation, §3.1.1.5), dialectal -ukv- ‘(fire) be lit’ (PerfP -òka-, etc.) and -usv- ‘arrive, come’ (PerfP -òsa-, etc.).

The perfectives in (398) all have «o a» vocalic sequence, arguably with stem-wide <L> melody and stem-initial (treated as) /u/ combining as o by V-Height Compromise. The short imperfectives have <L H> melody, as in short imperfectives of the a/i subclass of -v(C)Cv- verbs and those of -vCvC- verbs. The /t/ at the end of the short imperfectives has its usual range of surface expressions, contracting with suffix-initial /æ/ to produce ə, appearing as ə before C-initial subject, suffix, and disappearing word-finally. ShImpf examples, using the verb ‘open’: 3MaSg Future àd Ø-ar ‘he will open’, 3FePl ad àrə-næt, and 3MaPl ad àrə-n. The long imperfectives have strict <H>, except that A-grm has <L H> (or sometimes <L>) vocalism, thus LoImpfP -t-íðh- in most dialects but -t-áðh- or -t-áðha- in A-grm. A similar dialectal split occurs in long imperfectives of -vCvC- verbs.

The VbIN íCC is basic for the -vCCv- verbs in (398). On the other hand, áCC is typical for -vCv- verbs (in addition to ár ‘opening’ I can cite ‘butcher’ with PerfP -òša- and VbIN ášš or ázz).

In the subtype -vPQv-, when the final v is dropped (short and long imperfectives), if Q is a sonorant it forces **resyllabification**, which takes the form of Final-CC Schwa-Insertion (44) accompanied (in T-ka only) by Epenthetic-Vowel Accentuation (70) (§3.2.4, §3.4.2). The two -vPQv- verbs that resyllabify are shown in (399).

(399) Resyllabification in Imprt and LoImpfP

	Imprt		LoImpfP	
	final	before V	final	before V
a. -udwv- ‘leave in afternoon’ (cf. PerfP -òdwa-)	adów	àdw-	-t-idów	-t-ídw-
	[= /adwɪ/]		[= /-t-ídwɪ-/]	
b. -ulwv- ‘be spacious’ (cf. PerfP -òlwa-)	alów	àlw-	-t-ilów	-t-ílw-
	[= /alwɪ/]		[= /-t-ílwɪ-/]	

As usual, resyllabification fails to apply before a V-initial suffix or clitic. Nonsingular imperative forms are 2MaPl àdw-æt and àlw-æt, and 2FePl adwə-mæt and alwə-mæt. Likewise for the LoImpfP we have 3MaPl t-ídwə-n ‘they leave in the afternoon’ (suffix -æn).

In dialects other than T-ka, Epenthetic-Vowel Accentuation fails to apply: Imprt àləw ‘be spacious’ instead of T-ka alów, likewise word-final LoImpfP -t-íləw instead of -t-ilów. Some Gao-area dialects, including A-grm, at least

optionally preserve the original stem-final V, so no resyllabification is needed: word-final LoImpfP *-t-ílwa* or *-t-úlwu* depending on the dialect. A PerfP stem *-èlwa-* instead of *-òlwa-* is also attested for A-grm and Gao: 3MaSg Ø-èlwa, 3MaPl èlwæ-n. Perhaps e for expected o here reflects an idiosyncratic dissimilation to the w.

The verbs in (400) are of the **α/u subtype**, and show <H> short imperfective melody including final u.

(400) -vC(C)v- Stems with <H> Short Imperfective Melody

	‘believe’	‘fall’
	-vrdv-	-vɔv-
a. perfective system		
PerfP	-òrda-	-òɔa-
Reslt	-ordá-	-oɔá-
PerfN	-òrda-	-òɔa-
b. short imperfective system		
ShImpf	-ĩrdv-	-ĩɔv-
Imprt	ĩrdv	ĩɔv
c. long imperfective system		
LoImpfP	-t-ĩrdv-, -ríddv-	-t-ĩɔv-
LoImpfN	-t-ĩrdv-, -rèddv-	-t-ĩɔv-
Prohib	-t-ĩrdv-, -rèddv-	-t-ĩɔv-
d. nominalization		
VbIN	t-òrda	t-ũɔi-t-t

These verbs have <H> melody in the short as well as long imperfectives, suggesting that the stem-final imperfective u is lexical. Note the alternative long imperfectives for ‘believe’, one with *-t-* prefix (*-t-íPQu-*) and the other with medial geminate (LoImpfP *-PíQQv-*). The latter can be generated if we perform a pre-ablaut reconfiguration from *-vPQv-* to *-PvQv-* and then allow the regular long imperfective ablaut components to go to work.

The other *-vPQv-* verb known to me with a stem paradigm almost identical to that of ‘believe’ in (400) is *-vrmv-* ‘be stuck’. In addition to LoImpfP *-t-ĩrmv-* varying with *-rímmv-*, which parallel the LoImpfP variants for ‘believe’, *-vrmv-* also has a third LoImpfP variant */-t-ĩrm-/-*, realized prevocally as *-t-ĩrm-* and word-finally as (T-ka) *-t-irém* after resyllabification. The T-ka VbIN *irémm* (T-ka) also shows resyllabification, which in VbIN’s is accompanied (in T-ka) by both Epenthetic-Vowel Accentuation (70) and Stem-Final Gemination (71) (§3.3.2). For A-grm I recorded a feminine VbIN *t-àrmi-t-t*.

The other -vCv- verb with a stem paradigm identical to that of 'fall' in (400) is -vfv- 'be better' (PerfP -òfa-, Imprt ìfu-, LoImpfP -t-ìfu-). Its VblN's are t-ùfi-t-t and t-àfi-t-t.

Two verbs that have some -vCv- forms but do not fit into any established class are 'be born' (PerfP -èwa-, ShImpf -ìwi-, §7.3.2.17) and 'be lost' (PerfP -èba-, ShImpf -ìba-, §7.3.2.16).

To show how the stem-final *a* of the perfectives discussed in this section interacts with subject suffixes, I give full pronominal paradigms of the three perfective stems for a representative verb in (401).

(401) Perfective System of -òjja- 'stretch (to look)'

	PerfP	PerfN (Neg wær)	Reslt
a. no suffix			
1Pl	n-òjja	wær n-ojja	n-ojjá
3MaSg	Ø-òjja	wær Ø-òjja	Ø-ojjá
3FeSg	t-òjja	wær t-òjja	t-ojjá
b. contraction /a-æ/ > e with V-initial suffix			
1Sg	òjje-ɾ	wær ojje-ɾ	ojjé-ɾ
2Sg	t-òjje-d	wær t-ojje-d	t-ojjé-d
c. delete of stem-final /a/ before V-initial suffix, leaving æ			
3MaPl	òjjæ-n	wær òjje-n	ojjá-n
2MaPl	t-òjjæ-m	wær t-òjje-m	t-ojjá-m
d. stem-final V appears as short V before C-initial suffix			
2FePl	t-òjjæ-mæt	wær t-òjje-mæt	t-ojjá-mæt
3FePl	òjjæ-næt	wær òjje-næt	ojjá-næt

In (401.a) there is no subject suffix, so nothing happens to the stem-final *a* other than the usual accent shift due to $\acute{\chi}$ -pc1 in the Reslt. In (401.b), however, stem-final /a/ contracts with the initial V of 1Sg -æɾ and of 2Sg -æd to produce e. Since this contraction happens in all three perfective stems, it is a quasi-phonological rule of the type /a + æ/ → e. The PerfP and PerfN forms have default accent (assigned after VV-Contraction), as shown by the phrasal accent on Neg wær. In (401.c), with Pl /-æC/ subject suffixes, the stem-final /a/ undergoes Presuffixal *a*-Shortening (§3.4.9.1) and then contracts with suffixal /æ/ to give æ. In these combinations, the stem plus suffix is **rebracketed** to form a sequence -v(C)CæC- to which both PerfN ablaut and full-fledged Reslt ablaut can apply, hence the e in the PerfN and the accented and lengthened á in the Reslt. In (401.d), the initial C of the suffix likewise joins the stem by rebracketing to form -v(C)CæC- after Presuffixal

α -Shortening, and again this allows the /æ/ to be targeted by PerfN and Reslt ablaut formatives.

7.3.1.16 *Augmented -CuCCv-, -CuCuCv-, etc.*

Verbs that take Augment -t- are all V-final (§5.1, §7.1), and I know of none that begins with a full V. In this section I describe augment verbs that have a medial full V, which may appear in the penultimate or antepenultimate syllable. (I know of no verb with more than one medial full V). These verbs share relevant features with other (non-augment) verbs that have a medial full V (§7.3.1.7, §7.3.1.14).

Several subtypes must be recognized based on vocalism and stem-initial treatment, but they correlate with stem-shape. I begin with verbs whose medial full V occurs in a **stem-initial closed syllable** in the basic lexical representation. All verbs of this type have u as the full V, most transparently in the perfective system. A medial u can also be posited for the imperfective and VblN forms, but except for imperatives and unsuffixed short imperfectives the /u/ appears as ə due to Medial V-Shortening before the CC cluster. The basic shapes are **middleweight -CuCCv-** and **superheavy -CuCCvCu-**, plus Augment.

(402) Augmented -CuCCv- (+ -t) and -CuCCvCu- (+ -t)

	'be abundant' -buffv-	'bind' -jujvbu-
a. perfective system		
PerfP	-əbbuffæ-t	-əjjùjjæbæ-t
Reslt	-əbbúffæ-t	-əjjùjjæbæ-t
PerfN	-əbbuffæ-t	-əjjùjjæbæ-t
b. short imperfective system		
ShImpf	-əbbuffə-t	-əjjùjjəbə-t
Imprt	búffə-t	jùjjəbə-t
c. long imperfective system		
LoImpfP	-t-ĩbøffu-t	-t-ijəjjəbu-t
LoImpfN	-t-əbøffu-t	-t-əjəjjəbu-t
Prohib	-t-əbøffu-t	-t-əjəjjəbu-t
d. nominalization		
VblN	à-bøffu	ɑ-jəjjəbu

A-grm usually reduces the lexical *u* to a short *V*, converting these stem-shapes to *-CvCCv-* and *-CvCCvCv-* plus Augment, types covered in §7.3.1.6. For middleweight ‘be abundant’ we therefore get A-grm PerfP *əbbəffæ-t* and so on. For superheavy verbs, A-grm medial short *V* corresponding to *u* in other dialects, cited in the PerfP, is seen in PerfP *-kækkæræ-t* ‘draw out’, *-nænnæræ-t* ‘rub eyes’, and *-šæššæfæ-t* ‘tear off a strip’ (A-grm also avoids Stem-Initial *V*-Insertion in these stems).

As usual in perfectives beginning with a short *V* plus a syllable with a full high *V*, dialects other than T-ka and A-grm have initial *æ* instead of *ə* (PerfP *-æbbuffæ-t*).

I have recorded at least 20 verbs with paradigms of the middleweight ‘be abundant’ subtype in (402), with both geminated and nongeminate medial clusters. These include *-ḍukru-* ‘get angry’ (Imprt *ḍùkræ-t*), *-buggu-* ‘admit an error’, and *-kurdu-* ‘be dirty’.

In the superheavy subtype exemplified by *-jujvbu-* ‘bind’ in (402), my primary T-ka speaker tended to **degeminate the medial geminate** when the initial *C* was geminated by *C₁*-Gemination. Therefore, PerfP *-əllùllæmæ-t* was sometimes heard as *-əllùlæmæ-t* for this speaker, whereas Imprt *lùlləmæ-t* never appeared as *#lùləmæ-t*, and the LoImpfP was always *-t-iləlləmu-t*. This degemination seems to be a feature of allegro speech, and it may be an idiosyncrasy of this speaker (I usually got the geminate pronunciation when I elicited the form a second time). I checked these forms carefully with R and K-d speakers and observed no degemination.

The other verbs known to me of the superheavy subtype are these: *-fuffvru-* ‘scrub’, *-ɾullvmv-* ‘wear’ (K-d), *-kukkvbv-* ‘be tied up tight’, *-kukkvru-* ‘draw out’, *-lullvmv-* ‘trim’, *-mummvnu-* ‘pinch and twist’, *-nunnvrv-* ‘rub eyes’, *-sussvru-* ‘be rude’, *-šuššvfv-* ‘tear off a strip’, and *-žurrvbv-* ‘try, test’ (cf. A-grm non-augment *-žurbv-*, PerfP *-əžžoræb-*). The cluster seems to be a geminate in all cases.

All of the verbs in (402) are subject (in T-ka) to **u-Spreading** and **Medial V-Shortening** (§3.4.9.3) in short imperfective forms where Augment *-t-* is omitted and the stem-final *V* contracts with a *V*-initial subject suffix. This happens in the 1Sg, 2Sg, 2MaPl, and 3MaPl subject forms, which are expressed by *-æC* suffixes. The same morphophonological processes apply throughout the long imperfective paradigms.

Consider the sample short imperfectives in (403), where 3MaPl *-æn* illustrates what happens when a *V*-initial subject suffix is present. In the 3MaPl, a putative representation (after Melodic Association) */əbbuffi-æn/*, perhaps already contracted to */əbbuffi-n/*, first spreads the quality features of the */u/* to the stem-final *i*, and then shortens the */u/* to *ə* before a cluster.

(403) Short Imperfectives (T-ka) with u-Spreading and Medial V-Shortening

gloss	3MaSg	3MaPl
'be much'	ĩ-bbuffə-t	əbbəffu-n
'get angry'	ĩ-đđukrə-t	əđđəkru-n
'scrub'	i-ffüffərə-t	əffəffəru-n
'fear'	i-mmüttəsə-t	əmməttəsü-n

In the I, Kidal-area, and R dialects, Medial V-Shortening and u-Spreading are absent. For K(K-f and optionally K-d), I recorded 3MaPl əffüffəri-n. This is phonologically straightforward, assuming basic form -fuffvru-, ShImpf <H> melody, and /i-æ/ contracting to i (parallel to /u-æ/ contracting to u in T-ka). However, for I and R dialects (and optionally for K-d), I recorded forms with e instead of i, hence 3MaPl ShImpf əbbuffe-n and əffüffäre-n. These ShImpf forms have an odd resemblance to the corresponding perfectives, where stem-final /a/ contracts with suffixal /æ/ to give e, as in 3MaPl PerfP əbbuffe-n 'they were abundant' in these same dialects. It would seem that the e in the ShImpf forms in these dialects is due to an unusual analogy from perfective to ShImpf, and I will not attempt to derive these forms phonologically.

I now turn to stems where the full V occurs in a **noninitial open syllable** in the basic representation. The stems in question have the shapes -CvCuCu-, -CvCCuCu- just (one attested unaugmented verb, see (406) later in this section, and -CvCvCCuCu-. These stems have <L> melodies in the perfective, and except for the rare -CvCCuCu- stem shape they have a lexically determined high V (u or i) in the imperfectives and in the VblN. I consider the high V to be part of the basic representation.

Verbs of the shapes -CvCuCu- and -CvCvCCuCu- with lexical u are illustrated in (404).

(404) Augmented -CvCuCu- and -CvCvCCuCu- Stems

	'roll'	'be diluted'
a. perfective system		
PerfP	-əbləmbalæ-t	-əđrərə-t
Reslt	-əbləmbalæ-t	-əđrúra-t
PerfN	-əbləmbalæ-t	-əđrərə-t
b. short imperfective system		
ShImpf	-əbləmbulə-t	-əđrurə-t
Imprt	bələmbulə-t	đrurə-t

c. long imperfective system

LoImpfP	-t-ibləmbulu-t	-t-ĩḍruru-t
LoImpfN	-t-əbləmbulu-t	-t-əḍruru-t
Prohib	-t-əbləmbulu-t	-t-əḍruru-t

d. nominalization

VblN	ɑ-bləmbulu	à-ḍruru
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Using the Imprt with its diagnostic u for citation purposes, others like ‘roll’ are ‘snort’ (xə̀rə̀ŋxurə̀-t) and ‘jump up’ (bərə̀ŋjuyə̀-t). Others like ‘be diluted’ are ‘(grain) be soggy’ (lə̀bujə̀-t), ‘recover from illness’ (lə̀xurə̀-t), ‘(skin) break out’ (mə̀zʉrə̀-t), ‘(rope) have bulge at tip’ (təkurə̀-t), and ‘have a gaping hole’ (xə̀bubə̀-t).

Verbs of the same syllabic shapes but with i instead of u are illustrated in (405). The paradigms are exactly parallel to those with u in (404).

(405) Augmented -CvCiCu- and -CvCvCCiCu- Stems

	‘stir up’	‘be freed’
a. perfective system		
PerfP	-ə̀rɪlə̀ŋɪɪlæ̀-t	-ə̀rɪwɪlæ̀-t
Reslt	-ə̀rɪlə̀ŋɪɪlæ̀-t	-ə̀rɪwɪlæ̀-t
PerfN	-ə̀rɪlə̀ŋɪɪlæ̀-t	-ə̀rɪwɪlæ̀-t
b. short imperfective system		
ShImpf	-ə̀rɪlə̀ŋɪɪlə̀-t	-ə̀rɪwɪlə̀-t
Imprt	rə̀lə̀ŋɪɪlə̀-t	rə̀wɪlə̀-t
c. long imperfective system		
LoImpfP	-t-ɪrɪlə̀ŋɪɪli-t	-t-ĩrɪwɪli-t
LoImpfN	-t-ə̀rɪlə̀ŋɪɪli-t	-t-ə̀rɪwɪli-t
Prohib	-t-ə̀rɪlə̀ŋɪɪli-t	-t-ə̀rɪwɪli-t
d. nominalization		
VblN	ɑ-rɪlə̀ŋɪɪli	à-rɪwɪli

Another like ‘stir up’ is, in the Imprt, wərə̀wwirə̀-t ‘rotate’. Others like ‘be freed’, in the Imprt, are rə̀wɪšə̀-t ‘bellow’, tə̀wɪlə̀-t ‘remove impurities’, and wənɪfə̀-t ‘be curious’. The stem -tɪrɪrɪ- ‘be emptied’ has dialectal variants with u and with i, e.g. Imprt tə̀rɪrɪə̀-t or tə̀rɪrɪə̀-t.

For K-d I have a verb ‘suffer night blindness’ with PerfP -ə̀ddə̀mbə̀rəkə̀-t (arguably -ə̀ddə̀mbə̀rəkə̀-t since r is a BLC) and Imprt də̀mbə̀rukə̀-t.

I know of just one augmented verb of shape -CvCCuCu-. Key MAN stems are given in (406).

(406) -ʁvriwɔ- ‘be torn’

PerfP	-əqqərrawæ-t (phonetic [-æq:æ'r:awæt])
Imprt	ʁærrawə-t, ʁərriwə-t
LoImpfP	-t-ɑʁærrawa-t
VbIN	ɑ-ʁərrwi (or ɑ-qərrwi)

Because of the BLC's qq and rr, the perfective melody is indeterminately <HL> (-əqqərrawæ-t) or <L> (-æqqərrawæ-t). I take it as -əqqərrawæ-t, melodically equivalent to e.g. -əjjùjjæbæ-t ‘bind’ in (402) above, i.e. with two H vowels followed by two low vowels. As with all heavy verb stems, the VbIN with prefix ɑ- has <H> stem melody. The Imprt fluctuates between <H> and <L> melody, while only <L> is attested in the LoImpfP. I have noted numerous other cases where a medial lexical i is associated with a stem-wide <L> imperfective melody.

Finally, there are some augmented verbs with basic shape -CuCv-. Those in (407) represent the majority that have lexical u.

(407) Augmented -CuCv- Stems

	‘be plump’ -dufv-	‘drag’ -hubv-
a. perfective system		
PerfP	-əddofæ-t	-əhobæ-t
Reslt	-əddófæ-t	-əhóbæ-t
PerfN	-əddofæ-t	-əhobæ-t
b. short imperfective system		
ShImpf	-əddùfə-t	-əhubə-t
Imprt	dùfə-t	hùbə-t
c. long imperfective system		
LoImpfP	-t-ĩdufu-t	-t-ĩhubu-t
LoImpfN	-t-ədufu-t	-t-əhubu-t
Prohib	-t-ədufu-t	-t-əhubu-t
d. nominalization		
VFIN	æ-dafu	æ-habu

The only common subtype is that exemplified by ‘be plump’. I take the basic representation of the stem to be -CuCv-. The perfective has medial o (arguably from the fusion of <L> melody with lexical u by V-Height Compromise). The verb has u in the imperfectives, and it undergoes C₁-Gemination in conjunction with Stem-Initial V-Insertion (perfectives,

ShImpf). Others of this type are (PerfP) -æddobæ-t 'be able', -æddomæ-t 'plant (crop)' (from Songhay), -ækkolæ-t 'tug', -æmmolæ-t 'have some white on the head' (PerfP also attested once as mōlæ-t), -æššohæ-t 'be firm' and -æššohæ-t 'be healthy' (from Arabic), -æssomæ-t 'put head on cushion', , and -ættolæ-t 'put on top of'. For -æddobæ-t 'be able', T-ka has ShImpf -æddubæ-t varying with -ædabæ-t, while the other dialects have -ædabæ-t or -ùdabæ-t. The LoImpfP is -t-ïdubu-t (except A-grm -t-ùdaba-t).

In (407.b), 'drag' is the only verb recorded that has the same vocalism as the common 'be plump' subtype but fails to undergo C₁-Gemination. The C₁ for 'drag' is h, which is often resistant to gemination. For R, I did record PerfP -æhhobæ-t with C₁-Gemination.

The unusual VblN type æ-CaCu in (407) is quite characteristic of augmented -CuCu- verbs (another example is æ-kalu 'tugging'). To derive -CaCu from lexical /-CuCu-/, we can allow u-Spreading to apply (producing /-CuCu-/), then have a L melodic segment apply to the first syllable. (See also æ-kawi 'roasting' just below.)

For the R speaker, I recorded optional shortening of the medial V in long imperfectives, as in LoImpfP t-ïṣəxu-t (for t-ṣuxu-t) 'be healthy', cf. PerfP -æssoxæ-t. Normally, Medial V-Shortening applies only before a CC cluster.

There are three verbs of -CuCu- shape with medial lexical i (hence perfective e) or a. These are given in (408).

(408) Non-adjectival Augmented -CiCu- and -CaCu- Stems

	'roast'	'be brown'	'be green'
	-kiwu-	-fiwu-	-dalv-
a. perfective system			
PerfP	-ækkewæ-t	-æffewæ-t	dàla-t
Reslt	-ækkéwæ-t	-æfféwæ-t	dalá-t
PerfN	-ækkewæ-t	-æffewæ-t	dàla-t
	[perfectives also -ækkiwæ-t, fàwa-t, etc.]		
b. short imperfective system			
ShImpf	-ækkawæ-t	-æffawæ-t	-æddalæ-t
Imprt	kàwæ-t, kīwæ-t	fàwæ-t	dàlæ-t
c. long imperfective system			
LoImpfP	-t-àkawa-t	-t-àfawa-t	-t-àdala-t
LoImpfN	-t-àkiwi-t	-t-àfiwi-t	-t-àdili-t
Prohib	-t-ækawa-t	-t-æfawa-t	-t-ædala-t
d. nominalization			
VblN/Abstr	æ-kawi	t-æffàwæ-t-t	t-æddàlæ-t-t

'Be brown' and 'be green' are adjectival, as shown by their Abstractive nominals. Both were discussed in §7.3.1.13. The PerfP shapes *dàlɑ-t* and *f̄ɑwɑ-t* (variant *-æffewæ-t* is attested only for T-ka) are specifically adjectival, with <L> melody and stem-final *ɑ* that fails to undergo Pre-Augment V-Shortening.

However, 'roast' is a non-adjectival verb whose stem paradigm is parallel to that of 'be plump' in (407), above, but with lexical *i* rather than *u*. In the perfective, this *i* usually combines with L melody to produce *e*, hence the widespread PerfP *-ækkewæ-t*, though the T-ka informant also gave a variant *-ækkiwæ-t*. In the imperfectives, the shift to strict <L> melody is parallel to the same shift in -CiCvC- verbs like *-jiwvɔ-* 'flee' (PerfP *-æjewæɖ-*, VbIN *ɑ-jiwæɖ*, but Imprt *j̄wæɖ* with <L> melody, see §7.3.1.7).

7.3.2 Irregular and suppletive verbs

The verbs 'see' (\sqrt{nhy} or \sqrt{hny}) and 'weep' (\sqrt{lh} or \sqrt{hl}) are treated as cases of metathesis (§3.2.2.1). The verbs considered below have irregular or at least unique paradigms.

7.3.2.1 'die' (\sqrt{mt} , \sqrt{m} , \sqrt{mtn})

(409) 'die'

a. perfective system (based on \sqrt{m})

PerfP	-əmmu-t
Reslt	-əmmú-t
PerfN	-əmmu-t

b. short imperfective system (based on \sqrt{mt})

ShImpf	-əmmæt-
Imprt	əmmæt (2MaPl <i>əmmæ̀t-æt</i> , 2FePl <i>əmmæ̀t-mæt</i>)

c. long imperfective system (based on \sqrt{mt})

LoImpfP	-t-əmætta-t
LoImpfN	-t-əmætti-t
Prohib	-t-əmætta-t

d. nominalization (based on \sqrt{mtn})

VbIN	t-ɑ-mæ̀ttan-t ('death')
Agent	e-n-əmméttən, e-n-əmmétən ('corpse')

The major irregularity is that the *t* at the end of the perfective and long imperfective forms is the Augment *-t-* (and is therefore omitted before

V-initial subject pronominal suffixes), but the *t* at the end of the short imperfectives functions as a stem-final C and is not omitted before V-initial suffixes. Another idiosyncrasy is that the nominals are based on a stem-variant with final *n*.

PerfP forms for T-ka are 3MaSg *ì-mmu-t*, 3FeSg *t-èmmu-t*, 1Pl *n-èmmu-t*, 2FePl *t-èmmu-t-mæt*, and 3FePl *èmmu-t-næt* with the Augment, but with V-initial suffixes 1Sg *èmmu-ɾ*, 2Sg *t-èmmu-d*, 2MaPl *t-èmmu-m*, 3MaPl *èmmu-n*. The same forms are used as PerfN, which bring out accentual differences, e.g. 1Sg *wær èmmu-ɾ* 'I did not die' versus *wær èmmu-n* 'they-Ma did not die'. As usual before a syllable with *u*, the perfective has initial *ə* in T-ka and A-grm, but *æ* in the other dialects (K R T-md). The *æ* dialects have 3Sg PerfP *Ø-èmmu-t*.

ShImpf forms (note the invariant stem-final *t*) are 1Sg *æmmæt-æɾ*, 1Pl *n-æmmæt*, 2Sg *t-æmmæt-æd*, 2MaPl *t-æmmæt-æm*, 2FePl *t-æmmæt-mæt*, 3MaSg *Ø-æmmæt*, 3FeSg *t-æmmæt*, 3MaPl *æmmæt-æn*, 3FePl *æmmæt-næt*. Accent is default throughout the ShImpf, e.g. Future *àd Ø-æmmæt* 'he will die'. The LoImpfP is *-t-àmætta-* plus the Augment in the usual places, e.g. 3MaSg *i-tàmætta-t* and 3FePl *t-amætta-t-næt*, but augmentless 2Sg *t-amætte-d*, 3MaPl *t-amætte-n*, etc.

7.3.2.2 'be much, many' (*√j, √jt*), 'be long, tall' (*√šjr, √šjrt*)

The forms for 'be much, many' are in (410).

(410) 'be much, many'

a. perfective system

PerfP	-èjjæt- (dialectally -èjjæt-, -ègæt-, -æjut-)
Reslt	-əjjót- (-əjjæt-, -əgæt-, -æjút-)
PerfN	-èjjæt- (etc.)

b. short imperfective system

ShImpf	-įjat- (dialectally -ùjat-)
Imprt	įjat (ùjat)

c. long imperfective system

LoImpfP	-t-įjat (dialectally -t-àjata-, -t-újat-)
LoImpfN	-t-įjit (-t-èjiti-)
Prohib	-t-įjat (-t-æjata-)

d. nominalization

noun	éjutt ('large quantity, abundance')
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The shape -įjat- in the imperfectives connects this verb with numerous adjectival verbs (§7.3.1.10-11).

The PerfP -ąjjət- is unusual in that (for T-ka) it does not allow 3MaSg subject prefix i-, though the stem begins with schwa and can take other prefixes (3FeSg or 2nd person t-, 1Pl n-). Thus ąjjət (not the expected #i-jjət) ‘it-Ma became abundant’, but t-ąjjət ‘it-Fe became abundant’. This would make more sense phonologically if the stem began with æ rather than ə, and the participles (below) and K-d PerfP -ąjjot- actually do begin with æ.

The final t is clearly part of the stem in these inflected forms, and in the related noun ąjutt ‘large quantity, abundance’. For example, the 3MaPl PerfP is ąjjət-æn ‘they became numerous’.

However, in the **participles** (used as modifying “adjectives”) the final t behaves as though it were the suffixal Augment -t-, and therefore appears only in the plural form: MaSg Ø-ąjjé-n, FeSg t-ąjjé-t, Pl ąjjó-t-nen. See (534.e) in §8.5.7. For A-grm I elicited, along with inflected PerfP -ągæt-, the participles MaSg ąggé-n, FeSg ąggé-t, Pl ąggó-t-nen. Here the lack of t- prefix in the FeSg suggests that the participles do not take subject prefixes.

The verb ‘**be long, tall**’ has somewhat similar characteristics. The forms in (411) are valid for T-ka and some other dialects (with slight variation in consonantism).

(411) ‘be long, tall’

a. perfective system

PerfP	šąjrət- (dialectally ząjrət-, sąjrət-)
Reslt	šąjrót-
PerfN	šąjrət-

b. short imperfective system

ShImpf	-ąššąjræt-, -ąššąjræ-t-
Imprt	šąjræt, šąjræ-t

c. long imperfective system

LoImpfP	-t-ąšąjræt-, -t-ąšąjræ-t
LoImpfN	-t-ąšąjrít-, -t-ąšąjrít-t
Prohib	-t-ąšąjræt-, -t-ąšąjræ-t

d. nominalization

abstractive	t-ąššąjræt-t
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As with many C-initial adjectival verbs, pronominal subject prefixes are generally avoided in the perfectives. The final t is part of the stem at least in the perfectives, hence 3MaPl PerfP šąjrət-æn ‘they became long’. There is some fluctuation in the imperfectives between taking the t as a stem segment, or as the Augment -t. If interpreted as the Augment, -t should disappear before

V-initial subject suffixes. This possibility is illustrated in 3MaPl Future *ad æššæjre-n* ‘it-Ma will become long’ (T-ka). Some informants had difficulty with these suffixed forms, and more study is needed.

As with ‘be much, many’, the **participles** (§8.1.7) for ‘long, tall’ lack the final t, except in the Pl, where it functions as the Augment -t-. Thus MaSg *šæjré-n* ‘long, tall’, FeSg *šæjré-t*, Pl *šæjro-t-nen*. See (534.e) in §8.5.7.

There is additional dialectal variation in the verbs. For A-grm the verbs (like the participles) have Augment -t- even in the perfective, hence PerfP *-əššəgræ-t* (3MaPl *əššəgre-n*).

For Niger, LTF2 436 gives PerfP “zəgrət” with an ablaut change in 3MaPl “zəgrota” (suffix -a for *-æn). In my Malian data, this ablaut change does not happen in inflectable perfectives though it does occur in participles (see above). LTF2 (loc. cit.) also gives 3MaPl LoImpfP “tazəgren,” where the absence of stem-final t shows that LoImpfP -t-əzəgra-t ends in Augment -t.

7.3.2.3 ‘forget’ (√tw)

The stems are in (412). The verb generally takes Centrifugal clitic -*ɿn*, as in *əttəwə-ɿh-ɿn* ‘he forgot me’. The MAN stem paradigm is dialectally variable.

(412) ‘forget’

a. perfective system

PerfP	-əttəwə-
Reslt	-əttíwə-
PerfN	-əttəwə-

b. short imperfective system

ShImpf	-ítaw-, -əttaw-
Imprt	ítaw, əttaw

c. long imperfective system

LoImpfP	-t-ítaw-
LoImpfN	-t-ítaw-
Prohib	-t-ítaw-

d. nominalization

VbIN	t-e-tə̀wi-t-t, t-ə̀-taw-t
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The Imprt and LoImpfP are based on -*ítaw-*, with vocalism typical of adjectival verbs. PerfP *-əttəwə-* allows a 3MaSg subject prefix, as in *ɿ-ttəw-ɿn* ‘he forgot’. The Reslt is *-əttíwə-*, with an *i* vowel of the sort usually found in longer verb stems.

For K-d I recorded PerfP -əttəwa- as in (412), but alongside Imprt ðtaw I recorded a variant ættaw (also recorded for Im dialect). For R and T-md, and as a variant for K-d, I recorded variants with Augment -t-, hence PerfP -əttəwæ-t, Imprt tæwæ-t, and LoImpfP -t-ðtəwa-t (3MaPl t-ðtəwe-n). A-grm also has a type with Imprt tæwu and LoImpfP -t-ðtəwu-.

A **passive** 'be forgotten' with PerfP -ætw-ættəw- (T-ka) or -ætw-əttəwa- (K-d) is attested. The **causatives** attested ('make forget') are T-ka -s-vtvw- (PerfP -æs-təw-), K-d -s-vtvwu- (PerfP -æs-təwa-), and R -s-vtvwvt- (PerfP -æs-təwæt-, VblN a-s-əttəwət).

7.3.2.4 'be yellow' (\sqrt{wrx} , \sqrt{rx})

The paradigm of this verb is similar to that of many adjectival verbs with imperfectives based on -iCCaC-. However, it shows some irregularities, notably presence/absence of w as C₁. The abstractive is phonetically [tæ'roɣe] with the two BLC's making it impossible to determine whether the phonemic transcription is t-ə-rɣe or t-æ-roɣe. I prefer the former transcription based on parallelism with other abstractives with H vowels except for the final e, e.g. t-ə-rufe 'greediness' and t-ə-bləhe 'tameness' (§8.6.5).

(413) 'be yellow'

PerfP	-æɣɣ- (except K-d -wæɣɣ-)
Imprt	ðwɣɣ
LoImpfP	-t-ðwɣɣ-
Abstractive	t-ə-rɣe

Participles: MaSg æɣɣ-æn, syncoating in some dialects to æɣɣ-æn, also (Reslt) æɣɣ-æn; FeSg æɣɣ-æt, æɣɣ-æt, æɣɣ-æt (note the absence of 3FeSg t- prefix); Pl æɣɣ-nen.

The **causative** 'make yellow' is -s-vwɣɣ-, e.g. PerfP -əss-əwɣɣ-.

7.3.2.5 'say' (\sqrt{vn} , \sqrt{jn})

The stems are in (414).

(414) 'say'

a. perfective system

PerfP	-ənnə- (3MaPl ənnə-n)
Reslt	-ənná- (3MaPl ənná-n)
PerfN	-ənnə- (3MaPl ənne-n)

b. short imperfective system

ShImpf	/-ænnɪ-/ (3MaSg Ø-ænn, 3MaPl ènnə-n)
Imprt	ænn

c. long imperfective system

LoImpfP	-jánna- (3MaPl jánne-n)
LoImpfN	-jènni-
Prohib	-jænna-

d. nominalization

VbIN	t-ĩnaw-t, t-ènnə
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The perfectives and short imperfectives are of the α/I subclass of $-vCCv$ -verbs (§7.3.1.3). PerfN examples (with Neg particle) are 2MaPl wær t-ènnə-m) and 3MaPl wær ènnə-n. A ShImpf example (with Fut particle) is 3MaPl ad ènnə-n, where /ɪ/ contracts with suffixal /æ/ to ə, then the first syllable harmonizes.

For verbs of the shape $-vPQv$ - with ungeminated cluster, the regular LoImpfP is $-PáQQ-$ (underlying $/-PáQQA-/$ in T-ka). However, when the cluster is geminated ($-vPPv$ -), another C_1 is found for the long imperfectives (cf. ‘go to’, just below). In the case of ‘say’, a lexically idiosyncratic long imperfective with j as C_1 is used. Furthermore, the LoImpfP ends in a (rather than the deletable stem-final /A/ found in the other verbs). $-jánna-$ appears as $-jánne-$ before all nonzero subject suffixes: 2Sg jánne-d, 2MaPl jánne-m (suffix $/-æm/$), and even 2FePl jánne-mæt (suffix $/-mæt/$), where one would have expected $\#jännə-mæt$ by Presuffixal α -Shortening.

A **passive** $-tvw-vnnv-$ with PerfP $-æt-w-ænna-$ is attested. No causative form is recorded.

7.3.2.6 ‘go to’ (\sqrt{k})

‘Go’ can be expressed either with intransitive $-vjlv-$ ‘go, set off, be en route’ (in several dialects $-vglv-$) if destination is not specified, or with transitive $-vkku-$ ‘go to’ with a specified destination. For $-vjlv-$ see §7.3.2.7.

Representative forms of $-vkku-$ are shown in (415). The perfectives and short imperfectives are regular for the α/I subclass of $-vCCv$ -verbs (§7.3.1.3). In the long imperfectives, the geminate kk is not split up, and t is used as a kind of substitute C_1 . This t is presumably related to the $-t-$ prefix common in long imperfectives of verbs of longer stem shapes.

(415) 'go to'

PerfP	-əkkə-
ShImpf	/-ækkɪ-/ (3MaPl əkkə-n)
Imprt	əkk
LoImpfP	-t-ákk- (/t-ákkA-/
VbIN	t-ikaw-t (A-grm íki)

7.3.2.7 'go' (\sqrt{jl} , \sqrt{ms})

The intransitive verb -vjl- 'go' is inflected like other verbs of the same shape. T-ka and T-md have j, while all other dialects checked (A-grm I K-d K-f R) have g.

(416) 'go'

PerfP	-əjla-
ShImpf	/-æjli-/ (3MaSg i-jəl, 3MaPl əjlə-n)
Imprt	əjəl (2MaPl əjl-æt)
LoImpfP	-jáll- (A-grm -gállə-)
VbIN	t-a-jəllaw-t (A-grm also e-gælli)

The imperative is not in common use. The ShImpf (and Imprt) show the typical resyllabification (§3.2.4, §3.2.3) of -vPQv- verbs of the $\alpha/1$ subclass when Q is more sonorous than P.

There is another 'go' verb \sqrt{ms} . It is used chiefly in the imperative ('go!'), and therefore comes very close to being a suppletive Imprt stem (cf. the suppletive Imprt for 'come', §7.3.2.8, below). Nevertheless, a full set of paradigmatic forms for \sqrt{ms} does exist (417), with senses like 'budge, move; set off, leave'.

(417) 'go'

PerfP	-əmmussa-
ShImpf	/-əmmussi-/ (3MaSg ɪ-mmuss)
Imprt	müss (2MaPl müss-æt, 2FePl mussə-mæt)
LoImpfP	-t-īməssu-

For the morphophonology of the stems see §7.3.1.14, e.g. -jussu- 'go south'.

7.3.2.8 'come', 'arrive' and 'be on the way' (\sqrt{yw} , \sqrt{s} , \sqrt{ml})

'Come' is expressed in a number of ways. The (suppletive) **imperatives** for 'come' are in (418).

(418) Suppletive Imperative 'come'

2Sg	ĩyæw
2MaPl	iyæw-æt
2FePl	iyæw-mæt (variant iyæw-kmæt)

In the non-imperative inflected forms, there is no verb stem specifically translatable 'come' (including the directional element). Instead, 'come' is expressed as the combination of a nondirectional motion verb like -usv- 'arrive' -milv- 'be on the way' plus Centripetal clitic -\ódd (or variant). These verbs can also be used with Centrifugal -\ín (or variant) to indicate directionality toward a non-proximate location.

The telic '**arrive**' verb is illustrated in (419).

(419) 'arrive'

PerfP	-òsa-
ShImpf	/-ası-/ (3MaSg Ø-às, 3MaPl àsə-n)
Impf	às
LoImpfP	-t-ís- (3MaPl t-ísə-n ; A-grm -t-ás-)
VbIN	áss (also t-ässaw-t, t-äsi-t-t)

Thus àsə-n-\ódd 'they came (=arrived here)'. Contrast àsə-n-\ín 'they arrived there' (with Centrifugal clitic). The Imprt as-\ódd 'come!! (=arrive here!) is much less common than the suppletive forms in (418).

For atelic '**be on the way (to a place)**', the verb used is shown in (420). It has only long imperfective and VbIN forms in the dialects checked.

(420) 'be on the way'

LoImpfP	-mál- (/ -malA- /)
LoImpfN	-míl- (3MaSg ĩ-mil)
VbIN	α-míl

Example of LoImpfN: 3MaSg wær-\d ĩ-mil 'he isn't coming', 3MaPl wær-\əd mīlə-n. The long imperfectives are unusual in form, and the absence of short imperfectives (and perfectives) makes the morphology somewhat opaque. However, the shift from positive <L> to negative <H> melody indicates that these forms belong in the long imperfective system. The accent of wær-\d ĩ-mil shows that the verb has a V-final basic form -molv-, and the

VbIN points more specifically to *-milv-*. Many *-CiCvC-* and *-CiCv-* verbs switch to <L> characteristic long imperfective melody, so the vocalism of LoImpfP *-mál-* (from */-malA-/*) is not inconsistent with basic form *-milv-*.

7.3.2.9 'sit' (*√xrm*, *√xym*)

(421) 'say'

a. perfective system (əy and i indistinguishable)

PerfP	-əqqima- (-əqqəyɪma-)
Reslt	-əqqíma- (-əqqəyɪma-)
PerfN	-əqqima- (əqqəyɪma-)

b. short imperfective system

ShImpf	-əqqam (/ -əqqamA- / or / -əqqamɪ- /)
	-əqqəym (/ -əqqəymɪ- /)
Imprt	qàm (xàm) (A-grm T-ka)
	xàym (Gao K R T-md)

c. long imperfective system

LoImpfP	-t-àxəyɪma- (Im K R T), -t-àxama- (A-grm)
LoImpfN	-t-əxəyɪmi-, -t-əximi- (əy and i indistinguishable)
Prohib	-t-əxəyɪma-, -t-əxama-

d. nominalization

VbIN	a-xim, t-a-ximi-t-t
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There are two key issues for the analysis of this paradigm. One is whether to attribute a y to the basic stem representation (consonantism *√xrm* or *√xym*). The other is whether the medial V is short or full. If full, it must be i rather than u since all dialects have i in the perfectives and VbIN. Possible representations are *-ximv-*, *-xymv-*, and a *-xymv-* (the fourth possibility, *#-xymv-*, will not work.)

The perfectives, the LoImpfP, and the VbIN have phonetic medial [i], which could be represented structurally as /əy/, /i/, or /iy/. These forms therefore contribute to the mystery rather than resolving it. Each dialect reveals its analysis of the stem in the imperfectives. For A-grm, the stem is *-ximv-* with no sign of a semivowel (Imprt *xàm*, LoImpfP *-t-àxama-*). For several dialects (Gao Im K R T-md), the stem is *-xymv-*, with the full V based on the ShImpf (Imprt *xàym*). The long imperfectives have a short medial V (LoImpfP *-t-àxəyɪma-*, etc.), but this can be attributed to Medial V-Shortening (§3.4.9), compare e.g. LoImpfP *-t-ìməssu-* from stem *-mussv-* 'go' (§7.3.2.7). For T-ka, we get an inconsistent paradigm, with Imprt *qàm* pointing to *-ximv-* (or *-qimv-*) but with LoImpfP *-t-àxəyɪma-* pointing to *-xymv-*.

In the inflectable ShImpf, variants with both final /A/ and final /I/ were recorded. There is no audible difference in the absence of a subject suffix, since both of these final segments are deleted. However, with 3MaPl subject suffix -æn, for T-ka I recorded both *ad æqqðmæ-n* ‘they-Ma will sit’ and *ad æqqðmæ-n*, and the latter occurred in other dialects (Gao Im R T-ka). In *æqqðmæ-n*, /I/ has contracted with suffix-initial /æ/ to produce ə. Likewise, with medial y, I recorded *ad æqqðymæ-n* ‘they-Ma will sit’ in some Gao-area dialects. The T-ka variant /-æqqamA-/ has stem-wide <L> melody, while /-æqqamI-/ has the <L H> melody also found in short imperfectives of some other V-final verbs. Note that the final V “counts” for purposes of Default Accentuation, hence e.g. (*ad*) *æqqðmæ-n* ‘they-Ma will sit’ showing that the antepenult of pre-contraction /-æqqamA-æn/ is targeted by Default Accentuation.

For (ungeminated) q varying with ɣ, see §3.1.1.3.

The causative ‘make sit’ has the stems shown in (422).

(422) Causative ‘make sit’

	T-ka	both dialects	A-grm
PerfP	-æ̀s-ɣæyma-		-s-æ̀qqæyma-
Imprt		s-ə̀qqim	
LoImpfP	-s-àɣæyma-		-s-àɣama-
VbIN		a-s-ə̀qqim	

The T-ka causatives are clearly based on -ɣvymv- (with /əy/ indistinguishable from i), while the A-grm forms show both -ɣimv- and -ɣvymv-. See also ‘testify’ just below.

7.3.2.10 ‘testify’ (√jyh, √jh)

This verb is very similar to ‘sit’ (just above), though the two diverge in form somewhat. The forms for dialects excluding A-grm are given in (423).

(423) ‘testify’

a. perfective system (i and əy indistinguishable)

PerfP	-ə̀jjihə-, ə̀jjəyha-
Reslt	-ə̀jjihə-, -ə̀jjəyha-
PerfN	-ə̀jjihə-, ə̀jjəyha-

b. short imperfective system

ShImpf	/-æjjæyhA-/
Imprt	jæyh (T-ka), jàyh (Im K R T-md)

c. long imperfective system

LoImpfP	-t-àjæyha-
LoImpfN	-t-èjæyhi-, -t-èjihi- (indistinguishable)
Prohib	-t-æjjæyha-, -t-æjaha-

d. nominalization

VblN	α-jih
Agent	e-m-æjjéyh ('witness')

As with 'sit' (§7.3.2.9, above), a stem representation -juyhu- with medial long V will work for Im K T T-md, while T-ka requires -jvyhu- with medial short V (the difference is based on the short imperfectives). The final /A/ is deleted in most positions but is counted in Default Accentuation: 3MaSg Fut ad Ø-æjjæyh 'he will testify' (surface penultimate accent corresponding to underlying antepenult).

For A-grm, I recorded PerfP -èggiha-, ShImpf -æggah- or -æggahu-, Imprt gàh or gàhu), VblN α-gihi. The A-grm stem is therefore -gihu-.

There is also a related noun t-à-juhe, Pl t-i-jùhaw-en. (A-grm has Sg t-æ-guhe). This is not a productive ablaut derivation and its phonology is debatable (one could imagine /əw/ as an alternative to /u/ for the medial V of t-à-juhe). However, on the face of it, this noun points to a y-less representation for 'testify' similar to that seen in A-grm. On the other hand, agentive e-m-æjjéyh belongs to a fairly productive ablaut formation and points to a √jyh sequence.

7.3.2.11 Existential/locational 'be' (√l)

The defective verb -vllv- occurs **only in the perfective system**. In positive utterances, Reslt -əllá- is normal, although PerfP -əlla- is attested after Past preverbal particle kælá, see (424.g), below. In negatives, the stem appears as (PerfN) -əllα-. It may be translated 'exist', 'be present', or 'be here'. The emphasis is on existence, or on presence as opposed to absence (in a presupposed location such as 'here'). The locational element in translation ('be here') is best considered a pragmatic implicature, and -vllv- is not used in expressions like 'be in (a box, a city)' where the locational is part of the argument frame. **Unmarked time reference is to the present**, or to a timeless (gnomic) status, unless Past particle kælá precedes the verb. These temporal and aspectual features are mostly shared with 'be in' and 'have' (see just below). For additional information on the morphosyntax of this verb see §9.3.

For T-ka and some other dialects, -vllv- is syntactically transitive, but the “object” is an invariant 3MaSg clitic (allomorphs -\e, -\t, etc.), and in some combinations this clitic is optionally dropped. For these dialects, the clitic is nonreferential. When the Negative preverbal particle is present, the clitic (as usual) follows the Negative particle. Examples showing the clitic are in (424).

(424) Existential/Locational -vllv- (T-ka)

- a. i-ll-\é
3MaSgS-be.Reslt-\3MaSgO
'He/it exists.' (= 'He/it is here.')
- b. əllà-næt-\t
be.Reslt-3FePl-\3MaSgO
'They-FePl exist.' (= 'They are here.')
- c. t-əllé-d-\t (pronounced [...e't:;])
2S-be.Reslt-2SgS-\3MaSgO
'You-Sg exist.' (= 'You are here.')
- [< /t-əllá-æd-\t/]
- d. t-əll-\é t-èdi-t-t
3FeSgS-be.Reslt-\3MaSgO Fe-dog-Fe-FeSg
'There is a she-dog.'
- e. wær-\t ÿ-lla 'á-hæn
Neg-\3MaSgO 3MaSgS-be.PerfN Sg-house
'There is no house (or tent).'
- f. wær-\t əlle-næt
Neg-\3MaSgO be.PerfN-3FePlS
'They-Fe are absent.'
- g. kæld-\tt əllæ-n əssín médd-æn
Past-\3MaSgO be.PerfP-3MaPlS two-Ma men-MaPl
'There were two men.'

As (424.c) shows, the subject can be 1st or 2nd person, generally in the sense 'be (here), be present'. Further examples are əllé-q-\q 'I am here', n-əll-\é 'we are here', and t-əllá-m-\t 'you-MaPl are present'.

For the primary K-d, T-ka, and R informants, omission of the 3MaSgO clitic occurred after 2FePl -mæt and 3FePl -næt (in positive sentences), hence t-əllá-mæt 'you-FePl are here' and əllá-næt 'they-FePl exist, are here', instead of #t-əllà-mæt-\t, etc. Contrast 3MaPl əllá-n-\t in these dialects, with clearly audible 3MaSgO clitic -\t. There is no phonological reason preventing the

object clitic from occurring after *-mæt* or *-næt*, in the postconsonantal form *-\t*, since geminated *tt* is audible word-finally after a V (as in FeSg suffix complex *-t-t* after V-final noun stem). The absence of *-\t* after *-mæt* or *-næt* is therefore a morphophonological rule, deleting the (semantically meaningless) clitic after a subject suffix ending in *t*.

For the R speaker, who was also checked carefully, the status of the object clitic is quite different. For this speaker, *-əllé* seems to have been **reanalysed as a simple perfective** stem variant (used in the absence of a subject suffix). As a consequence, 3MaSg clitic *-\t* is also absent from the paradigm, except that it may be added optionally to the pronominally suffixed forms, denoting the specific location. Some examples are in (425).

(425) Existential/Locational *-vllv-* (R)

- a. *i-llé*
3MaSgS-**be**.Reslt
'He/it exists.' (= 'He/it is here.')
- b. *əllá-n*
be.Reslt-3MaPIS
'They exist.' (= 'They are here.')
- c. *wə̀r i-lla*
Neg 3MaSgS-**be**.PerfN
'He/It is not here.' (= 'There is none.')
- d. *t-əllé* *ʔt-æ-mæt-t*
3FeSgS-**be**.Reslt Fe-Sg-woman-FeSg
'There is a woman.' (= 'A woman is here.')
- e. *wə̀r əlle-n*
Neg **be**.PerfN-3MaPIS
'They-Ma are not here.'

The verb *-vllv-* can also be used in the expression *i-ll-\\é s ...* 'it is possible that ...'.

Another, much less common verb *-vmvl-* can be used as an alternative to *-vllv-*. It too generally takes a 3MaSg object clitic, as in *ĩ-mæl-\t* 'he existed, was here'. This verb is morphologically regular and has a full set of stems (2Sg Impprt *əmæl-\t* 'be!', LoImpfP *-əmmál-* or *-t-əmmál-*).

7.3.2.12 'be in' (√h)

The verb -vhu-, most often reduced to -hv-, means 'be in' and requires a locational complement as direct object: i-há bæmæko 'he is in Bamako'. The complement may denote a place or a container. There are also some abstract uses similar to English 'be in a quandary'.

This verb occurs **only in the perfective system**, in T-ka and most other dialects checked. Only in A-grm did I find **imperfectives** like Imprt ìhi and LoImpfP -t-íhi- (such forms are more common in Niger Tamashek.)

In positive main clauses, the verb is **normally in Reslt form** -há- or -əhá- with accented á in my Timbuktu-area data. The schwa is usually absent, as is the case with -vlu- 'have' (§7.3.2.13, below). When negated, -vhu- shows up as PerfN -hà- or -əhà-, as in wər i-ha 'he is not in ...'. Time reference is generally **present or timeless**; past time reference can be specified by preposing Past particle kældá. The PerfP paradigm is in (426). For many speakers, the prefix t- is systematically dropped, as usual before C-initial verbs, so 1Pl n- and 3MaSg i- are the only audible subject prefixes.

(426) PerfP of 'be in'

1Sg	hé-ɾ
1Pl	n-əhá
2Sg	Ø-hé-d, t-əhéd
2MaPl	Ø-há-m, t-əhá-m
2FePl	Ø-há-mæt, t-əhá-mæt
3MaSg	i-há
3FeSg	Ø-há, t-əhá
3MaPl	há-n
3FePl	há-næt

Since the verb is transitive, combinations with 3rd person pronominal object clitic are common: t-əh-ɬè ʔt-ə-jəlla '(the) bread is in it (e.g. sack)'. In definite relative clauses, the usual dropping of the ǰ-pcl (lengthening) formative of the Reslt is observed. This has an audible effect in the forms with nonfinal á in (426), which show up with shortened (but still underlyingly accented) æ. (427) has 3MaPl əhæ-n, though in this example the location of the surface accent is actually attributable to phrasal accent before an unaccented bisyllabic noun.

(427)	t-ɑ-həttin-t	t-à	əhæ-n	ʔl-latt-æn
	box	Fe-Sg.Dem	be.in.Reslt-3MaPlS	Pl-leaf-MaPl
	'the box which the leaves are in'			

In A-grm, the verb can also be used in PerfP form -əhà- with directional clitics in the sense 'come (=originate) from (a place)', i.e. while in a current

location. Depending on whether the current location is ‘here’ or somewhere else, Centripetal $-\lambda\ddot{d}$ or Centrifugal $-(h)\acute{i}n$ is used (428).

- (428) a. $\acute{e}nd\acute{a}k$ $s-i-ha$ $s-\lambda\ddot{d}$ $t-\acute{e}h\acute{e}-d$
 where? here that- λ Centrip 2S-be.in.PerfP-2SgS
 ‘Where are you (=have you come) from?’ [A-grm]
- b. $\acute{e}nd\acute{a}k$ $s-i-ha$ $s-\acute{h}\acute{i}n$ $i-ha$
 where? here that- λ Centrif 3MaSgS-be.in.PerfP
 ‘Where had he come from (while living there)?’ [A-grm]

The noun $t\ddot{h}i-t-t$ has the form of a feminine VbIN for this verb but means ‘origin, provenience, homeland’. For A-grm I did elicit a true VbIN $\acute{i}hi$.

7.3.2.13 ‘have’ (\sqrt{h})

The possessive verb is $-vlv-$. Like $-vhu-$ ‘be in’ (see just above), it is used **only in the perfective system**, and it is most often reduced to $-lv-$. It is a simple transitive as in English. Like ‘be’ and ‘be in’ (§7.3.2.11-12, above), it occurs only in perfective forms. In positive main clauses it occurs **in the Reslt**, and negative counterparts have the PerfN. The PerfP is found in subordinated clauses. As with ‘be’ and ‘be in’, unmarked time reference is present or timeless, while past time may be specified by preposing $k\acute{e}l\acute{a}$.

(429) Reslt of ‘have’

1Sg	$l\acute{e}-\acute{x}$
1Pl	$n-\acute{e}l\acute{a}$
2Sg	$\emptyset-l\acute{e}-d, t-\acute{e}l\acute{e}-d$
2MaPl	$\emptyset-l\acute{a}-m, t-\acute{e}l\acute{a}-m$
2FePl	$\emptyset-l\acute{a}-m\acute{e}t, t-\acute{e}l\acute{a}-m\acute{e}t$
3MaSg	$i-l\acute{a}$
3FeSg	$\emptyset-l\acute{a}, t-\acute{e}l\acute{a}$
3MaPl	$l\acute{a}-n$
3FePl	$l\acute{a}-n\acute{e}t$

The PerfN is unaccented $-\lambda\grave{a}-$ or $-\acute{e}l\acute{a}-$, as in $w\grave{e}r i-la$ ‘he does not have’. As expected, in definite relatives the forms with nonfinal \acute{a} show $\acute{æ}$ due to the erasure of the Reslt ablaut formative $\bar{\chi}$ (full-V), as seen in (430).

- (430) $\acute{e}-h\acute{æ}n$ $w-a$ $\acute{e}l\acute{æ}-n\acute{e}t$
 Sg-house Ma-Sg.Dem have.Reslt-3FePIS
 ‘the house that they-Fe own’ (= ‘the house that is theirs’)

(431.a-b) illustrate the uses of the PerfP (as opposed to the more usual Reslt). In a relative construction meaning ‘a few X’s’, the PerfP occurs in (431.a). The quantified-over noun is the source of subject agreement, but the actual noun is treated accentually as an adjunct rather than being part of the accentual phrase with the verb. In (431.b), we have a subject relative (participle).

- (431) a. α $\text{\textasciix}l\text{\textasciix}e\text{\textasciix}-n\text{\textasciix}et$ $\text{\textasciix}illi$
 Dem have.PerfP-3FeSgS goats
 ‘a few goats’
- b. $n\text{\textasciix}ekk\text{\textasciix}-\text{\textasciix}aen\text{\textasciix}-e\text{\textasciix}d$ $t\text{\textasciix}-i\text{\textasciix}-j\text{\textasciix}aer\text{\textasciix}ak\text{\textasciix}-en$
 1Pl Fe-Pl-cloud-FePl
 $\alpha\text{\textasciix}-\text{\textasciix}h\text{\textasciix}a\text{\textasciix}-n\text{\textasciix}aer$ $\text{\textasciix}i\text{\textasciix}-l\text{\textasciix}a\text{\textasciix}-n$
 Dem-NDat-1Pl 3MaSgS-have.PerfP-Partpl.MaSg
 $\text{\textasciix}ant\text{\textasciix}-\text{\textasciix}aen\text{\textasciix}-\text{\textasciix}aet\text{\textasciix}-e\text{\textasciix}d$ $\alpha\text{\textasciix}-\text{\textasciix}d\text{\textasciix}aegg$ $n\text{\textasciix}-\text{\textasciix}akk\text{\textasciix}a$
 3FePl Foc-under 1PlS-go.Reslt
 ‘(As for) us, the clouds (are) what has (=controls) us, it’s them
 (=clouds) [focus] that we go under.’

The VbIN of ‘have’ is $t\text{\textasciix}-\text{\textasciix}al\text{\textasciix}$ ‘possessing; possessions, wealth’.
 For more on possessive predications, see §9.4.

7.3.2.14 ‘do’ ($\text{\textasciix}j$)

This verb is the only light V-final verb of basic shape $-vCv-$ (with no cluster) that has a full set of stems. As always, A-grm has g instead of j.

(432) ‘do’

a. perfective system

PerfP	$-\text{\textasciix}ja\text{\textasciix}-, -j\text{\textasciix}a\text{\textasciix}-$
Reslt	$-\text{\textasciix}ja\text{\textasciix}-, -j\text{\textasciix}a\text{\textasciix}-$
PerfN	$-\text{\textasciix}ja\text{\textasciix}-, -j\text{\textasciix}a\text{\textasciix}-$

b. short imperfective system

ShImpf	$/-\text{\textasciix}ji\text{\textasciix}-/$
Imprt	$\text{\textasciix}j$

c. long imperfective system

LoImpfP	$-t\text{\textasciix}-\text{\textasciix}aj\text{\textasciix}- (/t\text{\textasciix}-\text{\textasciix}aj\text{\textasciix}A\text{\textasciix}-/)$ (3MaPl $t\text{\textasciix}-\text{\textasciix}aj\text{\textasciix}aen$)
LoImpfN	$-t\text{\textasciix}-\text{\textasciix}aj\text{\textasciix}- (/t\text{\textasciix}-\text{\textasciix}aj\text{\textasciix}i\text{\textasciix}-/)$ (3MaPl $t\text{\textasciix}-\text{\textasciix}aj\text{\textasciix}aen$)
Prohib	$-t\text{\textasciix}-\text{\textasciix}aj\text{\textasciix}- (/t\text{\textasciix}-\text{\textasciix}aj\text{\textasciix}A\text{\textasciix}-/)$

d. nominalization

VbIN	ɪji, t-ɪjaw-t
Agent	e-m-æjj

This is the only verb of the shape -vCu- (or -Cu-) whose vocalism is like that of -vCCu- verbs, a/i subclass (§7.3.1.3). Sample PerfP forms are 3MaSg ɪ-ja, 2Sg t-əje-d, 3MaPl əjæ-n, 3FePl əjæ-næt. The PerfN shows e vowel due to ablaut formative ϵ -pɛlf (§7.2.2.3) in combinations with a -CæC subject suffix or an underlying /-æC/ subject suffix, as in wær t-əje-m ‘you-MaPl did not do’ with underlying /-æm/ suffix. Sample ShImpf forms are 3MaSg Ø-æj, 1Sg æj-æx, 3MaPl əjə-n (from /-æjɪ-æn/), and 2FePl t-əjə-mæt. Examples of long imperfectives are 3MaPl LoImpfP t-əjjæ-n ‘they do’ and its negation LoImpfN wær t-əjjə-n ‘they don’t do’. A Prohib example is wær t-æjj ‘don’t do!’.

In some dialects, the initial schwa is absent in perfective forms that lack a subject prefix: jè-x (instead of əje-x), etc.

In derivatives, the j is **geminated** to jj, giving the verb a more normal appearance (compare -vkkv- ‘go’, -vnnv- ‘say’). The Agentive is therefore e-m-æjj, Pl ɪ-mæjj-an, as in the phrase e-m-æjj n ælxer ‘doer of good’. The passive is of the type PerfP -ætw-æjja-, with geminated jj throughout (LoImpfP -t-əwæjja-, VbIN a-tw-əjj). The causative is -sɔw-vjju- (PerfP -æsw-æjja-), with an extra w in the derivational prefix (§8.1.1).

7.3.2.15 ‘(day) break’ (√fw, √f)

The verb meaning ‘(day) break’, with invariable 3MaSg subject, denotes the time just before sunrise when the sky becomes light. Its stem paradigm is in (433).

(433) ‘(day) break’

PerfP	-æffo-, -æffew-
ShImpf	-ɪfaw-
LoImpfP	-t-ɪfaw-
noun	t-ɪfaw-t ‘daybreak’

For other imperfectives based on -iC(C)aC- shape, see §7.3.1.10-11.

In the PerfP, the dialects diverge. I recorded -æffo- for {K-d K-f R T-ka T-md}, but -æffew- for some eastern dialects {A-grm Im R}. -æffo- is completely isolated structurally, while -æffew- has a shape -æCCeC- also found with -æzzed- ‘be sweet’ and -æddew- ‘accompany’ (§7.3.1.01). For Niger, LTD2 gives 3MaSg PerfP “äffāw” for Tawellemmett (p. 73) and “yāffo” for Tayert (p. 57). For Algeria, DTF 1.297-8 gives 3MaSg PerfP “ieffō”. Tayert and Algeria have imperfectives based on -ufu-.

7.3.2.17 'be born' (\sqrt{w})

The basic forms are in (436).

(436) 'be born'

PerfP	-əwɑ-
Imprt	ĩwi
LoImpfP	-t-ĩwi-
VbIN	t-ĩwi-t-t 'birth'

This is the only -vCv- or -vCv- verb with this vocalism in the imperfective. The <H L> melody in PerfP -əwɑ- is regular for -v(C)Cv- verbs of the $\alpha/1$ subtype, cf. -əja- 'do' (§7.3.2.14) and the verbs in §7.3.1.3.

Some inflected LoImpfP forms are 3MaPl t-ĩwi-n and 2Sg t-ĩwi-d.

7.3.2.18 'be unripe' (\sqrt{rh})

The sense 'be unripe, raw, uncooked' lends itself to a stative rather than an inchoative usage (inchoative 'become raw/uncooked' is a strange combination).

(437) 'be unripe'

PerfP	-ərah-
Imprt	-ərah-, -ĩrah-
LoImpfP	-t-ĩrah-
nominal	t-àræh-æt 'ripe or undercooked food'

The verb occurs commonly in the Reslt -æráh- and its participles (MaSg Ø-æráh-æn, FeSg t-æráh-æt 'unripe'). The imperfectives make little sense pragmatically, and informants had difficulty producing them.

7.3.2.19 'pick up' (\sqrt{dkl} , \sqrt{kl} , etc.)

The perfectives and short imperfectives, i.e. the stems of shape -vCCvI-, differ in the form of the CC cluster. These differences also have implications for the long imperfectives, where the two relevant C's (unless geminate) are separated by a vowel.

(438) Consonantism for ‘pick up’

	cluster	PerfP	LoImpfP	dialect(s)
nongeminate				
a.	tk	-ət̪kæɫ-	-tákkæɫ-	T-ka
b.	ɖk	-ət̪kæɫ-	-dák̪kæɫ-	Im K K-d K-f R T-md
c.	dk	-əd̪kæɫ-	-dák̪kæɫ-	A-grm
geminate				
d.	kk	-əkkæɫ-	-t-ákkæɫ-	T-ka T-md

In (438.a-c) we have a nongeminate cluster PQ. These verbs are therefore of the type -vPQvC-, and the stem paradigms are consistent with the regular pattern for such verbs (§7.3.1.1). The only minor phonological issue is that /ɖk/ undergoes voicing assimilation to t̪k when clustered (§3.2.1.3).

The geminated variant (438.d) constitutes a verb of the type -vPPvC-, which requires a LoImpfP -t-áPPæC-. Note, however, that -t-ákkæɫ- (438.d) is identical in form to -tákkæɫ- (438.a).

The VbIN is α-Tækkəl with T attested as {t d ɖ} and there is a noun t-α-Tækkəl-t with T attested as {t ɖ}. There is no VbIN #úkəl, which we would expect for dialects with geminate subtype (438.d). I infer from this that the geminate subtype is of recent origin and has not yet been completely “nativized.”

Niger Tamajak has subtypes (438.c), with Tayert dialect also showing (438.d).

7.3.2.20 ‘be enough’ (√jdh) and ‘be equal’ (√jdh)

These two verbs show overlapping paradigms. Many dialects have g instead of j, but I disregard this here to focus on the vocalism and stem shapes.

‘Be equal, level’ is of -vjdvh- shape with initial full V, and its inflected paradigms are regular on this basis: PerfP -əjdæh-, ShImpf -əjdæh-, LoImpfP -t-íjdæh- (A-grm as usual has <L> melody, hence LoImpfP -t-ájdæh-).

‘Be enough’ is of -vjdvh- shape with initial short V (PerfP -əjdæh-, ShImpf -əjdæh-). However, its attested long imperfectives fluctuate between those compatible with -vjdvh- and -vjdvh- shapes: -jáddæh-/gáddæh- (R T-ka), -t-ígdæh- (A-grm T-md), and an anomalous variant t-əgæddæh- (A-grm).

For both ‘be enough’ and ‘be equal’, the nominal m-íjdæhaw (m-ígdæhaw) is used as a VbIN (‘sufficiency’, ‘equality, levelness’).

7.3.2.21 'quick!' (*šikk*)

There is an adverbial *šikk* 'quick(ly)'. It is often used as an exclamation with imperative force.

Specifically plural-subject imperative forms are also attested. For 2MaPl addressee, *šikk-æt* is usual but *šikkæw-æt* was attested once. The attested 2FePl form is *šikkə-mæt*. These plural forms are rather inconsistent and suggest historically secondary formations.

7.4 Pronominal subject paradigms

7.4.1 Non-imperative pronominal subject affixes

The pronominal subject affixes are constant across all inflected stem types (perfectives, short and long imperfectives). There are three exceptions. First, imperatives (limited to 2nd person) have a special set of suffixes (§7.4.3). Second, adjectival C-initial (and a few V-initial) perfective verbs allow pronominal subject suffixes but not prefixes (§7.4.2). Third, participles (i.e. verb forms used in subject relatives and in focalized constructions) have only 3rd person subject prefixes, plus a special set of gender-number participial suffixes (§8.5).

Here I discuss the set of subject affixes. Unlike object and dative clitics, which are hosted by the first element in the clause, subject suffixes are welded to the verb.

The prefixes are in (439), the suffixes in (440). None has an intrinsic accent.

(439) Pronominal Subject Prefixes on Nonimperative Verbs

1Sg	—
1Pl	n-
2Sg	t-
2MaPl	t-
2FePl	t-
3MaSg	i- (if verb begins with ə or a C) Ø- (if verb begins with æ or a full V)
3FeSg	t-
3MaPl	—
3FePl	—

For variants, and alternative morphological segmentations in some combinations, see the following sections.

(440) Pronominal Subject Suffixes on Nonimperative Verbs

1Sg	-æʀ
1Pl	—
2Sg	-æd
2MaPl	-æm
2FePl	-mæt
3MaSg	—
3FeSg	—
3MaPl	-æn
3FePl	-næt

By combining (439) and (440), we get the prefix-suffix combinations in (441). Only the 2nd person forms are “circumfixes” with nonzero prefix and suffix. The 1Sg and all 3rd person forms are suffixal, while 1Pl is prefixal. Because 3FeSg is unsuffixed, it is readily distinguishable from the 2nd person categories, even though they begin with the same t- prefix.

(441) Pronominal Subject Prefixes and Suffixes on Nonimperative Verbs

	prefix	suffix
1Sg		-æʀ
1Pl	n-	
2Sg	t-	-æd
2MaPl	t-	-æm
2FePl	t-	-mæt
3MaSg	i-, Ø-	
3FeSg	t-	
3MaPl		-æn
3FePl		-næt

There is no gender distinction in the 2Sg, though there is in the 2Pl (so much for markedness universals!).

7.4.1.1 C- versus Cə- and əC- forms of subject prefixes

In most cases, when an inflected verb with nonzero pronominal prefix begins in Cə... or Cæ..., I take the short V to be part of the stem, as in 1Pl PerfP n-əjjæš ‘we entered’ and 2Sg ShImpf t-ækkækæy-æd ‘you-Sg shook off’. This is justified by the fact that the initial V is present when the subject pronominal is solely suffixal (1Sg, 3rd person nonsingular), as in 3MaPl əjjæš-æn ‘they entered’ and ad ækkækæy-æn ‘they will shake off’.

When a nonzero pronominal prefix precedes a C-initial stem, there are two distinct situations. For adjectival C-initial verbs (and a small number of V-initial adjectival verbs), subject prefixes are absent (§7.4.2). The regular treatment, applicable to most V-initial verbs and to non-adjectival C-initial verbs, is summarized in (442).

(442) Pronominal Subject Prefixes Before Non-adjectival C-initial Stems

		basic form	before C-initial verb
a.	3MaSg	i-	i-
b.	1Pl	n-	n- or nə- or ən-
c.	3FeSg, 2nd	t-	Ø-

There are actually rather few combinations directly relevant to (442). Many verbs with basic lexical representations beginning with a C undergo Stem-Initial V-Insertion (usually accompanied by either Stem-Initial Syncope or C₁-Gemination), so they end up as V-initial. The remaining C-initial verbs include long imperfectives, whether beginning with the lexical C₁ or with LoImpf prefix -t-. Thus, for LoImpfP -báddæd- 'stands', we get 3MaSg i-báddæd, 1Pl n-báddæd or nə-báddæd or ən-báddæd, and 2Sg Ø-báddæd-æd. For verbs of the shape -vCv-, whose perfective-system stems commonly drop their initial schwa, we likewise get combinations such as the following with Reslt -lá- 'have': 3MaSg i-lá, 1Pl n-lá or n-əlá, 3FeSg Ø-lá. For deletion of t- subject prefix see §7.4.1.2, below.

The 1Pl variant ən- is arguably just a phonetic realization of n- in the relevant position. Example: wær e ən-s-æññ 'we will not cook' (K dialect). The main difference is between n- or ən- on the one hand, and nə- on the other.

The variation between e.g. n-báddæd and nə-báddæd might be taken as indicative of a dialectal difference in the form of the prefixes, C- versus Cə-. In the case of n-lá versus n-əlá, one possibility (suggested by my morpheme breaks) is that the verb itself has C-initial and V-initial variants, depending on whether a prefix is present. In this view, the prefix is always n-. In the case of n-báddæd versus nə-báddæd, there is no evidence for a V-initial variant of the verb, so a stronger case can be made for a dialectal difference between C- and Cə- forms of pronominal prefixes.

In the event we decide on Cə- for a particular dialect, we need to apply **VV-Contraction** when this Cə- is followed by a V-initial stem. See §3.2.3.2 for discussion.

The dialectal variation between Cə- and C- prefixes is perhaps also relevant to the status of -vCvC- verbs like -vwvt- 'hit' (§7.3.1.1). In T-ka and several other dialects, the PerfP is -əwæt-, as in 1Sg əwæt-ær 'I hit'. In K-area dialects, we get just wæt-ær with no stem-initial V. A form like

phonetic [nə'wæt] 'we hit' is best segmented n-əwæt in e.g. T-ka, but arguably as nə-wæt in K-area dialects.

7.4.1.2 Prefixal t-Deletion

To account for data just presented, a special rule is needed to account for the deletion of t- before a C-initial stem. This has the appearance of a phonologically motivated rule, but it is morphologically restricted.

The rule is (443), repeated from §3.2.1.5, where other possible cases involving Long Imperfective -t- prefix are discussed.

(443) Prefixal t-Deletion

A pronominal subject prefix of the form /t-/ is deleted before a C-initial verb stem.

I write Ø- to indicate that a t- prefix has been deleted, hence LoImpfP Ø-sáss 'she eats' and Ø-sássæ-d 'you-Sg eat'. In the case of LoImpfP alternations of the type -t-əwwát- varying with -əwwát- 'hit', for -vCvC-verbs, it is indeterminate whether [təw:d't] 'she hits' should be transcribed t-əwwát (with 3FeSg t-) or as Ø-t-əwwát (with deleted 3FeSg prefix before LoImpf prefix -t-).

7.4.1.3 Phonology of -æC subject suffixes

In §7.4.1, the 1Sg, 2Sg, 2MaPl, and 3MaPl suffixes are shown as beginning in a short vowel æ. The æ is easy to hear when the stem ends in a C, as in 3MaPl əjjæš-æn 'they entered' (cf. 3MaSg ĭ-jjæš).

When the suffixes are added to verb stems ending in a full high vowel u or i, the suffixal short V disappears. For VV-Contraction resulting in the deletion of the suffixal short V after a high V, see §3.2.3.3. Examples: PerfP -əsu- 'cough' (cf. 3MaSg ĭ-su) in 3MaPl əsu-n 'they coughed'; LoImpfP -rĭddu- 'believe' (cf. 3MaSg i-rĭddu) in 2Sg Ø-rĭddu-d 'you believe'; and LoImpfP -t-ĭwi- in 3MaPl t-ĭwi-n 'they are born'.

There are no cases where verb-stem-final mid-height {e o} are followed by a subject suffix. The only verb form ending in o, PerfP -æffo- '(day) break', allows only 3MaSg inflection (§7.3.2.15) and so cannot be followed by subject suffixes.

This leaves a as the only possible stem-final full vowel other than {u i} that can be followed by a subject suffix. When a is followed by a V-initial subject suffix, the contractions are as in (444), repeated from §3.2.3.3.

(444) VV-Contraction (Stem-Final *a* Plus V-Initial Subject Suffix)

conversion	distribution
<i>/a-æ/</i> → <i>e</i>	a. augment verbs: all V-initial suffixes b. light V-final non-augment verbs: 1Sg and 2Sg subject suffixes c. V-final non-augment long imperfectives: all subject suffixes
<i>/a-æ/</i> → <i>æ</i>	d. light V-final non-augment verbs: 2MaPl and 3MaPl (but not 1Sg or 2Sg) subject, and V-initial Participial suffixes e. heavy non-augment verbs: all subject and Participial suffixes

[note: the *æ* may be subsequently lengthened to *a* if targeted by an ablaut lengthening formative $\bar{\chi}$ -pcl or $\bar{\chi}$ -f]

Examples: for (444.a), *æhnæffe-n* ‘they-Ma moaned’; for (444.b) *ðjla-n* ‘they-Ma went’. I argued in §3.4.9.1 that the pattern (444.a) is the direct contraction of the two V’s, with *a* shifting to *e* under the influence of */æ/* (which is slightly more front in articulation than *a* itself). By contrast, (444.b) reflects an intervening rule of **Prefixal *a*-Shortening**, converting */a-æ/* first to */æ-æ/* before it surfaces as *æ*. This shortening rule also applies before C-initial suffixes, as in *ðjlæ-næt* ‘they-Fe went’.

In the short imperfectives, we get alternations for certain verb types like 3MaSg *ðd Ø-ækš* ‘he will eat’, 1Sg *ad ækš-ær*, 3MaPl *ad ðkšə-n*, and 3FePl *ad ðkšə-næt*. I analyse these as V-final stems with ShImpf */ækšv/*. The */i/*, an underspecified high V, is deleted word-finally by Stem-Final *i/A*-Deletion (29) (§3.1.2.4), appears as *ə* before C-initial suffix, and contracts with suffix-initial */æ/* to produce *ə*, or *æ* in the cases of 1Sg *-ær* and 2MaPl Imprt (*˘*)-*æt* (§3.2.3.3, §7.3.1.3).

For the same V-final light verbs, I recognize an underspecified low vowel */A/* in the LoImpfP, e.g. *-jáll-* ‘go’ for *-/jállA-/*. The */A/* deletes word-finally, appears as *æ* before C-final suffix, and contracts with suffix-initial */æ/* as *æ* in all cases.

I segment 1Sg ShImpf *ækš-ær* but 3MaPl *ðkšə-n*. I place the morpheme break before *-ær* event though VV-Contraction has occurred, since the *æ* quality is determined by the suffix. By contrast, with 2Sg *-æd*, 2MaPl *-æm*, and 3MaPl *-æn*, when they contract to form a surface short V, the quality of the short V is determined by the preceding stem, so I place the hyphen after the contracted V. The other morpheme that behaves like 1Sg *-ær* in this respect is 2MaPl Imprt suffix *-æt* (§7.4.3). The hyphenation is of no real significance in phonological derivations.

Also relevant to subject suffixes is **rebracketing** of stem plus suffix combinations to create **ablaut domains**. For most verbs, ablaut is limited to stems. However, light V-final verbs, i.e. -v(C)Cv-, notably those of the *a*/i subclass, combine with subject suffixes to create C-final sequences that serve as domains for certain ablaut formatives, specifically $\bar{\chi}$ -pc1 (lengthening) of the Reslt stem, which changes /æ/ to *a*, and ϵ -pc1f of the PerfN, which changes /æ/ to *e*. Thus *í-jla* ‘he went’, ending in a full V, cannot implement these formatives: Consider Reslt *i-jlá* (with audible $\bar{\chi}$ -pc1) and PerfN *ĩ-jla* (indistinguishable from the PerfP). By contrast, when PerfP *-əjla-* combines with 3MaPl *-æn* to give *əjlæ-n* ‘they-Ma went’, this creates a vCCæC sequence that permits audible lengthening (Reslt) or switch to *e* (PerfN) of the *æ*, hence 3MaPl Reslt *əjlá-n* and 3MaPl PerfN *əjle-n*. This also applies with C-initial suffix: 3FePl Reslt *əjlá-næt*, 3FePl PerfN *əjle-næt*. Since PerfN ϵ -pc1f has no audible effect on e.g. unsegmentable -vCCvCvC- stems, it is clear that only the [əjlæ-n] portion of 3FePl PerfP *əjlæ-næt*, is the domain of ablaut. Therefore we have a special rebracketing, e.g. 3MaPl [əjlæ-n] and 3FePl [əjlæ-n]æt, where the brackets delimit the domain of ablaut. Inclusion of (part of) a subject suffix in an ablaut domain applies only to light V-final verb stems.

7.4.1.4 3MaSg *i-* versus \emptyset -

When the 3MaSg prefix *i-* is followed by a stem-initial V, as in most (but not all) cases, the two V’s contract. The very common combination with stem-initial /ə/ is realized as *i-*, a special case of VV-Contraction (§3.2.3.1). However, the prefix is realized as \emptyset - before other V’s including the other short vowel *æ* (445).

(445) 3MaSg Forms

a. /i-ə/ > *i-*

/i-əwæt/	>	ĩ-wæt	‘he hit’ (PerfP)
/i-əjjæš/	>	ĩ-jjæš	‘he entered’ (PerfP)

b. /i-/ > \emptyset before other V

/i-æblalæɾ/	>	\emptyset -æblalæɾ	‘he gaped’ (PerfP)
/i-awən/	>	\emptyset -awən	‘he goes up’ (ShImpf)
/i-øjæy/	>	\emptyset -øjæy	‘he tied’ (PerfP)
/i-ujəj/	>	\emptyset -ujəj	‘he went far away’ (PerfP)
/i-ıdan/	>	\emptyset -ıdan	‘it is counted’ (ShImpf)

When a verb begins with underlying /ə/ that would (in the absence of a prefix) surface as phonetic [æ] due to a following BLC, the vowel is nonetheless treated in other phonological respects as /ə/, and therefore

combines with the 3MaSg prefix as /i-/. The BLC then has its usual effect on the preceding /i/, lowering it to phonetic [ɛ]. For example, the PerfP stem -əɖlæm- [æ'ɖlæm] is treated as beginning in schwa rather than æ, as always for PerfP stems of -vCCvC- verbs, so the 3MaSg form is /i-əɖlæm/, contracting to /i-ɖlæm/, and realized as phonetic [ɛ'ɖlæm] 'it melted'.

In T-kas, verbs with PerfP shape -æwwæC-, patterning as though derived from /owæC/, behave regularly with respect to 3MaSg prefix allomorphy, as in Ø-æwwær 'he held back' and Ø-æwwæɖ 'he arrived'. However, I recorded forms like è-wæɖ (Ansongo-Gourma) and è-wwæɖ (Imededeghan-Gourma) 'he arrived' in other dialects. The paradigmatic forms other than 3MaSg in these dialects (e.g. 3MaPl æwwæɖ-æn) were identical to those of Kal Ansar dialects.

7.4.2 Omission of subject prefixes with perfective adjectival verbs

Many adjectival verbs (§7.3.1.11) have C-initial perfectives that do not allow subject pronominal prefixes, though they do allow the usual subject pronominal suffixes. A sample paradigm is (446). The rule is given as (447).

(446) PerfP of 'become black'

1Sg	kæwal-ær
1Pl	—
2Sg	kæwal-æd
2MaPl	kæwal-æm
2FePl	kæwal-mæt
3Sg	kæwal
3MaPl	kæwal-æn
3FePl	kæwal-næt

(447) Subject Prefix Omission (all dialects)

In perfective forms of the class of C-initial adjectival verbs, subject prefixes are absent (while subject suffixes occur as usual).

Except for the 1Pl, the paradigm (446) provides nearly as much categorial information as a regular verb paradigm with subject prefixes and suffixes. The **merger of 3MaSg and 3FeSg** into a general 3Sg category is not unusual, since these categories are also merged in some other areas of the morphology (notably as possessors and as complements of prepositions).

However, the paradigm does present a problem for the **1Pl subject** category, which (like 3MaSg and 3FeSg) is elsewhere expressed only by a prefix. One might expect the 1Pl to also appear as *kæwal*, but informants accepted this bare stem form only for 3Sg subject. Instead, a circumlocation or

a specialized construction was offered to express senses like ‘we became black’. A T-ka informant offered *kæwal-æte-næʁ*, a difficult-to-segment morphological oddity that seems to involve an apparent **preposition-like extension** *-æte-* that takes 1Pl suffix *-næʁ*. There are other prepositions ending in *-e-* before pronominal suffix, so one could segment *kæwal-æt-e-næʁ*, but the only *-æt* suffix that can occur in such a position is FeSg Participle suffix *-æt*, so the construction is obscure. Another T-ka speaker, and the R speaker, offered a **circumlocution** with Reslt *-æmós-* ‘be, become’ and a plural relative clause: *n-æmós [i kæwál-nen]* ‘we have become black ones’.

7.4.3 Second person subject affixes in imperatives

The 2Sg circumfix *t-...-æd* is omitted in the positive imperative, and the nonsingular 2nd person markers have special forms (448). The positive imperatives are normally based on the Imprt stem, which forms part of the short imperfective stem family. Positive imperatives may also be based on the LoImpfP stem.

(448) Pronominal Subject Markers in Positive Imperatives

2Sg	zero (bare stem)
2MaPl	([~])-æt
2FePl	([~])-mæt

Examples: *əjjəš* ‘enter!-Sg’, *əjjəš-æt* ‘enter!-MaPl’, *əjjəš-mæt* ‘enter!-2FePl’, *ərlèy-mæt-tæn* ‘apply-FePl them-Ma!’.

Both 2MaPl and 2FePl Imprt suffixes require penultimate accent (§3.3.1.1).

V-final stems ending in deletable high vowel /i/ contract the /i/ with the suffixal /æ/ of the 2MaPl suffix to produce *æ* instead of *ə*. Example: Imprt stem */-ækš₁-/* ‘eat’, Sg Imprt *ækš*, MaPl Imprt *ækš-æt* (not *#əkšə-t*), FePl Imprt *əkšə-mæt*. The Short-V Harmony affecting the initial syllable in FePl Imprt *əkšə-mæt* was verified for T-ka and K-d but may not be valid for all dialects; I recorded *æjə-mæt* ‘do!-FePl’ for K proper. See VV-Contraction (§3.2.3.3).

Chapter 8

Verbal derivation

The major verb-to-verb derivations are expressed by prefixes immediately preceding the verb stem. These derived verbs take regular subject prefixes and suffixes. The derivations are the usual valency modifications: causative, passive, mediopassive, and reciprocal. Of course, the causative adds an argument while the others reduce the argument structure. The derivational prefixes readily combine with each other.

True reflexives are not expressed by prefixal derivation, rather by the use of a possessed form of *ĩ-m-an* ‘self, soul’ (§15.1), which is morphologically plural, in the appropriate non-subject position (object, dative, etc.).

Also discussed in this chapter are deverbal nominalizations and participles of various kinds.

8.1 Causative (-s-, -ʃ-, -š-, -z-, -ž-, -z-, -svw-)

8.1.1 Causative derivation

The causative derivation is very productive. Although most examples involve an intransitive base, there are also a fair number of causatives of **transitive bases**, like ‘cause to look for’ in the second clause of the proverb (449.a). (449.b) is a similar example from everyday speech. Both examples involve parallelism between simple and causative versions of the same transitive verb.

- (449) a. *ə̀ttər* [a w-à t-ərhe-d],
 seek.Imprt [Dem Ma-Dem.Sg 2S-want.PerfP-2SgS],
 s-ùtər
 Caus-seek.Imprt
 [a w-a wər t-ərhe-d]
 Dem Ma-Dem.Sg Neg 2S-want.PerfN-2SgS]
 ‘Seek (yourself) for what you want; have (others) seek what
 you don’t want.’
- b. *kə̀mm* æŋ-\\ódd i-kə̀rwat-æn rás
 you-FeSg kill.Imprt-\\Centrip Pl-lamb-MaPl only
 dæŋ æ-rojj, t-ajə̀y-əd-\\tæn, meŋ
 in Sg-bush, 2S-tie.ShImpf-2SgS-\\3MaPIO, or

In the more usual deverbal causatives, the **argument structure and case frame is carried over** from the input verb, with the addition of a new object NP representing the subject of the underlying verb. There is **no limit** to the number of arguments such a causative can have. In particular, it can have two direct object NPs. The only constraint is a morphological one, namely that two object clitics may not be adjacent (they may both appear if separated by a dative clitic). See §9.1.7 and §10.4.

A similar *-s-* prefix (arguably the same prefix) is also used in the formation of instrumental nominals (§8.11).

A variant Caus prefix allomorph *-svw-*, arguably bimorphemic *-s-vw-*, occurs in two stems (see below). I refer to this as a **w-extension**. One might compare it to the now very rare *y*-extensions found in one frozen mediopassive (*-nvyufv-* ‘be compared’, §8.3) and in one frozen instrumental nominal, *α-sæyɔr* ‘key’ (§8.11). The rare *w*-extended Causative prefix is structurally similar to the vastly more productive Passive *-tvw-* alongside the simpler allomorph *-t-* (§8.2).

One *-svw-* causative is ‘cause to be done’, which is based on *-vju-* ‘do’ or, more relevantly, ‘be done, happen’ (§7.3.2.14). The Caus, like other verbal derivatives, shows doubling of the *j*. The Caus forms are PerfP *-æsw-æjja-*, Imprt *səww-əjj*, LoImpfP *-səw-æjja-*, and VblN *α-səww-əjj*. The *w* is treated morphophonologically like an intervening prefix, hence the Stem-Initial Gemination to *ww* in Imprt and VblN. The extension can be “justified” here as a method of bulking up the causative of this unusually light stem with just one lexical C.

A similar *-svw-* occurs in causatives of *-vyyv-* ‘leave’ (§7.3.1.15). One causative paradigm, from T-ka, is *-svw-vyyv-*, with PerfP *-æsw-æyya-*, Imprt *səww-əyy*, LoImpfP *-səw-æyya-*, and VblN *α-səww-əyy*. Another T-ka causative paradigm, this time with double causative prefixation, is *-s-vsww-vyyv-*, with PerfP *-æs-səw-æyya-*, Imprt *s-əssəw-əyy*, LoImpfP *-s-ışw-əyyi-*, and VblN *α-s-əss-əwəyy*. A similar paradigm is recorded for A-grm. Underived VblN variant *t-əyyaw-t* ‘leaving, departure’, related to *-vyyv-* ‘leave’, points to a possible original **√yw* consonantal sequence for this stem. However, the development (or presentation) of the *w*-extension probably has more to do with the lightness of *-vyyv-*, with its single geminated C, and perhaps to the influence of the much more common (double) causative *-s-vs-iwvy-* ‘send’.

For ‘have (sb) kill (sb, sth)’, I recorded *-s-vɣɣ-* in K-d (PerfP *-əss-əɣɣa-*). For Burkina, Sudlow (TNEBF 87) records a variant with *-svw-* (Imprt “*səwəɣɣ*”). For Niger, LTF2 246 has *-s-vɣɣv-* varying with *-s-vs-vɣɣv-* but does not confirm the *-svw-* variant.

Since the Passive has variants *-tvw-* and *-t-* (*-tt-*), I incline to take the *-svw-* in ‘cause to leave’ as just an extension of *-s-*. Prasse (MGT 6.57) observes that Caus *-svw-* is more common in Algeria (Hoggar).

8.1.2 Sibilant Harmony in the Causative prefix

The basic mark of causatives is a prefix whose default form is *-s-*, just before the verb stem. The prefixal sibilant harmonizes with (assimilates totally to) any sibilant in the verb stem proper, even when other stem consonants intervene. Intervening non-sibilant C's do not prevent this assimilation, which may therefore operate at a relatively long distance.

(451) **Sibilant Harmony**

The *-s-* of the Causative prefix assimilates totally to a sibilant in the stem.

I know of no stem that has two distinct sibilants in T-ka. It may very well be that sibilant harmony is a stem-wide constraint rather than something specific to the Causative suffix. Examples are in (452).

(452) Sibilant Variation in Causative Prefixes

	causative verb	gloss
-s- (as default)	-s-vdufu- (+ -t)	'make plump'
	-s-vŋŋu-	'cook'
-s- (with s in stem)	-s-vsɤfvɤr-	'treat (patient)'
	-s-vskvr-	'hold upright'
-ʃ- (with ʃ in stem) [Arabic loans]	-ʃ-vʃuhv- (+ -t)	'strengthen'
-š- (with š in stem)	-š-vlušv-	'clean sand from'
	-š-vlvytvš-	'shake off'
-z- (with z in stem)	-z-vgzvl-	'shorten'
	-z-vjvzzv-	'scrutinize'
-ž- (with ž in stem)	-ž-vžvlwvʁ- (A-grm)	'glare at'
-ʒ- (with ʒ in stem)	-ʒ-vgrvʒ- (A-grm)	'please'
	-ʒ-vʒvd-	'sweeten'

Occasionally, in eliciting causatives I would get a form with *-s-* prefix in spite of another sibilant in the stem. My belief is that such forms represent

“elicitation-ese,” and in several cases when the form was repeated later it did respect Sibilant Harmony. All causatives that are in common use respect harmony (in T-ka). Harmony seems to be less reliable in R and A-grm, though this comment is based on elicited examples. I recorded PerfP *-æs-rærzæzzæw-* and later *-æz-rærzæzzæw-* from the R speaker for ‘fell (tree)’. Another R form is PerfP *-æs-kærzæzzæw-* ‘cluck (tongue)’. A-grm PerfP *-s-æffænæššæ-t* ‘break (melon) open with hand’ is another non-harmonic example.

For *-vnšv-* ‘be sold (or bought)’, the causative is *-š-vnšv-* for R and T-ka but *-ž-vnšv-* for other dialects (A-grm I K-d). Here we get positional but not voicing harmony. The causative is much more common than the intransitive; with different directional clitics it is the basic verb for ‘buy’, ‘sell’, and ‘barter’.

A-grm causative *-s-vžvd-* and K-d unsegmentable *-svžžvd-* ‘prostrate oneself (in prayer)’ are borrowed from Classical Arabic root $\sqrt{\text{sjd}}$ (j is pronounced ž in Hassaniya Arabic). T-ka causative *-s-vjvd-* (same gloss) does not violate Sibilant Harmony.

The simple verb ‘laugh’ has C’s $\text{d} \dots \text{z}$ when separated by a V, but $\text{t}\text{ʃ}$ varying with ts when clustered, e.g. PerfP *-əṭṣa-* (*-əṭṣa-*) and LoImpfP *-dázẓ-*. In the causative, the C’s in question are always clustered. There is a (faint) possibility of deriving $\text{t}\text{ʃ}$ from underlying $/\text{d}\text{z}/$, and if native speakers agreed we could, in theory, have *-z-* as Causative prefix. In fact, we get *-s-* (e.g. PerfP *-əss-əṭṣa-*), showing that native speakers take the stem-internal sibilant to be ʃ (or possibly s) instead of z .

8.1.3 “Double” causatives

In addition to simple causatives with prefix *-s-* and its variants, there are also some **morphological double causatives** with two adjacent *-s-* prefixes (or their harmonized variants) that are separated in non-perfective stems by a V. In the perfective stems, the difference between simple and double causative is not immediately obvious to the untrained eye, since simple s in the prefix is geminated to ss by C_1 -Gemination, while the type with double prefixation has s-s with no separating V. However, the imperfective stems and the VbIN have separating V’s in the double-causative derivatives. To add to the confusion, a third category is that of simple causatives of underlying verbs that already happen to begin in a sibilant.

‘Wash’ (453.a) is a simple causative (note the secondary gemination of the prefixal sibilant in the PerfP; ‘make curdle’ (453.b) is a simple causative of a sibilant-initial stem ($\sqrt{\text{s-sly}}$); and ‘make similar’ (453.c) is a double causative ($\sqrt{\text{s-s-lh}}$). The patterning of initial sibilants is as follows (omitting hyphens): (453.a) has s alternating with ss ; (453.b) has ssvs alternating with sus and svs (“v” = short V, “v” = full V); and (453.c) has ss alternating with sus and with svss .

(453) Simple Versus Double Causative Prefixation

	gloss	PerfP	LoImpfP	VbIN
simple prefix				
a.	'wash'	-æss-oræd-	-s-árad-	α-s-íræð
b.	'make curdle'	-ðess-æslæy-	-s-úslay-	α-s-ðsløy
double prefix				
c.	'make similar'	-æss-s-álæh-	-s-às-alah-	α-s-æss-íløh

The "double" causatives usually function semantically as simple causatives. As indicated below, double prefixation is common in causatives based on full-V-initial underlying verbs (§8.1.5). Where the choice between simple and double prefixation is not determined by the shape of the stem, there is a tendency for causatives based on transitive inputs to prefer double prefixation; see §8.1.9, below.

8.1.4 Causative stem shapes

The MAN stem-forms of causatives are similar to those of other multisyllabic verbs with similar canonical shapes. There are, however, several important differences.

First, the ablaut formatives that can appear on the second syllable of underived light stems (the *e* of the PerfN, and the combination of $\acute{\chi}$ and $\bar{\chi}$ in the Reslt), do not apply in the same way to causatives. In other words, even the shortest causatives are heavy. In the PerfN, where underived PerfP $-\dot{\text{a}}\text{CC}\text{æC}-$ stems become $-\dot{\text{a}}\text{CCeC}-$ in the PerfN (e.g., *wær i-jješ* 'he did not enter'), we get no change from PerfP to PerfN in causatives of similar shape. Thus PerfP $-\text{æs-jæn}-$ 'make kneel' occurs without change in negative utterances: *wær Ø-æs-jæn* 'he did not make kneel' (not *#wær Ø-æs-jen* with *e*). This is because an underived $-\text{vCCvC}-$ stem is light, and its second vowel is simultaneously the first postconsonantal vowel and the final-syllable vowel, so it can be targeted audibly by PerfN ablaut formative $\in\text{-p}1\text{f}$ (§7.2.2.3). By contrast, causative PerfP $-\text{æs-jæn}-$ is based on a derived stem-shape $-\text{s-vjvn}-$, which qualifies as middleweight (hence heavy), and its first postconsonantal vowel is not its final-syllable vowel, so $\in\text{-p}1\text{f}$ cannot attach audibly. Since the PerfN of causatives is always identical to the corresponding PerfP, the PerfN is omitted in the paradigms below. A further corollary of the fact that $-\text{æs-jæn}-$ is from $-\text{s-vjvn}-$ is that the Reslt is $-\text{əs-ijæn}-$ rather than $\#-\text{æs-jón}-$. Interestingly, $-\text{əs-ijæn}-$ does not show gemination of the *s*. The initial schwa is confirmed by 3MaPl əs-ijæn-æn 'they have already made kneel'.

A second difference has to do with the treatment of the onset. In the perfective stems, we have **Stem-Initial V-Insertion**, associated with either

Stem-Initial Syncope or C₁-Gemination. PerfP examples are -*æss-omæm-* ‘suck’ (with C₁-Gemination) and syncopated -*æs-fæykα-* ‘search through’. In the perfectives, therefore, causatives are like underived verbs of similar shape. However, most causatives have a unique pattern of stem-initial modification in the short imperfectives (§3.4.8.2). **Stem-Initial V-Insertion fails to apply.** As a consequence, Stem-Initial Syncope cannot apply. As for C₁-Gemination, it does apply, but not to the prefixal sibilant. Instead, it **applies to the next following C** (in simple causatives, this is the first C of the inner stem), provided that this targeted C is intervocalic (i.e. not clustered) and provided that the inner stem is heavy (so the causative stem is superheavy). Thus for *s-vkvrυ-* (+ -t) we get PerfP -*æs-kæræ-t* but Imprt *s-ækkæræ-t* (note the geminated *kk*). For *s-vjvn-* ‘make kneel’ we get PerfP -*æs-jæn-* but Imprt *s-æjæn* (this stem is too light for C₁-Gemination). For *s-umvm-* ‘suck’ we get PerfP -*æss-omæm-* (A-grm -*æss-omæm-*) but Imprt *s-umæm*.

This pattern of internal C₁-Gemination is inactivated if another derivational prefix is added to the left of the Caus prefix, the only common combination being reciprocal-causative (-m- plus -s-). Thus simple Caus -*s-vn-vhvḑ-* ‘consult (about a decision)’ has Imprt *s-ænn-æhəḑ* with geminated *nn*, but its Recip -*m-vs-vn-vhvḑ-* ‘consult each other’ has Imprt *m-æs-ænəhəḑ* (with no gemination).

A third difference is that most causatives have <H> **short imperfective melody**. For example, underived -CvCCvC- stems have <L> in the ShImpf, e.g. Imprt *kæbbær* ‘praise God!’, but prosodically similar causative -s-vCCvC- stems have <H>, e.g. Imprt *s-ælmed* ‘inform!’. The only other causative ShImpf melody is <L H> in middleweight (the shortest possible) non-augment V-final causatives, thus -*s-nvsυ-* ‘put down’, Imprt *s-æns* ‘put down’ (for /*s-æns*/ with final deletable high V). Superheavy non-augment V-final ShImpf stems have <H> melody: -*s-vfvyku-* ‘search’, ShImpf -*s-æffæyk* for /*s-æffæyk*/.

As shown in the preceding paragraphs, causative perfectives (e.g. PerfP) and causative short imperfectives (e.g. Imprt) have dissimilar onsets, since only the perfectives undergo Stem-Initial V-Insertion (accompanied either by Stem-Initial Syncope or by C₁-Gemination), while short imperfectives do not add the extra initial short V, and apply C₁-Gemination if at all to the first post-prefixal C. This description is true for T-ka, R, and K-d. However, in A-grm the onset structure of the short imperfectives also applies to the perfectives. Thus, for -*s-vbvlulυr-* ‘make into a ball’, A-grm shares with T-ka the Imprt *s-æbbə̀lulə̀r*, but in A-grm the PerfP is -*s-æbbə̀lələ̀r-*, versus -*æs-bələ̀lələ̀r-* in T-ka and other dialects. Therefore A-grm Imprt *s-æbbə̀lulə̀r* and PerfP -*s-æbbə̀lələ̀r-* differ only in <H> versus <L> melody.

A fourth major idiosyncrasy of causatives is the long imperfective system. With causatives, there is **no -t- prefix in the long imperfectives**. In addition, $\bar{\chi}$ -pcl and $\bar{\chi}$ -f, the two lengthening ablaut formatives, can apply audibly to adjacent syllables in the LoImpfP, whereas in underived stems they can occur audibly only if separated by at least one intervening syllable (clash avoidance).

Therefore causative **long imperfectives always have full V's in both the initial and final syllables**. For example, the LoImpfP of *-s-vjvn-* 'make kneel' is *-s-ájan-*, where both V's have been lengthened by ablaut formatives.

A fifth idiosyncrasy is that when **u-Spreading** (119) (§3.4.9.3) spreads the features of u in the first syllable (i.e. directly after the prefixal sibilant) to a full V in the immediately following syllable, the first u loses its rounding and we get a vocalic sequence «i u» instead of «u u». In other words, the back and rounded features of u are not copied, they are picked up and transported, leaving i as the unmarked high full V. Thus (bisyllabic) *-s-urvl-* 'give back', LoImpfP *-s-írul-*, LoImpfN and Prohib *-s-ĩrul-*. There is no exactly parallel underived shape that one can contrast this with, since there are no underived bisyllabic LoImpfP stems of the shape *-t-uCuC-* (because of clash avoidance). Trisyllabic causative LoImpfP *-s-ĩs-uduh-* 'make pound', see (455), below, allows u-Spreading to work exactly as in underived trisyllabic LoImpfP *-t-ĩCuCuC-* (e.g. *-t-ĩdubun-* 'marry') with *-t-* prefix. So there is no real phonological discrepancy between causatives and underived verbs with regard to u-Spreading. However, causative LoImpfP *-s-írul-* with *i...u* does differ from the other known bisyllabic u-Spreading case, the VbIN type *á-búdær* 'being rude', Pl *i-bùdur-æn* with *u...u* (§8.6.1.4), unless the Pl prefix *i-* in the latter is taken as making the first u "medial."

Care must be taken in causatives to distinguish the LoImpfP from the Reslt, which begins with *-s(s)-ú...* but does not lengthen the final syllable and has (at least after the *ú*) the same <L> melody as in the PerfP.

The absence of *-t-* in the LoImpfP in causatives is a **fail-safe diagnostic** for distinguishing "causative" stems (including frozen ones with no associated underived verb) from other heavy stems that happen to begin in a sibilant. For example, the verb 'reply', Imprt *s-üdmær*, is shown to be a causative by its LoImpfP *-s-ĩdmur-* (A-grm *-s-údmir-*). By contrast, *-şüşşəbət* 'pound (millet) to remove bran', which looks at first like it might be a causative morphologically, has LoImpfP *-t-işəşşəbi-t* with *-t-* prefix, and is therefore not causative in form.

The VbIN is basically regular, i.e. follows the same rules as apply to VbIN's of other heavy stems. However, the VbIN of causatives shows the same C_1 -Gemination pattern as was described above for short imperfectives. As an example, consider the non-augment stem *-s-vbvlwlvw-* 'make soggy'. The Sg VbIN is *á-s-əbbələwłəw* with variant *á-s-əbbələwław*. Aside from the C_1 -Gemination (bb), these forms show the <H> stem melody, *á-* Sg vocalic prefix, penultimate accent (*χ*-pen), and optional replacement of final-syllable *ə* by *á* that we see in other heavy VbIN's. Likewise, in the Pl we get *i-s-əbbələwłiw-æn* (with final-syllable schwa lengthened to *i*) or *i-s-əbbələwław-æn*. If the causative is augmented, we again get <H> melody and C_1 -Gemination where applicable, but default rather than penultimate accent. Thus *-s-vfqqv-* (+ *-t*) 'hatch', VbIN *á-s-əffəqqu*. See §8.6.1.4-6 for more on VbIN ablaut of heavy stems.

In (454), stems are given for causatives of representative **-vPQvC-** and **-vCvC-** verbs.

(454) Causative Stems for -vPQvC- and -vCvC- Stems

	-s- <i>vlmvd-</i> 'inform'	-s- <i>vjvn-</i> 'make kneel'
a. perfective system		
PerfP	- <i>əss-əlməd-</i>	- <i>əs-jæn-</i>
Reslt	- <i>əss-ilməd-</i>	- <i>əs-ijæn-</i>
PerfN	- <i>əss-əlməd-</i>	- <i>əs-jæn-</i>
	[A- <i>grm</i> PerfP - <i>əss-əgæn-</i> , etc.]	
b. short imperfective system		
ShImpf	-s- <i>əlməd-</i>	-s- <i>əjən-</i>
Imprt	s- <i>əlməd</i>	s- <i>əjən</i>
c. long imperfective system		
LoImpfP	-s- <i>álməd-</i>	-s- <i>ájæn-</i>
LoImpfN	-s- <i>əlmíd-</i>	-s- <i>əjín-</i>
Prohib	-s- <i>əlməd-</i>	-s- <i>əjæn-</i>
d. nominalizations		
VblN	a-s- <i>əlməd</i> , a-s- <i>əlməd</i>	a-s- <i>əjən</i> , a-s- <i>əjən</i>

The input stems are *-vlmvd-* 'understand' and *-vjvn-* 'kneel'. Note particularly the bisyllabic form of the PerfP *-əs-jæn-* of 'make kneel'. I did record trisyllabic perfective stems like PerfP *-əss-əgæn-* 'make kneel' in A-*grm*; for this dialect the perfectives of 'make kneel' and 'inform' are similar. Note the <H> stem melody in short imperfectives, and also in the VblN (with the option of replacing the last *ə* by *ɑ*). The LoImpfP forms have an <L> melody. The remaining forms are consistent with general rules for the MAN categories and the special features of causatives mentioned above.

Other examples (among many) are (PerfP) *-əss-əlyæm-* 'make melt' for the first type and *-əs-fæl-* 'make leave' for the second.

In the case of *-vjrvh-* 'understand', the expected simple causative *-s-vjrvh-* exists but has a special sense 'look at'. The true causative 'make (or help to) understand, explain to' is expressed by the double causative *-s-vs-vjrvh-*. Thus PerfP *-əss-əjræh-* 'look at', versus *-əs-s-əjræh-* 'help to understand'.

We now turn to causatives of **-vPPvC-** stems. As in the underived VblN (*úCəC*), derivatives of this verb type, including the causative, are based on a **pre-ablaut reconfiguration** from *-vPPvC-* to *-uPəC-*. (For a possible parallel see causative *-s-uku-* 'send' from *-vkku-* 'go to', in (464), below.) As a result, the causative of *-vPPvC-*, namely *-s-uPvC-*, falls together in the perfectives

with the causative of true input *-vPvC-*, namely *-s-iPvC-*, see (456) below, though the difference between *u* and *i* permits the two to be distinguished in imperfective stems.

A characteristic of these causatives from *-vPPvC-* inputs is that both simple and double causative prefixation is attested. Consider the data in (455), where the underived inputs are *-vffvy-* ‘be poured’ and *-vddvh-* ‘pound (grain, in mortar)’.

(455) Causative Stems for *-vPPvC-* Verbs

	simple causative ‘make flow’ <i>-s-ufvy-</i>	double causative ‘make pound’ <i>-s-vs-udvh-</i>
a. perfective system		
PerfP	<i>-æss-ɔfæy-</i>	<i>-æss-s-ɑdæh-</i>
Reslt	<i>-æss-ɔfæy-</i>	<i>-æss-s-ɑdæh-</i>
PerfN	<i>-æss-ɔfæy-</i>	<i>-æss-s-ɑdæh-</i>
b. short imperfective system		
ShImpf	<i>-s-ùfəy-</i>	<i>-s-əss-udəh-</i>
Imprt	<i>s-ùfəy</i>	<i>s-əss-udəh</i>
c. long imperfective system		
LoImpfP	<i>-s-ífuy-</i>	<i>-s-ış-uduh-</i>
LoImpfN	<i>-s-ífuy-</i>	<i>-s-əs-uduh-</i>
Prohib	<i>-s-ífuy-</i>	<i>-s-əs-uduh-</i>
d. nominalizations		
VbIN	<i>ɑ-s-úfəy</i> <i>ɑ-s-úfay</i>	<i>ɑ-s-əss-údəh</i> <i>ɑ-s-əss-údah</i>

For ‘make flow’ we have single prefixation, for ‘make pound’ double prefixation. I have also recorded double prefixation for the causative *-s-vs-umvɣ-* of ‘make search’ from *-vmmvɣ-* ‘search’. The single-prefixation type occurs in several other examples, e.g. *-s-urvl-* ‘give back’ (or ‘make wait’) and *-š-ujvš-* ‘make enter’.

The *o* in the perfectives of ‘make flow’, e.g. PerfP *-æss-ɔfæy-*, is arguably another case of a stem-wide <L> perfective melody overlaid on a lexical *u*, producing mid-height *o* by V-Height Compromise (§3.4.7).

The long imperfective vocalic sequence «*i u*» seen in LoImpfP *-s-ífuy-* requires a shift of the features back and rounded from the V of the first stem syllable to the V of the second, as in the long imperfectives of trisyllabic (and longer) underived verbs. As usual, this shift does not apply in A-grm, for which I recorded LoImpfP *-s-úfiy-*.

In the double prefixation case, the interesting features relate to the form of the second prefix and of the stem-initial full V. The second *-s-* is geminated (by C₁-Gemination) in the short imperfectives (including *Imprt*), and in the *VblN*. In the perfectives, we get strict <L> melody, hence *ɑ* after the prefixes (*-æ̣s-s-ɑdæh-*) instead of *o*. These features recur in other combinations of Causative *-s-* with a following derivational prefix (e.g. *Mediopassive -m-*); see §8.1.8.

The common verb ‘milk (e.g. a cow)’ probably originated as a causative of this class, but it is not regular. The underlying intransitive is *-ə̣ẓẓæj-* ‘(e.g. cow) be milked’, also occasionally used in transitive sense ‘milk (a cow)’. The more common, and therefore arguably lexicalized, transitive (causative) forms are these: *PerfP -ə̣ẓ-oẓæj-* (and *Reslt -æ̣ẓ-ọ́ẓæj-*), *ShImpf -ẓ-ùẓəj-*, *LoImpfP -ẓ-íẓuj-*, *LoImpfN -ẓ-ìẓuj-*, *VblN ɑ-ẓ-úẓəj*. The imperfectives and the *VblN* are compatible with the paradigm of ‘make flow’, but there is no gemination of the prefixal *ẓ* in the perfective (in T-ka and R dialects). For A-grm, I did record *PerfP -ə̣ẓẓ-oẓæg-* (and *LoImpfP -ẓ-úẓij-*), so apparently in that dialect this behaves like a regular causative.

In eliciting large numbers of causatives for the R speaker, I recorded a few cases of verbs of the single-prefix type like ‘make flow’ in (455), but with the *PerfP* shape *-ə̣ss-ɑCæC-* with strict <L> melody, hence medial *ɑ* instead of *o* or *e*. Some of these causatives are probably not in common use, and the *-ə̣ss-ɑCæC-* pattern may have reflected “elicitation-ese,” mixing the two types in (455). However, that such forms occurred does indicate that the patterns *-ə̣ss-ɑCæC-* and *-ə̣ss-eCæC-* with medial mid-height V’s (due to V-Height Compromise) are less than fully stable.

8.1.5 Causative stem shapes (inputs with initial or medial full vowel)

I now turn to causatives of true *-vCvC-* stems (456). The causatives merge with those of *-vPPvC-* verbs (455) in the perfectives, but not in the imperfectives and *VblN*, where the causative of *-vPPvC-* is based on *-s-uPvC-* while the causative of *-vCvC-* is based on *-s-iCvC-*. Similarly, the double causatives from *-vPPvC-* are based on *-s-vs-uPvC-*, while those from *-vCvC-* are based on *-s-vs-iCvC-*.

(456) Causative Inflection for -vCvC- Stems

	single prefix type	double prefix type
	‘break in (animal)’	‘make detest’
	-s-invn-	-s-vs-ikvǫ-
a. perfective system		
PerfP	-ǣss-onǣn-	-ǣs-s-akǣǫ-
Reslt	-ǣss-ónǣn	-ǣs-s-úkǣǫ-
PerfN	-ǣss-onǣn-	-ǣs-s-akǣǫ-
b. short imperfective system		
ShImpfP	-s-ǫnǣn-	-s-ǣss-ikǣǫ-
Imprt	s-ǫnǣn-	s-ǣss-ikǣǫ
c. long imperfective system		
LoImpfP	-s-ǫnan-	-s-ǣs-akǣǫ-
LoImpfN	-s-ǫnin-	-s-ǣs-ikiǫ-
Prohib	-s-ǫnan-	-s-ǣs-akǣǫ-
d. nominalizations		
VbIN	ǫ-sǫnǣn, ǫ-sǫnan	ǫ-s-ǣss-ikǣǫ, ǫ-s-ǣss-ikǣǫ

The underived intransitive stem -unvn- ‘be broken in’ has the stems PerfP -ónǣn-, ShImpf -ǫnǣn-, LoImpf -t-ǫnǣn-. The unusual feature in the causative is the disconnect in vocalism between the perfectives, which can be easily derived from -s-unvn- with u, and the imperfectives and VbIN, which are based on -s-invn- with i. Since the VbIN is the best diagnostic for basic lexical form, the perfectives are the odd man out, and suggest a morphological bias in causatives toward u rather than i as input, hence output o rather than e. Compare underived -CvCvC-, where -CiCvC- is somewhat less common than -CuCvC- but is nonetheless clearly attested (§7.3.1.7). The alternation of o, i, and ǫ in the first syllable of the forms for ‘break in’ is typical of stems with a basic shape /(\ə)Ci.../ in the ShImpf and VbIN. Other examples are -s-ilvl- ‘cause to be lodged’ with Imprt s-ǫlǣl, and -z-ihvz- ‘make approach’ with Imprt z-ǫhǣz.

For ‘make detest’ the underlying verb is (PerfP) -òkǣǫ- ‘detest’. The double-prefix type may be typical of causatives of transitive input verbs, though data are sparse. In addition to ‘make detest’ I can cite -s-vs-ikvy- ‘pass by’, Imprt s-ǣss-ikǣy.

In the single-prefix type, **perfective variants with e instead of o** are rare in T-ka, but are more common in other dialects. The verbs in (457.a) have e even in T-ka, probably by **dissimilation to w** (compare §4.1.2.17). In (457.b-e) we see the dialect split between perfective o (generally T-ka) and e,

not involving *w*. The verb 'break in' in (457.e), cf. (456), also has a variant with *ɑ* recorded from a T-md speaker, perhaps erroneous (this vocalism is typical of double causatives).

(457) e Versus o in Perfectives

a.	'raise (price)' 'make noise'	-æss-ewæd- -æss-ewæl-
b.	'bathe'	-æss-oræd- (T-ka) -æss-eræd- (A-grm, K-d)
c.	'count'	-æss-odæn- (T-ka) -æss-edæn- (K-d K-f R T-ka T-md)
d.	'hang'	-æss-olæy- (T-ka) -æss-elæy- (K-d R) -əss-elæy- (A-grm)
e.	'break in'	-æss-onæn- (A-grm T-ka T-md) -æss-enæn (K-d R) -æss-anæn- (T-md)

I now turn to verbs (mainly adjectival in sense) with **underived shape -i/uC(C)ɑC- in imperfectives**, often alternating with (especially perfective) -v(C)CvC-. These stems have a variably short or full V in the first syllable, a full V in the second syllable, and a final C. Since these verbs have rather distinct perfective and imperfective systems, the question arises whether the causative is based on the perfective or the imperfective. This is not a meaningful issue for other verb classes, whose perfective and (short) imperfective stems differ only in vocalic melody.

The underived -i/uC(C)ɑC- verbs normally have an initial schwa in the perfective forms versus a full V in the imperfectives, e.g. 'pray' with PerfP -əmud- (dialectally -æmud-) versus ShImpf -ùmɑd- (Imprt ùmad, LoImpfP -t-úmɑd-). Moreover, there are some verbs whose perfective shows consonantal gemination not seen in imperfectives, though there is dialectal variation in this respect; an example is 'be hot': PerfP -əkkus-, ShImpf -ïkas- (dialectally -ùkas-). Given these stem differences, it should be possible (for this verb class) to decide whether the perfective or the imperfective of the underived stem is the basis for the causative.

Consider the data in (458).

(458) Causatives of -vC(C)vC- Stems

	underived stem		gloss	Causative	
	Imprt	PerfP		PerfP	Imprt
a.	ùkaf	-əkuf-	'be inflated'	-æs-kæf-	s-əkəf
	ùməd	-əmud-	'pray'	-æs-mæd-	s-əməd
b.	ùmam	-əmum-	'be sucked'	-æss-omæm-	s-ùməm
	ùdab	-ədub-	'drip'	-æss-oðæb-	s-ùdəb
	irad	-ərid-	'bathe'	-æss-oræd-	s-irəd
	ïwəð	-əwið-	[A-grm and K-d: PerfP -æss-eræd-] 'increase'	-æss-ewæð-	s-ïwəð
c.	ùkmaš	-əkmuš-	'be scratched'	-əšš-ukmæš-	š-ùkməš
	ùsrəj	-əsruj-	'sneeze'	-æss-usræj-	s-ùsrəj
	ùksəð	-əksuð-	'be afraid'	-æss-uksæð-	s-ùksəð
				[Imprt variant s-ïksəð]	
d.	ïrhan	-ərhin-	'be sick'	-æss-ərhæn-	s-ərhan
	ïstak	-əstik-	'be empty'	-æss-əstæk-	s-əstək
e.	ïfad	-əffud-	'be thirsty'	-æs-fæd-	s-əfəd
	ïkas	-əkkus-	'be hot'	-æs-kæs-	s-əkəs
	ïlaz	-əlluʒ-	'be hungry'	-æs-læʒ	s-ələʒ
			[A-grm: underived PerfP ùfad, ùkas, ùllaz]		
f.	ïrar	-əqqor-	'be dry'	-æs-rær-	s-ərər
	ïzəd	-əzzəd-	'be sweet'	-əz-zæd-	z-əzəd
	ïzay	-əzzay-	'be heavy'	-əz-zæy-	z-əzəy
g.	ïjat	-əjjət-	'be many'	-æs-jæt-	s-əjət
	ïtaw	-əttəwə-	'forget'	-æs-təw-	s-ətəw

In (458.e-g), the entire causative agrees with the underived Imprt (=ShImpf) rather than with the underived PerfP in showing an **ungeminated C**. Let us assume then (momentarily) that the causatives are directly based on the (short) imperfective stem of the underived verb. This accounts for the fact that the verbs in (458.e-g) have the same causative stem shapes as those in (458.a). Indeed, these shapes, such as PerfP -æs-CæC-, are identical to those of causatives of -vCvC- stems, e.g. -æs-jæn- 'make kneel' (454).

However, there is an important difficulty in deriving the causatives in (458) from the corresponding underived imperfectives. The latter are based on a shape -i/uC(C)əC- with two full V's (i or u in the first syllable, ə in the second). All of the causatives have short V's in the final syllable. Since most

of the underlying verbs have a full V in both the perfective and imperfective systems, this must be due to an ablaut-linked morphophonological rule (459), repeated from (123).

(459) **Causative Final-Syllable V-Shortening** (repeated from (123))

A full V in the final syllable of an underived verb with imperfective -i/uC(C)aC- is reduced to a short V in the basic form of the causative.

In the initial (=penultimate) syllable, the underived stems have a full V in the imperfective (i or u) and a short V in the perfective (normally ə for T-ka and A-grm, normally æ for other dialects). In (458.b-c), the causative sides with the underived imperfective in this respect and shows a full V immediately following the prefixal sibilant. In the other cases, the causative agrees with the underived perfective, so following the prefixal sibilant we get a short V. In the causative perfective, this short V is then syncopated (**Stem-Initial Syncope**) where syllabically possible, i.e. in an open syllable (458.a, e-g), and it is preserved otherwise (458.d).

There is some ambiguity here as to the (morpho-)phonological processes involved. Most (but not all) cases of preservation of initial full V in the causatives involve u rather than i, but this division does not work cleanly. In addition, most cases of preservation involve non-adjectival senses (458.b-c), while most that undergo shortening in the causative are adjectival in sense, but again this correlation is not clean. I formulate (460) half-heartedly to account for (some of) the data above, repeated from (124). If the causative is based, in the relevant cases, on the underived perfective rather than imperfective, the rule is not needed.

(460) **Causative Initial V-Shortening** (repeated from (124))

A full V in the first syllable of an underived bisyllabic imperfective -i/uC(C)aC- verb is reduced to a short V in the basic form of the causative. [with exceptions; rule assumes that input is underived imperfective]

Both Causative Final-Syllable V-Shortening and Causative Initial V-Shortening (if the latter is valid at all) could be described as **pre-ablaut reconfigurations**, since they apply across the full set of causative stems. These two rules are complemented by Causative Medial V-Shortening (122), see (468), below.

While (458.b-c) suggest an alignment of the causative with the underived imperfective, insofar as they both show a full u or i in the onset of the stem proper, it is not completely out of the question to take the underived perfective shape -v(C)Ci/uC- as basic to both. Comparison with such cases as (PerfP =

ShImpf) -əndu- ‘be churned’ and its causative -s-undv- ‘churn’ (PerfP -əss-unda-, etc., see (467), below) shows that a second-syllable high V in the input can be transposed to the preceding syllable in the causative. But if ‘be churned’ is analysed as having basic form -undv- to begin with, becoming -vndu- by u-Spreading and Medial V-Shortening (before a CC cluster), cf. §7.3.1.4, no leftward movement of the features of u would be involved, so the comparison with causatives in (458), above, would not be instructive.

For the record, the full set of stem forms for ‘suck’, the causative of ‘be sucked’ (458.b), is given in (461).

(461) Causative Inflection for -ùmam- ‘be sucked’

a. perfective system

PerfP	-əss-omæm-
Reslt	-əss-ómæm-
PerfN	-əss-omæm-

b. short imperfective system

ShImpfP	-s-ùməm-
Imprt	s-ùməm

c. long imperfective system

LoImpfP	-s-ímum-
LoImpfN	-s-ímum-
Prohib	-s-ímum-

d. nominalizations

VblN	α-s-úməm, α-s-úmam
------	--------------------

8.1.6 Causative stem shapes (inputs with stem-final V)

We now turn to V-final stems, beginning with those of the α/ɪ subclass, with PerfP shape -əPQɑ-. As indicated in §7.3.1.3, underived verbs of this type have a complex phonology. The ShImpf is /-əPQɪ-/ with a deletable high V that affects accentuation and contracts with suffix-initial /æ/ to produce ə. When /ɪ/ is deleted word-finally (29), a resulting final PQ cluster requires **resyllabification** (§3.2.4, §3.3.2) if Q is more sonorous than P. These phonological alternations are carried over into prefixal derivatives, including causatives. In (462) I show both resyllabifying and stable types and give underlying schemas for the stems that have lost (word-finally and in most suffixal combinations) the stem-final V. The paradigms are valid for T-ka; dialectal variants are described below.

(462) Causative Inflection for -vPQu- Verbs, a/i Subtype

	resyllabifying 'show' -s-vknu-	stable 'make begin' -s-vntu-	stem pattern
a. perfective system			
PerfP	-əss-əkna-	-əss-ənta-	
Reslt	-əss-ikna-	-əss-ínta-	
PerfN	-əss-əkna-	-əss-ənta-	
b. short imperfective system			
ShImpfP	-s-əkón	-s-ənt	/-s-æPQ _I -/
Imprt	s-əkón	s-ənt	/s-æPQ _I /
c. long imperfective system			
LoImpfP	-s-ákna-	-s-ánta-	
LoImpfN	-s-əkni-	-s-ənti-	
Prohib	-s-ækna-	-s-ənta-	
d. nominalizations			
VbIN	α-s-əkónn	α-s-ənt	/-s-əPQ _I -/
	[Pl VbIN ð-s-ək _n -ən, ð-s-ənt-ən]		
Agentive	e-m-æss-ækænn	—	/...æPQ _I -/

VbIN's in other dialects: for 'show' α-s-əkón (R), α-s-əkən (T-md), α-s-əkni (A-grm); for 'make begin' α-s-ənti (A-grm). Cf. §3.3.2.

The perfectives are unremarkable, with <HL> melody and the usual stem-initial modifications. In the short imperfectives, we get the same <LH> melody as seen in the underived stems of the same class, so the final /ɪ/ is deleted, and in the case of 'show' the final unstable CC is resyllabified. The characteristic long imperfective melody is <L>, and as usual the full set of LoImpfP local formatives is audibly present. The VbIN and agentive show the same phonology (including dialectal details) as for other heavy verbs. The Pl VbIN ð-s-ək_n-ən displays χ-Erasure (§3.5.3.3) in connection with the contraction of the stem-final /ɪ/.

Some additional causatives of -vPQu- verbs are given in (463). That in (463.b) involves resyllabification.

(463) List of Causatives of -vPQv- Verbs, a/I Subtype

gloss	PerfP	Imprt	VblN
a. final cluster stable			
'put down'	-əss-ənsa-	s-əns	α-s-əns
'shave'	-əzz-əlza-	z-əlz	α-z-əlz
'dump' (√df)	-əss-əʃfa-	s-əʃf	α-s-əʃf
'plant'	-əss-əʀta-	s-əʀt	α-s-əʀt
'burn'	-əss-əʀʀa-	s-əʀʀ	α-s-əʀʀ
b. resyllabifying			
'teach'	-əss-əʀʀa-	s-əʀəʀ	α-s-əʀəʀ
'send'	-əss-əjla-	s-əjəl	α-s-əjəl

The importance of accent as a cue to structure (in T-ka dialect) is shown by comparing the forms for 'teach' in (463.b) with those of 'make wet': PerfP -əs-ʀær-, Imprt s-əʀər and VblN α-s-əʀər. Note in particular the T-ka accentual difference between Imprt s-əʀər 'make wet' and Imprt s-əʀəʀ (/s-æʀʀ/) 'teach', the latter showing Epenthetic-Vowel Accentuation (the vowels of 'make wet' are not epenthetic). This minimal pair does not work for most dialects, which do not shift accent to epenthetic V's in this position, and so have s-əʀər in both senses.

For A-grm I recorded the VblN for 'make begin' as α-s-ənt, Pl i-s-ənti-tæn, where the stem-final V is preserved only in the plural. From these limited data I infer that this dialect favors preservation of the stem-final i in the VblN before the Pl suffix, and word-finally unless deletion would create an unacceptable final cluster. While T-ka-like resyllabification is seen in the A-grm Imprt s-əkən, I have also recorded a number of forms in this dialect that retain an original i or u in the Imprt, viz., s-əʀʀu 'burn!', s-əʀŋu 'cook!'. This dialect often shows final u (instead of α) in the LoImpfP forms, e.g. -s-əʀʀu- corresponding to T-ka -s-əʀʀa- 'is burning'.

The above data involve underived -vPQv- stems, a/I subclass. I know of no causatives of the few -vPv- verbs. Only -vju- 'do' has a complete stem paradigm, and it geminates j to jj in derivatives. The two causatives of apparent -vPPv- stems, a/I subclass, are shown in (464).

(464) Causatives of -vPPv- Verbs, a/I Subtype

gloss	PerfP	Imprt	LoImpfP	VblN
'cook'	-əss-əŋŋa	s-əŋŋ	-s-əŋŋa-	α-s-əŋŋ
'send'	-əss-oka-	s-ùk	-s-ìku-	α-s-ùk

'Cook' in (464) is the causative of 'be cooked', which has basic form -vŋŋv- in perfectives and short imperfectives, but LoImpfP -nájŋŋ- and VbIN (or Abstr) t-è-næŋŋe, which would seem to point to a stem variant -vŋŋv- with a nongeminate ŋŋ sequence. The fact that causative 'cook' (464) has the same stem shapes as those for -vPQv- verbs in (463), above, could have either of two explanations, viz., that -vPPv- and -vPQv- are not distinguished in causative formation, or that 'be cooked' is actually a -vPQv- verb. This leaves 'send' in (464) as the only unequivocal evidence for the form of causatives from -vPPv-. Here the basic causative form is -s-ukv- 'send', and the apparent underived input is -vkkv- 'go to'. The conversion of -vkkv- to -ukv- in a derivational formation here matches that of -vPPvC- stems to -uPvC- in causatives (and other derivatives), as seen in e.g. -s-ufvy- 'make flow' from input -vffvy-. This was analysed in §8.1.4), above, as **pre-ablaut reconfiguration** of the stem. In the case of 'go to', the analogue would be a pre-ablaut reconfiguration of -vkkv- to -ukv- as input into causative derivation.

This takes care of all light -vCCv- input verbs of the α/ɪ subtype. There are also some heavy input verbs with the same vocalic alternations. Their causatives are in (465). The inputs are -fvykv- 'be searched', -mussv- 'move', and -tvrurv- 'go down'.

(465) Causative Stems for -CvCCv- and -CvCvCv- Verbs

gloss	PerfP	Imprt	LoImpfP	VbIN
'search'	-æs-fæyka-	s-əffæk	-s-ðfæyka-	α-s-əffæk
'drive'	-æs-mæssa-	s-əmmæss	-s-ðmæssa-	α-s-əmmæss
'send down'	-æs-tæra-	s-əttərur	-s-ðtruru-	α-s-əttərur

Another example like 'drive', showing the same **shortened medial V**, is causative -s-vfvggv- (PerfP -æs-fæggα-) 'take lid off' from -fuggv- (PerfP -əffuggα-) '(lid) be blown off' (among other senses). There is no trace of the underlying u in the causative stems; even the characteristic long imperfective melody is <L>. More examples of Causative Medial V-Shortening (122) are in §8.1.7, below.

For -vCCv- (I can cite no causatives of -vCv-), consider the causatives in (466). Inputs are -vlwv- 'be wide, spacious', -ujjv- 'stretch to look, peer', -vrmv- 'be stuck', and -vzjv- 'be tranquil'.

(466) Causative Stems for -vCCv- Verbs

gloss	PerfP	Imprt	LoImpfP	VbIN
'widen'	-æss-olwa-	s-iléw	-s-álwa-	α-s-iléww
'make peer'	-æss-ijja-	s-íjj	-s-ájja-	α-s-íjj

'stick in'	-əss-urma-	s-iróm	-s-írmu-	α-s-iróm
		[Imprt also s-írmu]		
'make tranquil'	-əzz-ozja-	z-ǐzj	-z-ázja-	—
			-z-ízju-	

There is some instability in these paradigms, some of which are attested for only one or two informants. 'Widen' and 'make peer' are from intransitive inputs with no u vowels, while 'stick in' and 'make tranquil' are from intransitive inputs with final u in the imperfectives. One could suggest basic representations /-ilwv-/, /-ijju-/, /-irmu-/, and /-izju-/, where "v" represents unrounded α or /i/. Here -ilwv- and -vrmu- have clusters lw and rm that require resyllabification (§3.2.4, §3.3.2) when word-final (i.e. in the Imprt and ShImpf). The two verbs with no lexical u show <L> melody in the LoImpfP. The instability of vocalism in PerfP forms of such stems is seen in the shift to medial o (avoiding e) in 'widen' and 'make tranquil', while 'make peer' has i and 'stick in' switches its final u into medial position.

This accounts for all non-augment V-final verbs that alternate between final α (perfectives) and /i/ (short imperfectives). It remains to consider the **α/u and u/u subclasses** of -v(C)Cv- verbs. It turned out to be difficult to elicit causatives for these verbs. For example, I was disappointed at being unable to elicit a causative for -vsu- 'cough', which ought to have been reasonable semantically. For these subclasses, there are two causatives in common use (467). The basic causative forms are -s-undv- and -s-unfv-.

(467) Causative Stems for -vCCv- Verbs (u/u and α/u subtypes)

gloss	PerfP	Imprt	LoImpfP	VblN
'churn'	-əss-unda-	s-ùnd	-s-índu-	α-s-únd
'rest'	-əss-unfa-	s-ùnf	-s-ínfu-	α-s-únf

The underived input for the first of these is 'be churned', with PerfP -əndu- and Imprt əndu, hence u/u subclass.

It is less clear whether 'rest' has any connection to underived PerfP -ənfa- and Imprt ənfu 'be useful to' (α/u subclass). These are part of a complex cognate and borrowing set also including Hassaniya Arabic t-naffas and Songhay funsu 'rest, relax, breathe', and Arabic √nfʿ and Songhay nafa 'be useful'. One possibility: -s-unfv- was the original causative of PerfP -ənfa-, but the relationship is now opaque due to semantic shifts under foreign influence. In any event, -s-unfv- in (467) is causative in form, since the long imperfective has no -t- prefix.

If 'be churned' is analysed as having a basic form -undv-, where the u is initial rather than final, the causative -s-undv- is unremarkable (see §7.3.1.4). For the shift of u to the final syllable in -s-ínfu-, -s-índu-, leaving i behind, see u-Spreading and Medial V-Shortening §3.4.9.3. The LoImpfN is -s-əndu-, so

LoImpfP *-s-índu-* is best derived by applying LoImpfP ablaut formatives $\acute{\chi}$ -pcl and $\bar{\chi}$ -pcl at a late stage (468).

(468) Derivation of LoImpfP *-s-índu-*

<i>-s-undv-</i> , <H>, $\bar{\chi}$ -f, $\bar{\chi}$ -pcl, $\acute{\chi}$ -pci	stem and ablaut components
<i>/-s-undi-/</i> , $\bar{\chi}$ -pcl, $\acute{\chi}$ -pci	integration of <H> and $\bar{\chi}$ -f
<i>/-s-undv-/</i> , $\bar{\chi}$ -pcl, $\acute{\chi}$ -pci	u-Spreading
<i>/-s-əndu-/</i> , $\bar{\chi}$ -pcl, $\acute{\chi}$ -pci	Medial V-Shortening
<i>-s-índu-</i>	integration of $\bar{\chi}$ -pcl, $\acute{\chi}$ -pci

In this derivation, the ablaut components are integrated in two stages, separated by u-Spreading and Medial V-Shortening, both of which are “phonological” rules internal to the ablaut derivation system (§3.4.9.3). The special treatment of $\bar{\chi}$ -pcl and $\acute{\chi}$ -pci is reasonable, since these features are confined to the LoImpfP, whereas $\bar{\chi}$ -f occurs in all three long imperfective stems, cf. LoImpfN *-s-əndu-*.

8.1.7 Causative stem shapes (heavy C-final input stems)

If the input stem is of a heavy shape like *-CVC(C)VC-* with three or more C positions, the perfectives of the causative are based on a strict surface <L> melody. This surface melody can be accounted for by assuming <H L>, Stem-Initial Syncope, and Leftward L-Spreading. Some examples are in (469).

(469) Causatives of Heavy Verbs (Perfective)

	input PerfP	input gloss	Causative PerfP
a.	<i>-æbewæs-</i> <i>-ædobæn-</i>	‘be wounded’ ‘marry’	<i>-æš-bawæs-</i> <i>-æš-dabæn-</i>
b.	<i>-ækrakær-</i> <i>-æmlæwlæw-</i>	‘rotate’ ‘shine’	<i>-æš-kærakær-</i> <i>-æš-mælæwlæw-</i>
c.	<i>-əbbə̀rjæjjæy-</i> <i>-ə̀kkə̀ykæy-</i> <i>-ə̀hhə̀jæy-</i>	‘(hair) stand’ ‘dust off’ ‘be harvested’	<i>-æš-bæ̀rjæjjæy-</i> <i>-æš-kæ̀ykæy-</i> <i>-æš-hæ̀jæy-</i>
d.	<i>-ə̀hhuššæl-</i> <i>-ə̀ddurhæn-</i> <i>-ə̀bbuddæl-</i>	‘be necessary’ ‘wish’ ‘be lazy; crazy’	<i>-æš-hæ̀ššæl-</i> <i>-æš-dæ̀rhæn-</i> <i>-æš-bæ̀ddæl-</i>

the underived counterpart ‘be obligatory’ (-huššvl-, LoImpfP -t-ihəššul-). Note the variant -š-àhəššal- (attested in K-d). There seems to be a tension between a phonologically “correct” derivation from -š-vhvššvl-, and one that recovers the original u of the input stem and builds the causative long imperfectives accordingly.

For the causative of √*x*(y)m ‘sit’, see §7.3.2.9.

8.1.8 Causative stem shapes (V-final augment verbs)

Since the augment is a suffix -t-, its distribution is unaffected by derivational prefixation. Examples in (471).

(471) Causatives of V-Final Augment Verbs

gloss	PerfP	Imprt	LoImpfP
a. ‘close’	-æs-nækæbbæ-t	s-ənnəkəbbə-t	-s-iŋkəbbi-t
‘free (slave)’	-æs-ræwalæ-t	s-əqqəwīlə-t	-s-ɪrwīli-t
b. ‘trim’	-æs-qæræ-t	s-əqqərə-t	-s-àqara-t
c. ‘hatch’	-æs-fæqqæ-t	səffəqqə-t	-s-ifəqqu-t
d. ‘make round’	-æs-bæləmbalæ-t	↓	-s-ibləmbulu-t
		s-əbbələmbulə-t	

The causative VbIN’s are a-s-ənnəkəbbi, a-s-əqqəwīli, a-s-əqqəri, a-s-əffəqqu, and a-s-əbbələmbulu. The default accent is regular for VbIN’s of augment stems. The inputs for these causatives (omitting the Augment) are -nvkvbbu- ‘be closed’ (syncopated PerfP -æŋkæbbæ-t), -rvwīlu- ‘be freed’ (PerfP -ærwalæ-t), -qvr- ‘be cut’ (PerfP -əqqərə-t with C₁-Gemination), -fuqqv- ‘be hatched, sprout’ (PerfP -əffuqqæ-t), and -bvlvmbulu- ‘be ball-shaped’ (PerfP -æbləmbalæ-t). The vocalic melodies in the causatives in (471) are generally consistent with those of the underived stems. Stems with a medial u, here represented by ‘make round’, also have a final u in the long imperfectives (and VbIN), otherwise there is a lexical choice of final V (u or i with the <H> melody of the VbIN, and either the same vowel or a in the LoImpfP depending on melody).

For A-grm I recorded the LoImpfP of ‘close’ as -s-inəkəbbi-t and that of ‘hatch’ as -s-əfəqqə-t.

8.1.9 Causatives of prefixally derived verbs

The combinations of Caus -s- with a following derivational prefix predominantly involve one of the following as second suffix: Mediopassive -m- (-n-), Reciprocal -m- (or -nvm-), or a second Causative -s-. The triple combination -s-m-s- is also attested. The rarest combination is Caus -s- followed by Passive -t(t)- or -tvw-. This is likely due to semantic awkwardness rather than morphological barriers. However, I can cite (from Gao) one case of a causative of a reciprocal of a passive, in the form of VbIN α -z-ənn-ət-əlməz ‘swallow and spit up saliva’, cf. -vlmvz- ‘swallow’. The derivative is literally something like ‘cause to be swallowed back and forth’ (see below on distributivity).

Clear cases of **causative of reciprocal** are given in (472), using T-ka for the most widespread paradigm type but adding some A-grm variants.

(472) Causative-Reciprocal

a. -s-vnvm-vyyu- ‘cause (them) to leave each other’ (-uyyu- ‘leave’)

PerfP	-əs-nə̃m-əyya-
Imprt	s-ənnə̃m-əyy
LoImpfP	-s-ĩnm-əyyi-
VbIN	α -s-ənnə̃m-əyy

b. -s-vnvm-vwvt- ‘cause (them) to hit each other’ (-vwvt- ‘hit’)

PerfP	-əs-nə̃m-əwæt-
Imprt	s-ənnə̃m-əwət
LoImpfP	-s-ĩnm-əwit-
VbIN	α -s-ənnə̃m-əwət

An example of the verb in (472.b) with 1Sg subject and 3MaPl plural object clitic: $\text{əs-nə̃m-əwæt-əq-}\backslash\text{qə̃n}$ ‘I made them hit each other’.

In the short imperfectives (including Imprt), as for other causatives, we observe C_1 -Gemination on the first C following the -s- prefix, in this case the inner -m- prefix, resulting in -s-vmm-V...

The examples in (472) are of the semantic type [Z cause [XY hit XY]]. I asked whether the forms in (472) could also be interpreted as of the type [XY cause [XY hit Z]], e.g. ‘cause each other to hit (something)’, but this sense was rejected.

In theory, it should be easy to distinguish these causatives of reciprocals from causatives of mediopassives. However, the distinction between Mediopassive -m- (-n-) and Reciprocal -nvm- is usually neutralized in favor of the shorter -m- (-n-) when the underived stem is already heavy (§8.4). In combination with a preceding Caus -s-, this neutralization of Mediopassive and Reciprocal seems to occur even with some of the shorter stems.

The cases in (473) appear to be simple cases of a **causative of mediopassive**. Note that the core stems are light (-vCvC-, -vCCv-).

(473) Causative of Mediopassive

- a. -s-vm-vdvd- ‘gnaw at’ (-vdvd- ‘bite’)
- | | |
|---------|--------------|
| PerfP | -æs-m-ædæd- |
| Imprt | s-ðmm-ədəd |
| LoImpfP | -s-ðm-ædæd- |
| VbIN | α-s-əmm-édəd |
- b. -s-vm-vlsu- ‘contaminate’ (-vlsu- ‘dress’)
- | | |
|---------|--------------|
| PerfP | -æs-m-ælsa- |
| Imprt | s-ðmm-əls |
| LoImpfP | -s-ðm-ælsa- |
| VbIN | α-s-əmm-ól̥s |

For the semantic nuances, cf. Mediopassive -m-vdvd- ‘be eaten (all over)’ and -m-vlsu- ‘(disease) be contagious’.

In other cases, a combination of -s- with -m- (-n-) has a specialized aspectual sense, involving (spatiotemporal) **distributivity** or **iterativity**. These combinations may be lexicalized (i.e. occur frequently and have idiosyncratic sense). Often the corresponding simple Mediopassive is not attested, at least in a sense closely related to that of the doubly prefixed combination. Arguably the original sense was reciprocal rather than mediopassive, since the reciprocal category has a built-in distributivity, but some mediopassives have a similar quantificational element, cf. ‘be eaten (all over)’ just illustrated. Examples involving spatiotemporal distributivity are in (474).

(474) Spatiotemporal Distributive Cases

- a. -s-vn-vffvy- ‘pour (over and over)’ (-vffvy- ‘pour’)
- | | |
|---------|---------------|
| PerfP | -æs-n-æffæy- |
| Imprt | s-ðnnəfəy |
| LoImpfP | -s-ñn-əffuy- |
| VbIN | α-s-ənn-éffəy |
- b. -s-vm-ʀʀvttvs- ‘do intermittently’ (-ʀʀvttvs-/ʀʀvttvs- ‘snap’)
- | | |
|---------|-----------------|
| PerfP | -æs-m-æʀættæs- |
| Imprt | s-əmm-əʀəttəs |
| LoImpfP | -s-ñm-ʀəttis- |
| VbIN | α-s-əmm-əʀəttəs |

- c. -s-vm-ulvy- ‘cut into pieces’ (-ulvy- ‘cut’)
- | | |
|---------|--------------|
| PerfP | -æs-m-alæy- |
| Imprt | s-əmm-iløy |
| LoImpfP | -s-àm-aløy- |
| VblN | α-s-əmm-íløy |
- d. -s-vm-vswu- ‘give another drink to’ (-vswu- ‘drink’)
- | | |
|---------|---------------|
| PerfP | -æs-m-æswa- |
| Imprt | s-əmm-əséw |
| LoImpfP | -s-àm-æswa- |
| VblN | α-s-əmm-əséww |
- e. -s-vm-vðnv- ‘fill (waterskin) to the top’ (-vðnv- ‘fill partially’)
- | | |
|---------|---------------|
| PerfP | -æs-m-æðnæy- |
| Imprt | s-əmm-æðnøy- |
| LoImpfP | -s-àm-æðnøy- |
| VblN | α-s-əmm-éðnøy |

Other, more lexicalized examples of -s- plus -m- (-n-) are in (475).

(475) Other Cases

- a. -s-vn-ulvs- ‘narrate, (re-)tell (a story)’ (-ulvs- ‘repeat’)
- | | |
|---------|--------------|
| PerfP | -æs-n-alæs- |
| Imprt | s-ənn-iləs |
| LoImpfP | -s-àn-ælas- |
| VblN | α-s-ənn-íləs |
- b. -s-vm-vrwvs- ‘offer credit to’ (-vrwvs- ‘be owed’)
- | | |
|---------|---------------|
| PerfP | -æs-m-ærwæs- |
| Imprt | s-əmm-ərwəs |
| LoImpfP | -s-àm-ærwæs- |
| VblN | α-s-əmm-érwəs |

Causative -s-vmvlkvw-, PerfP -æs-mælkæw- ‘give (something) away’, based directly on -əmmælkæw- ‘be donated’, is another possible example, but the latter has no obvious synchronic semantic connection to -vlkvw- ‘draw (water, at well)’. Likewise with -s-vnvtfv- , PerfP -æs-nætfæs- ‘fold’, directly based on -nutfv- ‘be folded’, but the latter has only a questionable connection to -vtfv- ‘(udder) be full’ ($\sqrt{\text{dfs}}$).

There are many **morphological double causatives** with two successive -s- prefixes. In the cases known to me, these function as simple causatives. The pattern is common when the underived input verb is of the shape -vCvC-, or is already transitive. Examples are (Imprt) s-əss-ətkəl ‘cause (X) to take (Y)’, and (Imprt) s-əss-iwæn ‘cause to go up’; see §8.1.3.

While I know of no true causative-causative other than these purely morphological double causatives, there are a number of more complex combinations involving two Causative prefixes separated by -m- (variant -n-), which can here be taken as Reciprocal (rather than Mediopassive). Some of these are fairly common, but they tend to have specialized senses. I refer to them as **causative-reciprocal-causative**, though in several cases there is a distributive or iterative nuance.

(476) Causative-Reciprocal-Causative

- a. -s-vm-vs-ıđvn- ‘count (over and over)’ (Imprt ıđan ‘be counted’)
- | | |
|---------|--|
| PerfP | -æs-m-æs-ɑđæn- (A-grm -s-æmm-æs-eđæn-) |
| Imprt | s-æmm-əs-ıđæn |
| LoImpfP | -s-ı̃m-s-ıđin- |
| VblN | ɑ-s-æmm-əs-ıđæn |
- b. -s-vm-vs-urvl- ‘begin again’ (-vqqvl- (√rl) ‘return’)
- | | |
|---------|-----------------|
| PerfP | -æs-m-æs-ɑræl- |
| Imprt | s-æmm-əs-uræl |
| LoImpfP | -s-ı̃m-s-urul- |
| VblN | ɑ-s-æmm-əs-úræl |
- c. -s-vm-vs-ıjvr- ‘compare (X and Y)’ or ‘make (X) bigger or longer than (Y)’ (-ıjvr- ‘surpass, be better than’)
- | | |
|---------|-----------------|
| PerfP | -æs-m-æs-ɑjær- |
| Imprt | s-æmm-əs-ıjær |
| LoImpfP | -s-ı̃m-s-ıjir- |
| VblN | ɑ-s-æmm-əs-ıjær |
- d. -s-vn-vs-udvb- ‘pour (liquid) back and forth’ (Imprt uđab ‘be poured’)
- | | |
|---------|-----------------|
| PerfP | -æs-n-æs-ɑđæb- |
| Imprt | s-ænn-əs-udæb |
| LoImpfP | -s-ı̃n-s-udub- |
| VblN | ɑ-s-ænn-əs-úđæb |
- e. -s-vm-vs-ıhvr- ‘vacillate, hesitate’ (-ıhvr- ‘have in common’)
- | | |
|---------|-------------------|
| PerfP | -æs-m-æs-s-ɑhær- |
| Imprt | s-æmm-əs-s-ıhær |
| LoImpfP | -s-ı̃m-s-ıhir- |
| VblN | ɑ-s-æmm-əs-s-ıhær |

The rare causative of passive is probably confined to cases where the passive is somewhat specialized semantically (i.e. lexicalized). The only textual example I have is ‘cause to be arrested’. The input is -t-ırmvs- ‘be

arrested', which is morphologically the passive of -vrmvs- 'receive, take'. The causative is therefore -s-vt-vrmvs- 'cause (sb) to be arrested' (PerfP -əs-t-ærmæs-, etc.).

An unusual causative VbIN α -z-ənn-ət-əlməz 'act of swallowing and spitting up saliva', recorded for Gao, is of the type -z-vn-vt-vlmvz, based on -vlmvz- 'swallow' (intr or tr), preceded in succession by Passive -t-, Reciprocal -n-, and Causative -z-. The combination of Reciprocal with Passive is the irregular feature here.

8.1.10 Dialectal causative ShImpf forms without C₁-Gemination

The R speaker sometimes failed to apply C₁-Gemination in the ShImpf of some combinations of Caus -s- plus derivational prefix -m-. The effect is that the onset of the ShImpf (including Imprt) resembles that of the LoImpfP rather than the VbIN. In (477) I show the relevant cases, giving the LoImpfP and VbIN for comparison.

(477) Ungeminated Causative ShImpf Forms

	dialect Imprt	LoImpfP	VbIN
a. 'whisper'			
R	s-əm-təktək	-s-īm-təktik-	α-səmm-ətəktək
A-grm	s-əmm-ətəktək	"	"
b. 'compare' (-ujvr- 'surpass, be better than')			
R	s-əm-s-ijər	-s-īm-s-ijir-	α-s-əmm-əs-ijər
T-ka	s-əmm-əs-ijər	"	"
A-grm	s-əmm-əs-igər	-s-im-əs-igir	α-s-əmm-əs-igər

This ungeminated pattern seems to be sporadic for the R speaker, who did in fact apply C₁-Gemination to the nasal prefix in short imperfectives (including Imprt) of the triple prefix type Caus-Recip-Caus- (-s- plus -m/-n- plus -s-), e.g. Imprt s-ənn-əs-uḍəb 'pour back and forth' and Imprt s-əmm-əs-urəl 'restart'.

8.2 Passive (-t-, -tt-, -tvw-)

The passive derivation is not very common. As explained in §8.2.1, many underived intransitive verbs have senses corresponding to passives in English (the transitive counterpart is then expressed by a causative). Other verbs can be used, without affixal derivation, interchangeably as transitive or intransitive. Transitives with impersonal 3MaPl subject ('they bit me') can also be used to

translate English passives ('I got bitten'). For many transitive verbs, no prefixal passive could be elicited.

For 'give' (§9.1.6), the passive always has the theme (i.e. the object given) as subject: Ø-æt_w-ækfa 'it was given'. I tried to elicit passive examples with the recipient as subject but they were rejected.

The Passive allomorphs -t- (including -tt- due to C₁-Gemination) and -tvw- (syncopated -tw-) overlap, but in practice the choice between them is usually predictable. Admittedly, in elicitation, speakers generally allowed either form across a wide range of verbs. In normal speech, however, the -t- form (including -tt- due to C₁-Gemination) is usual with -vCCvC- stems, and for T-ka with -vCvC-, while -tvw- is usual with heavier stems.

I will refer to the two as **T-passive** and **TW-passive**, respectively. The -tvw- variant may be compared structurally with the rare w-extension of Causative prefix -s-, i.e. -svw-, in a very small number of causative verbs (§8.1.1).

Examples of the T-passive are in (478).

(478) T-Passives

	-vPQvC- 'be taken'	-vCvC- 'be hit'
	-vrmvs-	-vwvt-
a. perfective system		
PerfP	-ətt-ərmæs-	-ətt-əwæt-
Reslt	-ətt-írmæs-	-ətt-íwæt-
PerfN	-ətt-ərmæs-	-ətt-əwæt-
b. short imperfective system		
ShImpf	-ətt-ərmæs-	-ətt-əwæt-
Imprt	t-ərmæs	t-əwæt
c. long imperfective system (two variant types)		
LoImpfP	-t-érmæs-	-t-éwat-
	-t-àt-ərmæs-	-t-àt-əwat-
LoImpfN	-t-èrmæs-	-t-èwat-
	-t-ət-ərmis-	-t-ət-əwit-
Prohib	-t-èrmæs-	-t-èwat-
	-t-æt-ərmæs-	-t-æt-əwat-
d. nominalizations		
VblN	a-t-érmæs	a-t-éwat
	a-t-érmæs	a-t-éwat

Other passives similar to 'be taken' in (478), in the *Imprt*, are *t-æjræw* 'be found' and *t-æŋkæd* 'be cut'. In long imperfectives like *LoImpfP* *-t-æt-ærmas-*, the first *-t-* is the *LoImpf* prefix.

The paradigm is similar to that of underived verbs with *CæCCæC* imperatives (middleweight verb with short vowels), e.g. *kæykæy* 'shake' §7.3.1.2). Specifically, the *PerfP*, the *Imprt*, and the *-t-æt-ærmas-* type of *LoImpfP*, are consistent with the corresponding stems of the *kæykæy* class. A minor difference is that the *VblN* of the passives usually has final-syllable *a*, while *ə* is most common in the *kæykæy* class, but both *ə* and *a* variants are grammatical in both cases.

But the most striking feature of the paradigm in (478) is the unique **variant long imperfective** of type *LoImpfP* *-t-érmas-*. The *e* is not secondarily lengthened by \tilde{x} -*pc1*, as we can see from the fact that it remains *e* (though unaccented) in the *LoImpfN* and *Prohib* stems: *wær t-ewat* 'don't-Sg be hit!'. Another example is *LoImpfP* *-t-éjraw-* for passive *-ətt-əjræw-* 'be found' (*Imprt* *t-æjræw*); *-t-éjraw-* shows that the *e*-vocalism is genuine, rather than due to a shift from */i/* as one might infer from just looking at *-t-érmas-* (where *r* is a *BLC*).

In addition to regular use with *-vCvC-* and *-vPQvC-* stems, I have also recorded one (possibly dialectal) form with a *-vCvC-* stem, namely 'be related (by kinship)' (*PerfP* *-ətt-eræw-*, *Imprt* *t-iræw*), cf. *-urv-* 'give birth' (*PerfP* *-ðræw-*).

The *w*-extended Passive allomorph *-tw-* occurs in a much broader set of stem types. Examples with light stems are in (479). The *-vCvC-* input recurs here after appearing first in (478). Allomorph *-tw-* is always subject to Stem-Initial Syncope, so we get surface stem-wide <*L*> melody (arguably from underlying <*H L*>) in perfectives, and <*H*> melody in short and long imperfectives as well as in the *VblN*.

(479) TW-Passives (Light Input Stems)

<i>-vCCv-</i>	<i>-vCvC-</i>	<i>-vCvC-</i>
'be said'	'be bitten'	'be intended'
<i>-vnnv-</i>	<i>-vwvt-</i>	<i>-vtvs-</i>

a. perfective system

<i>PerfP</i>	<i>-ætw-ænna-</i>	<i>-ætw-ædæd-</i>	<i>-ætw-atæs-</i>
<i>Reslt</i>	<i>-əfīw-ænna-</i>	<i>-əfīw-ædæd-</i>	<i>-əfīw-atæs-</i>
<i>PerfN</i>	<i>-ætw-ænna-</i>	<i>-ætw-ædæd-</i>	<i>-ætw-atæs-</i>

b. short imperfective system

<i>ShImpf</i>	<i>/-ətw-ənni-/</i>	<i>-ətw-ədəd-</i>	<i>-ətw-itəs-</i>
<i>Imprt</i>	<i>təw-ənn</i>	<i>təw-ədəd</i>	<i>təw-itəs</i>

c. long imperfective system

LoImpfP	-t-ĭtw-ənni-	-t-ĭtw-ədīd-	-t-ĭtw-itis-
LoImpfN	-t-ət̃w-ənni	-t-ət̃w-ədīd-	-t-ət̃w-itis-
Prohib	-t-ət̃w-ənni-	-t-ət̃w-ədīd-	-t-ət̃w-itis-

d. nominalizations

VbIN	a-tw-ənn	a-tw-ədəd	a-tw-ītəs
		a-tw-ədād	a-tw-ītās

For -vCvC- stems, T-ka prefers the T-passive (PerfP -ætt-ædæd- 'be bitten', etc.), though a TW-passive is attested in this dialect (PerfP -æt̃w-ædæd-). Other dialects checked (A-grm R) have just the TW-passive for -vCvC- stems. For A-grm the PerfP is (predictably) -tæw-ædæd-, since A-grm does not allow Stem-Initial Syncope here.

For T-ka (at least), the TW-passive **'be touched'** shows an idiosyncratic **gemination of the stem-medial C**, hence PerfP -æt̃w-æddæs- from underived -vḍvs- 'touch'. The gemination also occurs in the other attested T-ka prefixal derivative of this verb, the reciprocal, suggesting a systematic shift to -vḍḍvs- as this stem's input to prefixal derivation. Note ḍḍ, not ṭṭ (cf. §3.1.1.8).

Further examples of TW, cited in the Imprt, show that -tvw- is productive with all types of verb, including full-V-initial, augmented, and heavy stems, other than the few input types (-vPQvC-, to some extent -vCvC-) shown above with T-passives: t̃w-iwəḍ 'be reached' (-uwvḍ-), t̃w-iwəx 'be delayed' (-uwvx-), t̃w-əḡx 'be killed' (-vḡxu-), t̃w-əḡr 'be harmed' (-ḡvrru-), t̃w-əbləjbəlij 'be cut up' (-bvlvjbvlvj-), t̃w-əgəggər 'be insulted' (-gvggvr-), augmented t̃w-əḡnə-t 'be carried on head' (-lvnjv- + -t), and augmented t̃w-əḡhubə-t 'be dragged' (-hubv- + -t). Passive t̃w-əyy 'be left' can be added, though here it should be pointed out that -vyyv- 'leave' also has a w-extension in the causative (PerfP -əsw-əyya- 'cause to leave'). TW-passives of -vCCvC- verbs are uncommon, cf. the regular pattern in (478), above, but I can cite Imprt t̃w-əqbəl 'be accepted' (whose input stem is an Arabic borrowing).

In the A-grm dialect, we find long imperfectives of the **type LoImpfP -t̃w-ædad-** 'be bitten', versus -t-ĭtw-ədīd- in T-ka and other dialects. The A-grm type lacks the LoImpf -t- prefix, and therefore attaches the LoImpfP ablaut features ǰ-pcl and ǰ-pclto the vowel of the prefix -tvw-. This resembles the long imperfectives of causatives, which also omit LoImpf -t- before Causative prefix -s-. The full set of A-grm long imperfective MAN stems for 'be said' and 'be bitten' is presented in (480).

(480) Variant A-grm Long Imperfectives of TW-Passives

	'be said'	'be bitten'
long imperfective system		
LoImpfP	-təw-ænna-	-təw-ædad-
LoImpfN	-təw-ənni-	-t-ətəw-ədɪd-
Prohib	-təw-ænna-	-t-ətəw-ədɪd-

For the K-d speaker, I recorded an unusual passive verb showing a **long vowel in the final stem syllable**, not only in the long imperfectives (where it is expected due to ablaut formative \bar{x} -f) but also in other stems: PerfP -ətəw-ænnəy- '(e.g. camel) be mounted', Imprt təw-ənnəy, LoImpfP -t-ɪtəw-ənniy-. A similar example from a Gao-area recording was Reslt n-æfɪw-æssən 'we are well-known' (cf. -vssvn- 'know'). Cf. ablaut formatives α -f and \bar{x} -f (§3.4.4).

The -tvw- allomorph is also regular in passives of stems that already contain another (inner) derivational prefix. Examples are in (481).

(481) TW-Passives of Derived Verbs (gloss, PerfP, Imprt, LoImpfP, VblN)

a. passive-causative (common)

-tvw-vs-vstvN- 'be questioned'

PerfP	-ætəw-əs-æstæn-
Imprt	təw-əs-əstən
LoImpfP	-t-itəw-əs-əstin-
VblN	ɑ-təw-əs-əstən

-tvw-vs-vmɣvr- 'be respected'

PerfP	-ætəw-əs-æmɣær-
Imprt	təw-əs-əmɣər
LoImpfP	-t-itəw-əs-əmɣir-
VblN	ɑ-təw-əs-əmɣər = ɑ-təw-əs-əmɣər

-tvw-vs-vdrvs- 'be reduced'

PerfP	-ætəw-əs-ædræs-
Imprt	təw-əs-ədrəs
LoImpfP	-t-itəw-əs-ədris-
VblN	ɑ-təw-əs-ədrəs

b. passive-mediopassive (rare)

-tvw-vm-vkšv-	'be eaten'
PerfP	-ætʷ-əm-ækšɑ-
Imprt	təw-əm-əkš
LoImpfP	-t-itw-əm-əkši-
VblN	ɑ-tw-əm-ákš

'Be questioned' in (481.a) is the passive of a frozen causative (for all practical purposes, the passive of a simple transitive verb); there is no attested verb #-vstvn-. 'Be respected' is the passive of -s-vmʷvr- 'respect, honor', a lexicalized causative of the adjectival verb 'be big' in the contextual sense 'be important' (PerfP məqqor-). 'Be reduced' is the passive of -s-vdrvs- 'reduce', causative of the adjectival verb 'be few, not much' (PerfP dārus). To the extent that the double derivation is logically transparent, the passive-of-causative appears to have the underlying patient as subject ('X be caused to be big/few'), with both the agent of the intervening causative and the outer agent omitted.

'Be eaten' in (481.b) does not seem to differ much in meaning from -əmm-əkšɑ-, the simple mediopassive on which it is based.

The usual variant forms occur for A-grm, in particular LoImpfP -tiw-əs-əstin- and -tiw-əs-əmʷir- with no LoImpf -t- prefix.

8.3 Mediopassive (-m-, -n-, -nvy-)

The mediopassive is characterized by a nasal prefix -m- or -n-. It is much less productive (in the sense of ready combinability with any transitive verb) than the T- or TW-passives (§8.2, above). While those passives imply an agent (however unspecific), the mediopassive usually denotes **agentless** mediopassives. Mediopassives tend to become semantically specialized and therefore lexicalized. There are a number of verbs in my dictionary that begin with m or n and have stem-shapes consistent with those of mediopassives, but either correspond to no underived stem, or diverge semantically from a formally related underived stem.

The transitive verb -vfrvn- 'choose, select' illustrates the difference between mediopassive (-n-vfrvn-) and passive (-tvw-vfrvn-). Both can be glossed 'be chosen'. However, -n-vfrvn- focuses on the qualities of the referent, and can be glossed 'be the best (in a competition)' (cf. English *select* in adjectival use: *a few select wines*). On the other hand, -tvw-vfrvn- implies an agent: 'be chosen (by someone)'. Another mediopassive example is -m-urv- 'be open(ed); be untied', which denotes an agentless transition, or the resulting state.

One reason the mediopassive is not particularly productive is that some verbs can be used intransitively or transitively without derivational prefixation. Quite often, the intransitive use (denoting a state) is expressed in the Reslt

stem (with present or past time reference), while the transitive use is often expressed in the PerfP or LoImpfP depending on its time reference. For such ambi-valent verbs see §9.1.3.

In mediopassive sense, *-m-* or *-n-* occur chiefly with light underived stems that have simple shapes like *-vCCvC-* and *-vCv-*.

-n- and *-m-* also function as allomorphs of the **Reciprocal** prefix (whose fuller form is *-nvm-*). The short variant *-n-* and *-m-* is usual before heavy verb stems. With such heavy verbs, the sense of *-n-* and *-m-* is quite regularly reciprocal, though there are a few attested cases that could be taken as mediopassive. See §8.4, below, for the examples.

The choice between *-m-* and *-n-* is phonologically determined (482). For *-nvy-*, see below.

(482) Mediopassive Prefix

- n- if stem contains a labial C {m b f}, e.g. *-n-vkvmv-* ‘be squeezed’,
-n-vbɔv- ‘be dislocated’
- m- otherwise, e.g. (Imprt) *-m-vrtvy-* ‘become mixed’, *-m-vrvvy-* ‘be kneaded’

A *w* in the stem does not count as a “labial” for this purpose and is compatible with *-m-* prefixes, hence *-m-vrvvy-* ‘be mixed’ (PerfP *-əmm-ərwæy-*).

The *-n-/m-* rule must be qualified, since if a prefixal *n* is clustered with a following *b* or *f* (but not *m*), it undergoes the regular **local assimilation** and we get phonetic [mb]. Example: Imprt *n-əbðlæɖwəy* ‘fall over’ (with *n-* rather than *m-* to dissimilate at a distance from *b*), but PerfP *-əmb-əðlæɖwæy-* (where the /n/ is now clustered with the *b* and cannot avoid Nasal Assimilation). By contrast, a prefixal *m* does not assimilate to a following alveolar, hence *-əmt-læt* ‘be stacked (on top of each other)’. Leaving low-level Nasal Assimilation aside, I take *-m-* to be the basic form of the Mediopassive prefix, while *-n-* is dissimilatory (at a distance).

There is one case with (frozen) **allomorph** *-nvy-*, probably no longer segmentable synchronically. This is (T-ka) *-nvyufv-* ‘be compared (to determine which is best)’ with PerfP *-ənyafa-* and Imprt *nəyuf*. It is historically related to (PerfP) *-ðfa-* ‘surpass, be better than’ (MGT 1.56), though a segmentation *-nvy-ufv-* is probably unjustified for modern-day speakers. The labial *f* accounts for the dissimilated prefixal *n* (instead of *m*), but the prefixal *y* is synchronically isolated. The causative has PerfP *-əs-nəyafa-* ‘compare (things, to determine the best)’ (historically **-s-vny-ufv-*). A similarly frozen **y-extension** of Instrumental derivational prefix *-s-* to *-svy-* (*α-sæyar* ‘key’, cf. *-vrv-* ‘open’) is mentioned in §8.9. For a parallel *w-extension*, see the uncommon causative *-svw-* instead of *-s-* (§8.1.1), as well as the Passive alternation of *-t-* and *-tvw-*.

We get **exceptional -n-** for expected -m- in a handful of frozen and semantically specialized “mediopassive” stems whose (apparent) input has no labial C. This appears to be the case in -n-vktv- (PerfP -ənn-əkta-) ‘do by habit’, cf. -vktv- ‘remember’; in -n-ilvs- (PerfP -ən-elæs-) ‘be repeated’ (A-grm PerfP -ənn-elæs-), cf. -vlvs- ‘repeat’; and in -n-vwvl- (Imprt n-əwæl) ‘take a walk, stroll’, cf. -vwvl- ‘turn around’.

The MAN stem paradigm of mediopassives of input light verb stems that lack full vowels is illustrated in (483).

(483) Mediopassive Inflection for -vPQvC- and -vCvC- Stems

	-vPQvC- ‘be mixed’ -m-vrtvy-	-vCvC- ‘be (all) bitten’ -m-vdvd-
a. perfective system		
PerfP	-əmm-ərtæy-	-əmm-ədæd-
Reslt	-əmm-irtæy-	-əmm-ídæd-
PerfN	-əmm-ərtæy-	-əmm-ədæd-
b. short imperfective system		
ShImpf	-əmm-ærtæy-	-əmm-ədæd-
Imprt	m-ærtæy	m-ədæd
c. long imperfective system		
LoImpfP	-t-əm-ærtay-	-t-əm-ədad-
LoImpfN	-t-əm-ərtiy-	-t-əm-ədíd-
Prohib	t-əm-ærtay-	t-əm-ədad-
d. nominalizations		
VblN	ɑ-m-értəy	ɑ-m-édəd

Another example of -vPQvC- input is -vŋkvɔ- ‘cut’, mediopassive -m-vŋkvɔ- (PerfP -əmm-əŋkæɔ-).

Since -vPPvC- verbs in causative and other derivatives show a reconfigured input stem variant -vPvC-, one wonders whether the mediopassive of -vPPvC- would take the transparent form -m-vPPvC- (-n-vPPvC-) or the reconfigured form -m-vPvC- (-n-vPvC-). If -mvzzvy- ‘become divorced’ is connected with -vzzvy- ‘get well, recover from illness’, in addition to embodying a worldly-wise philosophy of human relationships it also provides an instance of the hypothesized -m-vPPvC- mediopassive shape. MGT 7.93 gives (from Foucauld) Algerian Imprt “mukkəs” as reflexive (i.e. mediopassive) of -vkkvs- ‘take away’, showing both the full V (here u) and the geminate, while LTF2 169 has Imprt “mäkkäs” with shortened V for Niger (Tawellemmett dialect).

The inflection of mediopassives of input stems beginning and/or ending in a full vowel is illustrated in (484).

(484) Mediopassive Inflection for -vCvC- and -v̇C(C)v- Stems

	-vCvC- 'be stolen' -m-ikvr-	-vCv- 'be open' -m-irv-	-vCCv- (a/u type) 'be dislocated' -n-vbḍv-
a. perfective system			
PerfP	-æm-ekær-	-æm-era-	-ənn-əbḍa-
Reslt	-æm-ékær-	-æm-éra-	-ənn-íbḍa-
PerfN	-æm-ekær-	-æm-era-	-ənn-əbḍa-
b. short imperfective system			
ShImpf	-æm-akær-	-æm-ar	-ənn-əbḍ
Imprt	m-əkær	m-ər	n-əbḍ
c. long imperfective system			
LoImpfP	-t-əm-akar-	-t-əm-ara-	-t-ən-əbḍa- -t-ín-əbḍu- -t-ən-əbḍi- -t-ən-əbḍa- -t-ən-əbḍi-
LoImpfN	-t-əm-ikir-	-t-əm-iri-	
Prohib	-t-əm-akar-	-t-əm-ara-	
d. nominalizations			
VblN	a-m-íkær	a-m-ír	a-n-əbḍ

Other examples similar to 'be stolen' in (484) are (PerfP) -æm-ehæx- 'be snatched' (Imprt m-əhæx), -æm-elæy- 'be cut', -æn-elæs- 'be repeated', -æm-ewæḍ- 'come of age' (lit. 'be reached'), -æm-ewæy- 'be brought'. The verb PerfP -ænemæs- 'be tested' (nūmæs) is a distinct lexical item but might be a frozen and semantically specialized Mediop -æn-emæs- (cf. -umvs- 'wipe'). Other possible cases are -mišvl- 'be sent on an errand' (PerfP -æmešæl-), which may be related to the (albeit intransitive) -ušvl- 'run' (PerfP -òšæl-). Another possible case is -miwvḍ- 'be a young adult (=reach young adulthood)', if related to -uwwḍ- 'arrive, reach'. Note that even T-ka has no problem with medial perfective e in mediopassives, though in other contexts (especially causatives) this dialect shows a strong preference for perfective o even when the imperfectives and VblN show i instead of u.

The -m-iCvC- and -m-iCv- mediopassives, cf. 'be stolen' and 'be open' in (484), **do not apply C₁-Gemination** in the perfectives or in the ShImpf. For -uhvr- 'have in common' I recorded two mediopassive variants, -m-ihvr- and -m-uhvr- 'be held in common', both for T-ka dialect. The two mediopassives are distinguishable in the VblN (a-míhær, a-múhær). In the imperfectives, the

medial *i* variant triggers a shift to <L> melody, as often in Tamashek verbal ablaut. I recorded the PerfP only as -*əmm-ohær-*. It would seem that medial *o*, but not *e*, correlates with C₁-Gemination in perfectives (485).

(485) -*m-ihvr-* or -*m-uhvr-* ‘be held in common’

PerfP	- <i>əmm-ohær-</i>	
Imprt	<i>m-àhær</i>	<i>m-ùhær</i>
LoImpfP	- <i>t-àm-ahar-</i>	- <i>t-ĩm-uhur-</i>
VbIN	<i>a-m-ihær</i>	<i>a-m-ùhær</i>

In A-grm, C₁-Gemination is more productive, hence PerfP -*əmm-era-* ‘be open’.

As usual, -*vPQu-* stems of the *a/t* subclass whose Q is a sonorant require **resyllabification** in the short imperfectives (Final-CC Schwa-Insertion (44) and, for T-ka only, Epenthetic-Vowel Accentuation (70), §3.2.4, §3.3.2). The same rules plus Stem-Final Gemination (71) occur in the VbIN. In (486) I illustrate these points with ‘be eaten’, which does not resyllabify, and ‘(liquid) be drunk’, which does. The short imperfectives are of the type /-*m-əCCA-*/ with final deletable /*A*/ rather than /*I*/, as seen by its contraction with V-initial subject suffix such as 3MaPl /-*æn*/ to give ...*æ-n*, not #...*ə-n*.

(486) Resyllabification in Mediopassives

	non-resyllabifying ‘be (all) eaten’ - <i>m-vkšv-</i>	resyllabifying ‘(liquid) be drunk’ - <i>m-vswv-</i>
a. perfective system		
PerfP	- <i>əmm-əkša-</i>	- <i>əmm-əswa-</i>
Reslt	- <i>əmm-íkša-</i>	- <i>əmm-íswa-</i>
PerfN	- <i>əmm-əkša-</i>	- <i>əmm-əswa-</i>
b. short imperfective system (/ - <i>m-əCCA-</i> /)		
ShImpf	- <i>əmm-ækš</i>	- <i>əmm-æsəw</i>
	[3MaPl <i>əmm-ækšæ-n</i> , <i>əmm-əswæ-n</i>]	
Imprt	<i>m-ækš</i>	<i>m-æsəw</i> (2MaPl <i>m-əsw-æt</i>)
c. long imperfective system		
LoImpfP	- <i>t-àm-əkša-</i>	- <i>t-àm-əswa-</i>
LoImpfN	- <i>t-àm-əkši-</i>	- <i>t-àm-əswi-</i>
Prohib	- <i>t-àm-əkša-</i>	- <i>t-àm-əswa-</i>

d. nominalizations

VbIN α -m- $\acute{\epsilon}$ kš α -m- $\acute{\epsilon}$ s $\acute{\epsilon}$ w (Pl $\ddot{\imath}$ -m- $\acute{\epsilon}$ sw-an)
 (cf. Agentive e-m- $\acute{\epsilon}$ kš ‘eater’, e-m- $\acute{\epsilon}$ s $\acute{\epsilon}$ w ‘drinking place’)

For R and K-d dialects, which do not shift the accent to the epenthetic vowel in the short imperfective of ‘be drunk’, we get Imprt m- $\acute{\epsilon}$ s $\acute{\epsilon}$ w (K-d, R) and ShImpf - $\acute{\epsilon}$ mm- $\acute{\epsilon}$ s $\acute{\epsilon}$ w- (attested for K-d in 3MaSg future \emptyset - $\acute{\epsilon}$ mm- $\acute{\epsilon}$ s $\acute{\epsilon}$ w). K-d and R dialects do have VbIN α -m- $\acute{\epsilon}$ s $\acute{\epsilon}$ w with shifted accent.

There are also some nominal derivations involving -m- (and dissimilated variant -n-), including agentives (§8.8) and locational nominals.

8.4 Reciprocal -nvm-, -m-, -n-

The highly productive Reciprocal prefix creates derived verbs with senses like ‘(hit/see) each other’, where there is some overlap in the set of subjects and objects. In this primary sense, the subject is normally plural: $\acute{\epsilon}$ mm- $\acute{\epsilon}$ kš $\acute{\epsilon}$ -n ‘they ate each other’ (-vkšv-). The reciprocal can also be used in asymmetrical predicates, with one referent as subject and the other expressed in a comitative prepositional phrase. An example is i-nn- $\acute{\epsilon}$ kf $\acute{\alpha}$ - \backslash d $\acute{\epsilon}$ r- $\acute{\epsilon}$ s ‘he engaged in mutual giving with him/her’. For more on the grammatical range of the reciprocal, and on alternative constructions, see §15.2.

The forms of the prefix are given in (487).

(487) Reciprocal Prefix Allomorphs

light (and occasionally heavy) verb stems
 -n- if stem contains a labial {b m f}
 -nvm- otherwise

heavy verb stems
 -n- if stem contains a labial {b m f}
 -m- or (less often) -nvm- otherwise

The variation between labial m and (dissimilated) alveolar n is shared with the Mediopassive prefix. Arguably -nvm- is really just a double sequence of -m- (-n-), i.e. underlying /-m-vm-/, with the first /m/ invariably dissimilating to the second one (MGT 6.64-65). As usual, the -n- allomorph is realized as m when immediately followed by a labial, due to Nasal Assimilation, as in - $\acute{\epsilon}$ m-b $\acute{\epsilon}$ bb $\acute{\epsilon}$ - ‘carry each other’ due to a low-level cluster assimilation (the n does appear in Imprt n- $\acute{\epsilon}$ b $\acute{\epsilon}$ bb).

In the heavy stems, -m- (-n-) can be taken as either Mediopassive or Reciprocal. In the great majority of cases, the sense with heavy stems is reciprocal. However, there are a handful of cases where -m- and -nvm- occur

with the same verb and have different senses. For -kvykvy- ‘shake (off)’, we get the forms in (488), cited in the VbIN.

- (488) a. a-m-kə̀ykə̀y ‘(cow) be full of milk’ mediopassive
 b. a-nm-əkə̀ykə̀y ‘shake each other’ reciprocal

Note that the “mediopassive” in (488.a) is highly specialized semantically.

Rarely, -m- (-n-) with a light verb stem like -vPQvC- seems to have reciprocal rather than mediopassive sense. An example is -n-vlkvm- (PerfP -ə̀nn-ə̀lkæm-, Imprt n-ə̀lkæm) ‘follow each other’ (e.g. walk in single file). Note that -vlkvm- ‘follow’ does not lend itself to mediopassive sense.

Sample reciprocal paradigms are in (489).

(489) Reciprocal Paradigms

	-vPQvC- ‘stick to each other’ -n-vrmvm-	-vCvC- ‘bite each other’ -nvm-vdvd-
a. perfective system		
PerfP	-ə̀nn-ə̀rmæm-	-ə̀nm-æ̀dæ̀d-
Reslt	-ə̀nn-ı̀rmæm-	-ə̀nı̀m-æ̀dæ̀d-
PerfN	-ə̀nn-ə̀rmæm-	-ə̀nm-æ̀dæ̀d-
b. short imperfective system		
ShImpf	-ə̀nn-ə̀rmæm-	-ə̀nm-ə̀də̀d-
Imprt	n-ə̀rmæm	nə̀m-ə̀də̀d
c. long imperfective system		
LoImpfP	-t-ə̀n-ə̀rmam-	-t-ı̀nm-ə̀did-
LoImpfN	-t-ə̀n-ə̀rmim-	-t-ə̀nm-ə̀did-
Prohib	-t-ə̀n-ə̀rmam-	-t-ə̀nm-ə̀did-
b. nominalizations		
VbIN	a-n-ə̀rmæm a-n-ə̀rmam	a-nm-ə̀dæ̀d a-nm-ə̀dæ̀d

In ‘stick to each other’ we see -n- in the long imperfectives, the Imprt, and the VbIN, but -nn- (due to C₁-Gemination) in the ShImpf and the perfective stems.

The verb -vɸvs- ‘touch’ shows idiosyncratic **medial-C gemination** in its reciprocal (as in its TW-passive): PerfP -ə̀nm-æ̀dɸæs- ‘touch each other’.

For -vC(C)v- and similar V-final verb inputs, we get paradigms like those in (490).

(490) Reciprocal Paradigms From -v(C)Cv- Inputs

	-vPQv-	-vPQv-	-vPPv-
	'give to e. other'	'call each other'	'go to e. other'
	-n-vkfv-	-nvm-vvrv-	-nvm-vkkv-
a. perfective system			
PerfP	-ənn-əkfa-	-ənm-əvra-	-ənm-əkka-
Reslt	-ənn-íkfa-	-ənim-əvra-	-ənim-əkka-
PerfN	-ənn-əkfa-	-ənm-əvra-	-ənm-əkka-
b. short imperfective system			
ShImpf	/-ənn-əkfa-/	/-ənm-əvri-/	/-ənm-əkkv-/
Imprt	n-əkf	nəm-əvər	nəm-əkk
c. long imperfective system			
LoImpfP	-t-ənn-əkfa-	-t-ənm-əvri-	-t-ənm-əkki-
LoImpfN	-t-ənn-əkfi-	-t-ənm-əvri-	-t-ənm-əkki-
Prohib	-t-ənn-əkfa-	-t-ənm-əvri-	-t-ənm-əkki-
b. nominalizations			
VblN	a-n-əkf	a-nm-əvər	a-nm-əkk

The /A/ or /I/ in the ShImpf can be inferred from the suffixal *æ* or *ə* in 3MaPl *ənn-əkfa-ə-n*, *ənm-əvra-ə-n*, and *ənm-əkkə-ə-n*. Further 3MaPl ShImpf examples with V-final stems are *əm-bəbbə-ə-n* 'carry each other (on back)' (-bubbv-), *ənm-ššə-ə-n* 'butcher each other' (-ušv-), *ənm-əyyə-ə-n* 'leave each other' (-vyyv-), and *ənm-əjjə-ə-n* 'do (make) each other' (-vjv-). 'Call each other' shows the usual resyllabifications (due to the sonorant *r*) in the short imperfectives and the (Sg) VblN (§3.2.4, §3.3.2).

Short-stem reciprocals with -nvm- or dissimilated -n- are exemplified in (491).

(491) Examples of Short-Stem Reciprocals (-nvm-, -n-), in VblN Form

VblN	Recip gloss	stem type
a. -nvm-		
a-nm-əŋkaɖ	'cut each other'	-vPQvC-
a-nm-əɖʁar	'stick to each other'	"
a-nm-ənhay	'see each other'	"
a-nm-əhyaj	'wound each other'	"
a-nm-əlkah	'underestimate each other'	"
a-nm-əzzay	'know each other'	-vPPvC-
a-nm-əšar	'graze (wound) each other'	-vCvC-

a-nm-íjəy	'tie each other'	-vCuC-
a-nm-íhəz	'approach each other'	"
a-nm-íwəɾ	'block each other'	"
a-nm-íwəɖ	'contact each other'	"
a-nm-əjjaj	'go away from each other' (K-d)	-uCvC-
a-nm-əjj	'do (make) each other'	-vCu-
a-nm-əkš	'eat each other'	-vPQu-
a-nm-əɾərr	'call each other; be homonyms'	"
a-nm-ək	'go to each other'	-vPPv-
a-nm-əyy	'leave each other'	-v(P)Pv-
a-nm-íš	'butcher each other'	-vCu-
b. -n-		
a-n-ərmam	'stick to each other'	-vPQvC-
a-n-ək	'give to each other'	-vPQu-

Another case, Recip -n-*usvm-* 'be jealous of each other' from *usvm-* 'be jealous of' (PerfP -*əsəm-*) is interesting (492).

(492) Reciprocal of 'be jealous'

PerfP	-ən-esəm-
Imprt	n-əsəm
LoImpfP	-t-àn-asam-
VblN	a-n-ísam

Since the stem contains a labial, the Recip prefix is just -n-. This creates a stem shape -n-*usvm-* that fits into the broader -CuCvC- (more precisely, -CiCvC-) pattern (§7.3.1.7). Hence the medial e in the perfectives, and the shift to <L> vocalism in the imperfectives (but not the VblN).

Some examples involving middleweight inputs are in (493). There is a mix of -m- and -nvm-. Further study would probably show that both -m- and -nvm- are grammatical with all of the stems, with -m- typical of the more commonly used stems. In elicitation, -nvm- is probably more common than in actual speech with long stems. If the stem contains a labial, -n- is usual.

(493) Reciprocals (-m-, -n-, -nvm-) of Middleweight Inputs (VblN Form)

Recip VblN	Recip gloss	underived stem type
a. -n-		
a-m-bəbb	'carry e. o. on back'	-CuCCv-
[Imprt n-əbəbb]		
a-n-žiwab	'reply to each other'	-CiCvC-
a-n-məɾútar	'need each other'	-CvCuCvC-

b. -m-			
	α-m-γάττας	'cut each other'	-CvC(C)vC-
	α-m-γάγγαρ	'insult each other'	-CvCCvC-
c. -nm-			
	α-nm-ἐλέγξω	'harm each other'	-CvCCv-
	α-nm-ἐλάσσω	'shake each other'	-CvCCvC-
d. -nvm- or -m-			
	α-nm-ἐπιφεύγω	'flee each other'	-CiCvC-
	α-m-ἐπιφεύγω	"	

The **reciprocal-causative** is common, with -m- (-n-) preceding the sibilant prefix of the causative (494). I have never heard the -nvm- variant in this combination. Note that while C₁-Gemination applies to an intervocalic C following a simple Causative prefix, this does not happen when the Causative prefix is itself preceded by another derivational prefix such as the Recip, so the d of reciprocal-causative VblN α-n-s-ἐδύβην is not geminated as it is in simple causative VblN α-s-ἐδύβην 'cause to marry'. Likewise we get PerfP -ἄν-s-ἔδδβην- and Imprt n-ἄs-ἐδύβην with ungeminated d.

(494) Reciprocal-causatives

	VblN	Recip gloss	underived type
a. -m-			
	α-m-s-ἐδῶρι	'make each other plump'	-CvCv- (+ -t-)
	α-m-s-ἐνῆχῶρι	'act in concert, coordinate'	-CvCvC-
	α-m-s-ἐγγῶρι	'make each other jump'	-vPPvC-
b. -n-			
	α-n-s-ἐδύβην	'cause each other to marry'	-CuCvC-
	α-n-ῥ-ἔκμῶρι	'scratch each other'	-uCCvC-

The verb in (495), -m-vs-ὀκῶ- also has the form of a reciprocal-causative, and can mean 'send to each other', but it often functions (with only a slight semantic shift) as a transitive meaning 'spread (news)'. Its syllabic structure is similar to that of -tvrurv- (PerfP -ἄτρῶρι-) 'go down', see §7.3.1.14, and the two have similar MAN stem paradigms.

(495) -m-vs-ukv- 'spread'

a. perfective system

PerfP	-æm-s-aka-
Reslt	-æm-s-áka-
PerfN	-æm-s-aka-

b. short imperfective system

ShImpf	-ə̃m-s-uk	(= /-ə̃m-s-ukɪ-/)
Imprt	m-ə̃s-uk	

c. long imperfective system

LoImpfP	-t-ĩm-s-uku-
LoImpfN	-t-ə̃m-s-uku-
Prohib	-t-ə̃m-s-uku-

d. nominalization

VbIN	a-m-s-úk
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8.5 Participles (subject relatives)

Participles can be formed from any indicative verb form (i.e. excluding imperatives and hortatives) that may occur clause-initially, hence PerfP, Reslt, and LoImpfP. We may therefore speak of PerfP participles and so forth. Clauses beginning with a preverbal particle (Negative, Future, or Past) can form participial constructions, often with a Participial affix added directly to the preverbal particle (with much dialectal variation to be described below).

Participles are the forms taken by verbs in **subject relatives** ('the man who hit the dog', 'the donkey that is running', 'the dog that didn't bark'), and in the closely related **subject focalization** construction ('it was **X** [focus] who saw me'). In effect, then, participial marking is a kind of **subject-extraction index**, from which the listener can deduce that the NP or demonstrative immediately to the left of the participle is the subject of the participialized verb, but has been extracted (by relativization or focalization). It is necessary to distinguish definite from indefinite participial constructions, and the forms of the participles are different in the two contexts.

Definite subject relatives require a definite demonstrative (or a syntactic equivalent such as ère 'whoever', §12.1.6.1) preceding the participle itself.

(496) Demonstrative Heads in Relative Clauses

a. speech-act participant as subject of definite relative

ī	1st, 2nd
---	----------

b. 3rd person subject definite relative

w-á	3MaSg
w-í	3MaPl
t-á	3FeSg
t-í	3FePl

The 3rd person demonstratives in (496.b) are also used as regular demonstrative ('this', 'these') after nouns, as in *æ-hólæs w-á* 'this man' (§4.3). A typical definite relative is *æ-hólæs [w-á ī-jræw-æn]* 'the man who entered'. The demonstrative *ī* in (496.a) occurs only in relatives, following a 1st or 2nd person independent pronoun, as in *nækk ī kæwæl-æn* 'I who am black'.

Indefinite subject relatives are expressed by placing the participle immediately after a head NP, which is generally interpreted as indefinite ('a man who ate'), or else after the indefinite demonstrative *Ma ī* or *Fe t-ī*. *Ma ī* is an accidental homophone of the 1st/2nd person definite demonstrative in (496.a).

In **subject focalization** (§12.2.1) the invariable Focus particle *à* intervenes between the fronted focalized NP (which may be a pronoun) and the participle. I take *à* to be a bare demonstrative root, cf. the *-á* of Sg demonstratives *w-á* and *t-á* in (496).

(497) Demonstrative Head in Focalized Clauses

à	(all subject categories)
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In definite relatives, but not in indefinite relatives or in focalized clauses, the verb undergoes certain **ablaut modifications**. This applies both to participles (in subject relatives) and to ordinary inflected verbs (in non-subject relatives, §12.1.2ff.). The ablaut modifications are **χ-pc1 Erasure** (130) in the two MAN stem-types where lengthening ablaut formative *χ-pc1* occurs (Reslt, LoImpfP), and for many pronominal subject categories there are also adjustments (audible only in the LoImpfP) in ablaut-induced accent, **χ-Erasure** (136) or **Rightward Accent Shift** (132). See §3.5.3 for a summary of these modification rules. The erasure of *χ-pc1* hints at an affinity between definite relative clauses and adjectival verbs, which generally omit *χ-pc1* even in normal main clauses. This is suggestive, since of course relatives are "adjective-like" in a sense, but note that indefinite relatives do not erase *χ-pc1*.

8.5.1 Affixes for participles built directly on verb stems

When a verb is participialized, it take the regular **3rd person pronominal-subject prefixes** that occur on the corresponding verb. In participles, the 3rd person forms are used even when the head is a 1st or 2nd person pronoun, so they have no actual person-marking value and function simply as number-gender markers. The prefixes are shown in (498).

(498) Number-Gender Prefixes on Participles

MaSg	i- (before C or ə), Ø- (before full V or æ)
FeSg	t- (realized as Ø- before CV...)
Pl	[zero]

The allomorphs of the MaSg, the deletability of /t-/ before a CV..., and the absence of a prefix for Pl subject, show that the prefixes on participles behave in every way like regular 3rd person subject prefixes on inflected verbs (§7.4).

The **adjectival verbs** that cannot take any subject prefixes in their perfective forms (including PerfP and Reslt), e.g. PerfP *kæwɔl* and Reslt *kæwól* ‘be black’, likewise lack prefixes in the corresponding participles, including MaSg. The zeroing of FeSg t- would happen anyway before a CV... stem onset (Prefixal t-Deletion, §7.4.1.2), but adjectival verbs also avoid 3MaSg i- prefix (§7.4.2), and this carries through to participles, e.g. the Reslt participles in *æ-háləs kæwáel-æn* ‘a black man’, and *t-ɑ-mætt kæwáel-æt* ‘a black woman’.

Given the limited set of prefixes in participialized verbs, **Participial suffixes** are especially important. They express the same categories as we saw in the prefixes (MaSg, FeSg, Pl), with no gender distinction in the plural.

In (499) I show the Participial suffixes. For morphological comparison, I add the corresponding nominal gender-number suffixes, and 3rd person verbal subject suffixes. Overall, the participles are *sui generis*, but have some affinities with both nominal and verbal morphology (like participles in many other languages). The stems to which Participial affixes are added are verb stems, and the prefixes are those used with inflectable verbs. On the other hand, the suffixes look more nominal than verbal, participles (as relative clauses) are part of NP syntax, and the restriction of both prefixes and suffixes to gender-number marking (with no person marking) is suggestive of nominal rather than verbal morphology.

(499) Participial versus Nominal Gender-Number Suffixes

	category	Participial	nominal suffix	3rd person subject suffix
	MaSg	-æn	∅	∅
	FeSg	-æt	-t, -æt	∅
	MaPl	-nen	-æn, -tæn	-æn
	FePl	"	-en, -ten	-næt

The connection between Participial and nominal suffixes is far from clean. Note that suffix -æn is MaSg for participles, but MaPl for nouns.

Participial FeSg -æt ends in a single t. Like the FeSg nominal suffix -æt (§4.1.2.5), it has no special accentual effect, allowing antepenultimate default accent as in t-ð t-æddðbæn-æt 'the one-FeSg who married'. In this respect -æt contrasts with the common nominal FeSg suffix -t, which forces word-penultimate accent (i.e. it behaves accentually as though it ended in a vowel, §3.3.1.1).

Participial -æn (MaSg) and -æt (FePl) induce VV-Contraction when the preceding stem ends in a V. Specifically, they behave like 3MaPl subject suffix -æn and 2MaPl subject suffix -æm. In other words, a stem-final perfective /a/ in a non-augment verb combines with suffixal /æ/ to give æ, and both V's are counted for purposes of Default Accentuation (resulting in surface penultimate word accent after VV-Contraction): ú-šæl wá-\dd ðsæ-n 'the day he came' (compare PerfP ðsæ-n 'they-Ma came'). For contractions involving augment verbs, see §8.5.5.

8.5.2 Forms of definite participles (PerfP, Reslt)

Consider the examples in (500). MaPl and FePl are the same, except for w-í versus t-í demonstrative, so the FePl is omitted.

(500) PerfP and Reslt Definite Participles

	MaSg	FeSg	MaPl
'enter'			
PerfP	w-α ð-jjæš-æn	t-α t-ðjjæš-æt	w-í ðjjæš-nen
Reslt	w-α i-jjæš-æn	t-α t-əjjæš-æt	w-í əjjæš-nen
'drink'			
PerfP	w-α ð-swæ-n	t-α t-ðswæ-t	w-í ðswæ-nen
Reslt	w-α i-swæ-n	t-α t-əswæ-t	w-í əswæ-nen

‘move out’

PerfP	w-ɑ	∅-æhðnæ-n	t-ɑ	t-æhðnæ-t	w-i	æhðnæ-nen
Reslt	w-ɑ	∅-æhðnæ-n	t-ɑ	t-æhðnæ-t	w-i	æhðnæ-nen

‘Enter’ -vjvš- and ‘drink’ -vswv- are light stems, while ‘move out’ -huvv- (more specifically -hinu- in several dialects) is middleweight. In all participles for ‘enter’ and ‘drink’, it is possible to distinguish PerfP from Reslt due to the Reslt accent formative $\check{\chi}$ -pc1, even though the lengthening formative is removed by $\check{\chi}$ -pc1 Erasure in definite participles (for these formatives see §7.2.2.2). This does not work for the middleweight verb ‘move out’. Although there is an underlying $\check{\chi}$ -pc1 in the Reslt participles, it targets the medial o, which in the PerfP is targeted by Default Accentuation. In Pl Partpl æhðnæ-nen, the targeted vowel is the antepenult. In ∅-æhðnæ-n and t-æhðnæ-t, and also in ð-swæ-n and t-ðswæ-t for ‘drink’, i.e. in participles of non-augment V-final verbs, the surface penultimate accent shows that **Default Accentuation applies before VV-Contraction**, e.g. to /t-æhonæ-æt/. We also observe Presuffixal α-Shortening with ‘drink’ and ‘move out’, most obviously in the Pl participles but also (before VV-Contraction) in the MaSg and FeSg.

$\check{\chi}$ -pc1 Erasure also accounts for the fact that the í which appears after stem C₁ in Reslt stems of many superheavy stems, and which I analyse as a manifestation of $\check{\chi}$ -pc1, does not appear in definite participles. Thus -xvbubv- (+ -t) ‘have a gaping hole’ has PerfP -æxbabæ-t and with $\check{\chi}$ -pc1 Reslt -æxǐbabæ-t. In a definite relative clause with Reslt participle, the í (and the Short-V Harmony that it triggers) are absent: w-ɑ ∅-æxbábe-n ‘the one with a gaping hole’, differing only by accent from PerfP counterpart w-ɑ ∅-æxbabe-n ‘the one that became wide open’. With augment verbs, before Participial suffixes as before subject suffixes, **VV-Contraction precedes Default Accentuation**, hence the antepenultimate accent in ∅-æxbabe-n.

$\check{\chi}$ -pc1 Erasure does not shorten lexical full V’s.

Textual examples of Reslt participles are in (501).

- (501) a. t-əhù hæræt [dæɾ hæræt-æn]
 3FeSgS-be.in.Reslt thing [in thing-MaPl]
 [w-ǐ-|tænæt ənfæ-nen]
 [Ma-Dem.Pl-|3FePIO benefit.**Reslt-Partpl.PI**]
 ‘One of the things is in it (a plant) that benefits them
 (livestock).’
- b. i-hánnæy ʼæ-mɾɑɾ
 3MaSgS-see.LoImpfP Sg-old.man
 ∅-æqqimæ-n,
 3MaSgS-sit.**Reslt-Partpl.MaSg**
 [ɑ wær ǐ-hənnəy
 [Dem Neg 3MaSgS-see.LoImpfN

[ʰæ-lyɑð i-bdád-æn]]
 [Sg-boy 3MaSgS-arise.**Reslt-Partpl.MaSg**]]
 ‘An adult man sitting down sees more than a boy standing up.’
 [Gao] [proverb, lit. “a man who has sat down sees what a boy
 who has stood up does not see”]

In (501.b), the demonstrative *w-ĩ* is separated from the participialized verb by an object clitic.

An example of a definite participial relative with *ĩ* after a 1st/2nd person pronoun is (502).

(502) *nækk-æn-eð* [ĩ hæ-n æ-rojj]]
 1Pl [Dem be.in.PerfP-Partpl.MaSg Sg-bush]
 ‘we who are (living) in the bush’ [K]

8.5.3 Forms of definite participles (LoImpfP)

Excluding imperatives and hortatives, which have no participles, the LoImpfP is the only indicative imperfective stem that can occur clause-initially, and can therefore be directly participialized. It readily occurs in definite participial constructions, e.g. in subject relatives with progressive or other non-past imperfective time reference (‘he who eats’, etc.).

As indicated in §7.2.5.1, the regular LoImpfP stem of inflected verbs is characterized by several ablaut formatives, including a characteristic long imperfective vocalic melody («L» or «H» depending on stem-shape class), an accent $\acute{\chi}$ -pc1, two full-V formatives $\bar{\chi}$ -pc1 and $\bar{\chi}$ -f, and a prefix -t- and/or gemination of the second stem consonant Γ -c2. The characteristic melody, the consonantal change(s), and $\bar{\chi}$ -f (lengthening of final-syllable V) constitute the prototype for all long imperfectives (though the LoImpfN then overlays its own melody). By contrast, within the long imperfective system, $\acute{\chi}$ -pc1 and $\bar{\chi}$ -pc1 are specific to the LoImpfP, and these two formatives (both targeting the first postconsonantal C) are vulnerable to modification in definite relatives, including definite LoImpfP participles.

Consider the data in (503)

(503) $\bar{\chi}$ -pc1 Erasure in First Stem-Syllable of LoImpfP Definite Participles

gloss	LoImpfP	MaSg LoImpfP definite participle
a. $\acute{\chi}$ -pc1 inaudible after Default Accentuation, $\bar{\chi}$ -pc1 audibly erased		
‘stand’	-báddæd-	w-a i-bæddæd-æn
‘sit’	-t-ðvæyma-	w-a i-t-ævæyme-n
‘converse’	-t-ĩdwænni-t	w-a i-t-èdwænni-n

b. $\check{\chi}$ -pcl audible after Default Accentuation, no audible $\bar{\chi}$ -pcl		
‘bite’	-(t-)əddád-	w-a i-ddád-æn w-a i-t-əddád-æn

The effect of $\bar{\chi}$ -pcl Erasure can be seen in the shortened æ or ə in the first syllable of the LoImpfP stem (following 3MaSg i-) in the participles in the right-hand column in (503.a). There is no shortened V in the participle of ‘bite’ (503.b), since the full a in -(t-)əddád- is not due to $\bar{\chi}$ -pcl, rather to $\bar{\chi}$ -f, as is shown by retention of the full V in the other long imperfective stems, e.g. LoImpfN -(t-)əddid-. In (503.a), the $\check{\chi}$ -pcl accent formative is theoretically still present in the participles, but is overridden by Default Accentuation. For ‘sit’, we get surface penultimate accent since Default Accentuation applies before VV-Contraction in non-augment V-final stems.

$\bar{\chi}$ -pcl Erasure has the effect of making it difficult to distinguish the (modified) **LoImpfP** from the **Prohib** stem. In their full forms (in main clauses), the two share the ablaut features common to all long imperfectives, but differ in that the LoImpfP also has $\check{\chi}$ -pcl and $\bar{\chi}$ -pcl. Therefore the erasure of $\bar{\chi}$ -pcl and the overriding of $\check{\chi}$ -pcl by Default Accentuation in (503.a) do result in surface neutralization of the difference between LoImpfP and Prohib (causing no real ambiguity, since the Prohib has no participles). However, participial i-ddád-æn in (503.c) has an unmistakable, accented LoImpfP stem; compare unaccented Prohib stem -əddad-.

The full set of LoImpfP participles for -ryvmv- ‘sit’, cf. (503.a), and for -hinu- ‘move out’, cf. (500) (§8.5.2, above), is given in (504). Again, the MaSg and FeSg show surface penultimate accent because **Default Accentuation precedes VV-Contraction**.

(504) LoImpfP Participles for Middleweight V-final ‘sit’ and ‘move out’

	‘sit’	‘move out’
	-ryvmv-	-hinu-
MaSg	w-a i-t-æræyme-n	w-a i-t-æhàne-n
FeSg	t-a Ø-t-æræyme-t	t-a Ø-t-æhàne-t
(Ma)Pl	w-i t-æræyma-nen	w-i t-æhàna-nen

Stem-final a remains full in the LoImpfP before -nen, being protected by the $\bar{\chi}$ -f length formative. Before -æn and -æt suffixes, stem-final a contracts with /æ/ to form e.

In the LoImpfP, unlike the perfective system, there are also some instances of <H> rather than <L> melody in the suffixes. This occurs with LoImpfP stems of V-initial and V-final light stems like -všv- ‘butcher’ (PerfP -òša-, LoImpf -t-iš- from /-t-iši-/). In (505), compare the LoImpfP participles of ‘butcher’ and ‘drink’.

(505) LoImpfP Definite Participles for Light V-Final ‘butcher’ and ‘drink’

MaSg	FeSg	MaPl			
a. ‘butcher’ (LoImpfP /-t-išī-/) <table border="0" style="width: 100%; margin-top: 5px;"> <tr> <td style="width: 33%;">w-ɑ i-t-išə-n</td> <td style="width: 33%;">t-à Ø-t-išə-t</td> <td style="width: 33%;">w-i t-išə-nen</td> </tr> </table>			w-ɑ i-t-išə-n	t-à Ø-t-išə-t	w-i t-išə-nen
w-ɑ i-t-išə-n	t-à Ø-t-išə-t	w-i t-išə-nen			
b. ‘drink’ (LoImpfP /-sássA-/) <table border="0" style="width: 100%; margin-top: 5px;"> <tr> <td style="width: 33%;">w-ɑ i-sæssæ-n</td> <td style="width: 33%;">t-à Ø-sæssæ-t</td> <td style="width: 33%;">w-i sæssæ-nen</td> </tr> </table>			w-ɑ i-sæssæ-n	t-à Ø-sæssæ-t	w-i sæssæ-nen
w-ɑ i-sæssæ-n	t-à Ø-sæssæ-t	w-i sæssæ-nen			

Disregarding the accents for the moment (see below), we observe schwa (rather than æ) as the result of VV-Contraction from /i-æ/ in the singular forms. There is also a schwa representing /i/ before Pl suffix -nen. These are the normal manifestations of /i/ and call for no special phonology here.

The accentual alternations in (505) are remarkable. The Pl participle has an accent shift onto the stem-final ə or æ. The fact that the FeSg participles Ø-t-išə-t and Ø-sæssæ-t are entirely unaccented, forcing phrasal accent on the preceding demonstrative, indicates that Default Accentuation applies at a late point. As shown below, FeSg participles of heavier verbs show the same accent shift (**Rightward Accent Shift** (132)) that applies to the Pl participle. As shown by paradigms of (non-participial) LoImpfP verbs in non-subject definite relatives (§12.1.2-4), the basic principle is that Rightward Accent Shift applies when the ablaut accent $\acute{\chi}$ -pcl targets the first stem syllable, and when there is no (potentially) syllabic subject prefix (like 3MaSg i-). Given that FeSg LoImpfP definite participles undergo Rightward Accent Shift (since the 3FeSg t- prefix is zeroed and is therefore not syllabic), the conclusion is that e.g. Ø-t-išə-t in (505) starts out as /t-t-išī-æt/, becomes /Ø-t-išá-æt/ by Rightward Accent Shift (after the t- prefix is deleted), and then abruptly loses its accent as the /á-æ/ combination contracts to ə. Since there is no reason for a marked accent to be deleted in the course of VV-Contraction, this requires a special morphophonemic rule, $\acute{\chi}$ -Erasure (136).

It is important to make sure that Default Accentuation does not apply at the unaccented /Ø-t-išə-æt/ stage, since this would lead to surface penultimate accent, e.g. the incorrect #Ø-t-išə-t. In the MaSg participles, e.g. i-t-išə-n, there is no reason not to allow precisely this ordering, though we would get the same surface penultimate accent anyway since the marked ablaut accent $\acute{\chi}$ -pcl occurs precisely on this syllable.

Consider now (506), where the underlying LoImpfP stem is bisyllabic. These forms bring out the parallelism in accent between FeSg and Pl LoImpfP definite participles, in opposition to MaSg counterparts.

(506) LoImpfP Definite Participles for Four Verbs

MaSg	FeSg	MaPl
a. 'belch' (LoImpfP -t-újray-)		
w-a i-t-ùjray-æn	t-a Ø-t-ujráy-æt	w-i t-ujráy-nen
b. 'enter' (LoImpfP -t-ájjæš-)		
w-a i-t-æjjæš-æn	t-a Ø-t-æjjæš-æt	w-i t-æjjæš-nen
c. 'exit' (LoImpfP -zájjær-)		
w-a i-zæjjær-æn	t-a Ø-zæjjær-æt	w-i zæjjær-nen
d. 'hit' (LoImpfP)		
w-a i-ggát-æn	t-a t-æggát-æt	w-i æggát-nen
w-a i-t-æggát-æn	t-a Ø-t-æggát-æt	w-i t-æggát-nen

In (506.a-c), the underlying LoImpfP stem has marked penultimate accent. The MaSg participle is consistent with this, though its accent is overridden by Default Accentuation. In the FeSg and Pl participles, we observe Rightward Accent Shift. In (506.d), the underlying LoImpfP stem has marked accent on the final syllable, so no accent shift occurs.

Finally consider (507).

(507) LoImpfP Definite Participles for 'marry' (LoImpfP -t-ǐdubun-)

MaSg	FeSg	MaPl
w-a i-t-ǐdubun-æn	t-a Ø-t-ǐdubun-æt	w-i t-ǐdubun-nen

Here we cannot tell whether any accent erasures or shifts have occurred, since Default Accentuation on the antepenult would override any such alternations.

An example showing $\bar{\chi}$ -pcl Erasure with a 1st-2nd person pronoun head is (508).

(508)	nækk	[i	i-tættæ-n]
	1Sg	[Dem	3MaSgS-eat.LoImpfP-Partpl.MaSg]
	'I who eat (regularly)'		

Although 1st and 2nd pronouns require $\bar{\imath}$ as the clause-internal head, this does not behave like the demonstrative $\bar{\imath}$ used in indefinite relatives (see below). The accentual and ablaut modifications for definite relatives apply in (508), hence -tætt- rather than -tátt- for 'eat.LoImpfP', but not in indefinite relatives.

8.5.4 Indefinite participles

Indefinite participles, which directly follow the head noun with no intervening demonstrative, or follow an indefinite demonstrative (see below) in the absence of a real head noun, are much more straightforward in form than the definite participles described in preceding sections. They have the same prefixes and suffixes as definite participles. The difference is that the special rules erasing ablaut \bar{x} and shifting the accent in definite participles do not apply to indefinite participles. Therefore the verb stem preceding the Participial suffix is exactly the same as the corresponding inflectable verb stem in main clauses.

In the **PerfP** for ordinary verbs, the definite and indefinite participial forms are the same: w- α \bar{i} -jjæš-æn ‘he who entered’ (definite), æ-hálæs \bar{i} -jjæš-æn ‘a man who entered’ (indefinite). For adjectival verbs, on the other hand, there are special indefinite participle forms (translatable as modifying adjectives); see §8.5.7, below.

The most systematic difference between indefinite and definite participles can be seen in the **Reslt** and **LoImpfP** participles. The indefinite participles follow the ablaut pattern of the regular inflected stem as seen in main clauses, while (see §8.5.3, above) the definite participles erase \bar{x} -pcl, and have unusual accentual patterns in FeSg and Pl **LoImpfP** participles. For the **Reslt**, compare the forms in (509), e.g. ‘he who has entered’ versus ‘an N who has entered’ (509.a). The inflected **Reslt** stems are - \bar{e} jjáš- ‘enter’, - \bar{e} xíbábæ-t (with augment, underlying /- \bar{e} xíbaba-t/ ‘have gaping hole’, and - \bar{e} bdád- ‘stand’.

(509) Definite versus Indefinite **Reslt** Participles (N = any noun)

	gloss	def. (‘he who has’)	indef. (‘one who has’)
a.	‘enter’	w- α i-jjæš-æn	N i-jjáš-æn
b.	‘have gaping hole’	w- α Ø-æxbábe-n	N i-xíbabe-n
c.	‘stand’	w- α i-bdæd-æn	N i-bdád-æn

For the **LoImpfP**, consider the examples in (510). The corresponding inflected stems are -t- \bar{e} jjæš-, -t- \bar{i} xbubu-t (underlying /-t- \bar{i} xbubu- + -t/), and -báddæd-.

(510) Definite versus Indefinite **LoImpfP** Participles (N = any noun)

	gloss	definite (‘he who...s’)	indefinite (‘one who...s’)
a.	‘enter’	w- α i-t- \bar{e} jjæš-æn	N i-t- \bar{e} jjæš-æn
b.	‘have gaping hole’	w- α i-t- \bar{i} xbubu-n	N i-t- \bar{i} xbubu-n
c.	‘stand’	w- α i-bæddæd-æn	N i-báddæd-æn

If there is no noun head, a special set of indefinite demonstratives can be pressed into service as dummy heads ('a good one', etc.). The forms are shown in (511).

(511) Demonstrative Head of Indefinite Relative

MaSg = MaPl	ĩ
FeSg = FePl	t-ĩ

One could argue, by analogy to other demonstratives (e.g. MaSg *w-ú* 'this' versus MaPl *w-ĩ*, FeSg *t-ú*, and FePl *t-ĩ*, §4.3.1), that the plurals in (511) are structurally distinct from the singulars (e.g. FePl /t-i-i/ with the two i's then contracting to one), but if so the difference is phonetically vacuous. In any event, plurality in subject relatives is clearly marked by the participle itself, so the only number-gender information added non-redundantly by the demonstrative is gender in the plural. Examples are in (512); note that the lengthened *ú* in the *Reslt* stem is not (re-)shortened.

- (512) a. *i* Ø-*olúr-æn*
 Dem 3MaSgS-be.good.**Reslt-Partpl**.MaSg
 'a good one-Ma'
- b. *i* *olúr-nen*
 Dem be.good.**Reslt-Partpl**.Pl
 'good ones-Ma'
- c. *t-i* *t-olúr-æt*
 Fe-Dem 3FeSgS-be.good.**Reslt-Partpl**.FeSg
 'a good one-Fe'
- d. *t-i* *olúr-nen*
 Fe-Dem be.good.**Reslt-Partpl**.Pl
 'good ones-Fe'
- e. *æwwæd-ær* *æddinæt-nænáær* *æzzúr-nen*
 arrive.PerfP-1SgS people-1PlPoss dwell.**Reslt-Partpl**.Pl
 dær æ-kall w-én-dær *n* *aræbændá í*
 in Sg-land Ma-Dist-Anaph Poss Gourma Prox
 'I arrived to (=among) our people (=kin) who live in that
 (same) country of the Gourma (south of the Niger River).'

Indefinite (like definite) participles may take complements. In the case of indefinite participles (513), any **clitics** appear after the head noun since there is no demonstrative head to host them. (We will see that this remains true when the head noun is followed by a preverbal particle like *Neg wær*.) In (513.a),

the accent in *i-kšæ-n* is a secondary phrasal accent and can be disregarded here.

- (513) a. *æ-húlæs* *i-kšæ-n* *eði-nnet*
 Sg-man 3MaSgS-eat.PerfP-**Partpl**.MaSg dog-3SgPoss
 ‘a man who has eaten his dog’
- b. *æ-húlæs-\ətt* *i-kšæ-n*
 Sg-man-\3MaSgO 3MaSgS-eat.PerfP-**Partpl**.MaSg
 ‘a man who has eaten it’
- c. *æ-húlæs-\ədd* *Ø-osá-n*
 Sg-man-\Centrip 3MaSgS-arrive.Result-**Partpl**.MaSg
 ‘a man who has come’

8.5.5 Suffixal augment -t- in participles

V-final verbs characterized by the stem-final augment -t- show the augment in the Pl participle, but not in the MaSg and FeSg. This is because the Pl Participial suffix *-nen* is C-initial, while the MaSg and FeSg Participial suffixes are V-initial. Exactly the same pattern occurs in the (non-participial) regular paradigms of augment verbs, where -t- occurs before C-initial suffixes like 3FePl *-næt*. See (514).

(514) Definite Participles of Augment Verb $\sqrt{\text{dwn}}$ ‘converse’

- a. PerfP (cf. *ædwænnæ-t* ‘he conversed’)
- | | | |
|-------|-----|---------------|
| MaSg: | w-a | Ø-ædwænnæ-n |
| FeSg: | t-a | t-ædwænnæ-t |
| MaPl: | w-i | ædwænnæ-t-nen |
- b. Result (cf. *ædiwænnæ-t* ‘he has conversed’)
- | | | |
|-------|-----|---------------|
| MaSg: | w-a | Ø-ædwænnæ-n |
| FeSg: | t-a | t-ædwænnæ-t |
| MaPl: | w-i | ædwænnæ-t-nen |
- c. LoImpfP (cf. *i-t-ǣdwænni-t* ‘he converses’)
- | | | |
|-------|-----|-----------------|
| MaSg: | w-a | i-t-ǣdwænni-n |
| FeSg: | t-a | t-ǣdwænni-t |
| MaPl: | w-i | t-ǣdwænni-t-nen |

The PerfP and Result stem-final /a/ contracts with suffix-initial /æ/ (MaSg and FeSg participles) to produce e. This is exactly the same contraction we get

in PerfP inflected forms of the same augment verbs with subject suffixes of the shape /æC/, e.g. *ædwænne-n* 'they conversed'.

Although this contraction to e applies in MaSg and FeSg participles of both augment and non-augment stems, there is a difference between the two verb classes in that **augment verbs have Default Accentuation apply after VV-Contraction**, hence the antepenultimate accent in e.g. *Ø-ædwænne-n* (514.a). This is consistent with the ordering of these rules in regular inflected forms of augment verbs. When the accent of a participle of an augmented verb is penultimate, this is due to Reslt ablaut accent formative $\acute{\chi}$ -pc1, as in *i-ddóre-n* 'plump-MaSg' and its FeSg counterpart *t-æddóre-t* (cf. Reslt -æddóræ-t). By contrast, both in participles and in regular inflected forms, non-augment V-final stems have Default Accentuation apply before VV-Contraction, so we end up with surface penultimate accent in e.g. LoImpfP participle *w-a i-t-æræðyme-n* 'the one-Ma who is sitting'.

8.5.6 Participles built on preverbal particles

8.5.6.1 Participles with Negative wær

Subject relatives with a negation are constructed by participializing (i.e. adding Participial suffixes to) the Negative particle *wær*. The MaSg is *-æn* and the FeSg is *-æt* as in simple verb participles, but the Pl ending is now also *-æn* (homophonous with the MaSg), as seen in (515). In K-f, the Participial suffixes lose their short V, resulting in Pl and MaSg *n-* and FeSg *t-*. In Im dialect, *n-* generalizes from Masg and Pl to FeSg, and is prosodically part of the following verb.

(515) Participial Forms of Negative wær

MaSg	FeSg	Pl	dialect
<i>wær-æn</i>	<i>wær-æt</i>	<i>wær-æn</i>	K-d, R, T-ka
<i>wær-n</i>	<i>wær-t</i>	<i>wær-n</i>	K-f
<i>wær n-</i>	<i>wær n-</i>	<i>wær n-</i>	Im

The **inflected verb** (PerfN, LoImpfN) itself follows the participialized negative. In the MaSg and FeSg cases, the verb has the same form it would have following *wær* in a non-participial clause. Therefore the MaSg begins in *i-*, which is audible before a C or a verb beginning in underlying schwa (but is zeroed, as usual, before *æ* or a full V). The FeSg begins in *t-*, which is audible before any V, but is deleted before CV... However, the expected **3MaPl** or **3FePl subject suffix is absent** in this negative participial construction (cf. 3MaPl *-æn* and 3FePl *-næt* with ordinary inflected verbs).

One suspects that the *-æn* suffix on *wær* does a kind of double duty, as both the participial ending (cf. *MaSg Participial -æn*) and as a substitute for the missing *3MaPl -æn* or *3FePl -næt* on the inflected verb. If so, the homophony of participial *-æn* and *3MaPl* subject suffix *-æn* is likely to have been responsible for the mischief. Examples involving *LoImpfP -sæss-* ‘drink’ (from stem *-vswu-*) are in (516.a-d). (516.e) is a *PerfP -ènhey-* ‘see’ (from stem *-vhnvy-*, with metathesis of adjacent *hn* to *nh*), and also shows that a **clitic** attaches to the demonstrative in this construction.

(516) Examples of Negative Participles (not Future)

- a. *w-ɑ* *wær-æn* *ĩ-sæss*
 Ma-Dem.Sg **Neg-Partpl.MaSg** *3MaSgS-drink.LoImpfN*
 ‘he who does not drink’
- b. *t-ɑ* *wær-æt* *Ø-sæss*
 Fe-Dem.Sg **Neg-Partpl.FeSg** *3FeSgS-drink.LoImpfN*
 ‘she who does not drink’
- c. *w-i* *wær-æn* *sæss*
 Ma-Dem.Pl **Neg-Partpl.Pl** *drink.LoImpfN*
 ‘they-MaPl who do not drink’
- d. *t-i* *wær-æn* *sæss*
 Fe-Dem.Pl **Neg-Partpl.Pl** *drink.LoImpfN*
 ‘they-FePl who do not drink’
- e. *æ-hóløs* [*w-ɑ-\\hĩ* *wær-æn*
 Sg-man [*Ma-Dem.Sg-\\1SgO* **Neg-Partpl.MaSg**
i-nhey]
3MaSgS-see.PerfN]
 ‘the man who didn’t see me’
- f. *i-rəzzej-æn* *w-ĩ* *n* *t-æ|m-en*
 Pl-livestock-MaPl *Ma-Dem.Pl* *Poss* *Fe-she.camel-FePl*
wær-æn *əzzèy* *àr* *æʃʃæħra*
Neg-Partpl.Pl *know.PerfN* *except* *Sahara*
 ‘the camels that did not know (=had not experienced) anything
 other than the Sahara.’

Since *-sæss-* begins with CV..., the *3FeSg* prefix is not audible in (516.b), which looks superficially as though it has the same inflected verb form as in the plural examples (516.c-d). In (517) I give examples of V-initial stems with a clear *3FeSg t-* prefix.

The K-f informant had MaSg or Pl -n versus FeSg -t (without a V) suffixed to the Neg particle. Subject prefixation on the following verb was as for T-ka. The Im system in (519) could have evolved out of the K system (520), with the -n generalized and prosodically resegmented.

(520) Kidal-Ifoghas Dialect Negative Participles

- a. w-ɑ wær-n i-kh^yɑ
'he who did not eat'
- b. t-ɑ wær-t t-ək^yɑ
'she who did not eat'
- c. w-i wær-n əkh^yɑ
'they-Ma who did not eat'

The preceding examples are all of definite negative participles. **Indefinite** counterparts are shown in (521).

- (521) a. æ-hóləs wær-æn i-zjer
Sg-man Neg-Partpl.MaSg 3MaSgS-go.out.PerfN
'a man who has not gone out.'
- b. æ-hóləs-\\ót wær-æn i-nhey
Sg-man-\\3MaSgO Neg-Partpl.MaSg 3MaSgS-see.PerfN
'a man who has not seen it'
- c. t-ɑ-mætt wær-æt t-əlmed
Fe-Sg-woman Neg-Partpl.FeSg 3FeSgS-know.PerfN
t-æ-məšæq-q
Fe-Sg-Tamashek-FeSg
'a woman who doesn't know Tamashek.' [K-f]
- d. əddinæt wær-æn əlmed
people Neg-Partpl.Pl know.PerfN
t-ɑ-məšæq-q
Fe-Sg-Tamashek-FeSg
'people who don't know Tamashek.' [K-f]

(521.b) also shows that any clitic present is hosted on the internal head of the relative clause (here, a head noun in the indefinite construction), even when a preverbal particle like wær- is present.

T-ka and R have the same basic grammar for negative participles. They diverge, however, in future (and future negative) participles, to which we now turn.

8.5.6.2 Participles with Future *màr* (or *è*)

Another preverbal particle is the Future, which appears as *àd* (dialectally *àr*) in positive utterances. The Future Negative is expressed in T-ka by *ù-mar* (presumably fused from *wær *màr*), in R and some other dialects by *wær* followed by Future allomorph *è*. In effect, *àd* is confined to clause-initial position and is replaced by *màr* or *è* when non-initial

For **T-ka**, the combinations of (noninitial) Future particle *màr* with participial endings are given in (522).

(522) Participial Forms of Future *màr* (T-ka)

MaSg	FeSg	Pl
<i>màr-æn</i>	<i>màr-æt</i>	<i>màr-æn</i>

Corresponding to T-ka *màr-æn*, I have recorded *màre-n* for T-md, both *màde-n* and *màr-n* for A-grm, and *màn-n* (evidently assimilated from **màr-n*) for some Gao-area dialects.

Examples of the **definite participial** construction are in (523).

(523) Definite Future Participles (T-ka)

a.	<i>w-à</i> Ma-Dem.Sg 'he who will drink'	<i>màr-æn</i> Fut-Partpl .MaSg	<i>i-sów</i> 3MaSgS-drink.ShImpf
b.	<i>t-à</i> Fe-Dem.Sg 'she who will drink'	<i>màr-æt</i> Fut-Partpl .FeSg	<i>t-əsów</i> 3FeSgS-drink.ShImpf
c.	<i>w-ĩ</i> Ma-Dem.Pl 'they-Ma who will drink'	<i>màr-æn</i> Fut-Partpl .MaSg	<i>əsów</i> drink.ShImpf
d.	<i>t-ĩ</i> Fe-Dem.Pl 'they-Fe who will drink'	<i>màr-æn</i> Fut-Partpl .MaSg	<i>əsów</i> drink.ShImpf

Again there is no subject suffix on the inflected verb in the plural-subject cases (523c-d).

When both Neg and Fut particles are present (**future negative**), the Neg morpheme comes first (as usual). In T-ka, where Neg and Fut combine into the fused form *ù-mar*, the participial endings are added to this. Hence MaSg and Pl *ù-mar-æn* but 3FeSg *ù-mar-æt*. As in the preceding negative and future

cases, the inflected verb may take a 3MaSg or 3FeSg prefix but takes no affix for plural subject.

(524) Definite Future Negative Participles (T-ka)

- a. w-a ù-mar-àen Ø-aš
Ma-Dem.Sg **Neg-Fut-Partpl.**MaSg 3MaSgS-butcher.ShImpf
'he who will not butcher'
- b. t-a ù-mar-àet t-aš
Fe-Dem.Sg **Neg-Fut-Partpl.**FeSg 3FeSgS-butcher.ShImpf
'she who will not butcher'
- c. w-i ù-mar-àen aš
Ma-Dem.Pl **Neg-Fut-Partpl.**Pl butcher.ShImpf
'they-MaPl who will not butcher'
- d. nàèkk [i ù-mar-àen i-jól]
1Sg [Dem **Neg-Fut-Partpl.**MaSg 3MaSgS-go.ShImpf]
'I-Ma who will go.'
- e. nàèkk [i ù-mar-àet t-əjól]
1Sg [Dem **Neg-Fut-Partpl.**FeSg 3FeSgS-go.ShImpf]
'I-Fe who will go.'

I have recorded dramatically different constructions for these future and future negative participials for **R** and **K**. Here the noninitial Future particle is è (allomorph hè after a V-final demonstrative), and it patterns quite differently from T-ka màr. The Participle ending is **attached to the following (ShImpf) verb**, not to the preverbal particle. In this R and K construction, clitics can intervene between Neg wə̀r and Future è, while the fused T-ka Fut Neg complex ù-mar allows no intervening material. Examples are in (525).

(525) Definite Future Participles (R and K)

- a. w-a he ə̀kšə-n
Ma-Dem.Sg Fut eat.ShImpf-**Partpl.**MaSg
'he who will eat' [R] (/he ə̀/ contracts to [he¹])
- b. t-a hè t-ə̀kšə-t
Fe-Dem.Sg Fut eat.ShImpf-**Partpl.**FeSg
'she who will eat' [R]

c. MaPl

i. w-i he wær-æn e èdubæn
 Ma-Dem.Pl Fut Neg-**Partpl**.Pl Fut marry.ShImpf
 'they-Ma who will not get married'

ii. [not attested]

iii. w-i wær-æn e èdubæn

The R informant had some difficulty with the examples in (526), and there is evidently some intra-dialectal variation here. In the (i) version of each example, Future è (or: hè) is doubled, occurring once before and once after Negative wær. The Future particle occurs only once in the other types, before Neg in the (ii) examples and after it in the (iii) examples. The (iii) examples appear to be most common for the R informant, and it is consistent with the usual ordering (Neg Fut) in non-relative clauses. The (i) and (ii) types are therefore anomalous. They may reflect difficulty in hearing Fut è before MaSg subject prefix i- in (526.a.iii), a difficulty that can be resolved by adding another (h)è before the Neg particle.

In any event, the forms of the verb are consistent in (526). The FeSg forms have FeSg Participial suffix -æt, but no Participial suffix occurs on the verb in the MaSg or Pl constructions. One variant of the FeSg construction (526.b.ii) also adds -æt to the Neg particle (wær-æt). The MaSg and Pl add their participial suffixes to the Neg particle (wær-æn).

For K-d, only one type of future negative participial clause was recorded (527).

- (527) a. æ-húls [w-a-\tæt
 Sg-man [Ma-Dem.Sg-\3FeSgO
 wær-æn è Ø-æŋʁ]
Neg-Partpl.MaSg **Fut** 3MaSgS-kill.ShImpf]
 'the man who will not kill her'
- b. t-a-mætt [t-a-\t
 Fe-Sg-woman [Fe-Dem.Sg-\3MaSgO
 wær-æt è t-æŋʁ]
Neg-Partpl.FeSg **Fut** 3FeSgS-kill.ShImpf]
 'the woman who will not kill him'
- c. méddøn [w-i-\tæt
 men [Ma-Dem.Pl-\3FeSgO
 wær-æn è æŋʁ]
Neg-Partpl.Pl **Fut** kill.ShImpf]
 'the men who will not kill her'

For the Im dialect, I recorded a positive future participial construction with *hè-n*, i.e. Participial *-n* added to the (noninitial) Future particle. The following verb is in invariant 3MaSg subject form (528).

(528) Definite Future Participles (Im Dialect)

- | | | | |
|----|-----------|------------------------|-------------------|
| a. | w-a | <i>hè-n</i> | Ø-æmmæt |
| | Ma-Dem.Sg | Fut-Partpl | 3MaSgS-die.ShImpf |
| | | 'he who will die' | |
| | | | |
| b. | t-a | <i>hè-n</i> | Ø-æmmæt |
| | Fe-Dem.Sg | Fut-Partpl | 3MaSgS-die.ShImpf |
| | | 'she who will die' | |
| | | | |
| c. | w-i | <i>hè-n</i> | Ø-æmmæt |
| | Ma-Dem.Pl | Fut-Partpl | 3MaSgS-die.ShImpf |
| | | 'they-Ma who will die' | |

The future negative for this dialect simply adds Neg *wær* before the same invariant *hè-n* (529).

(529) Definite Future Negative Participles (Im)

- | | | | | |
|----|-----------|----------------------------|-------------------|-------------------|
| a. | w-a | <i>wær</i> | <i>hè-n</i> | Ø-æmmæt |
| | Ma-Dem.Sg | Neg | Fut-Partpl | 3MaSgS-die.ShImpf |
| | | 'he who will not die' | | |
| | | | | |
| b. | w-i | <i>wær</i> | <i>hè-n</i> | Ø-æmmæt |
| | Ma-Dem.Sg | Neg | Fut-Partpl | 3MaSgS-die.ShImpf |
| | | 'they-Ma who will not die' | | |

The **indefinite** participial construction is illustrated in (530). The T-ka example (530.a) is of the same structure as the definite construction (523), except that the demonstrative is missing and (therefore) the clitic is hosted by the head noun. The R example (530.b) shows *màr-æn* followed by Fut *è*. The R informant was the same who gave the rather different definite participial type (526).

- | | | | |
|----------|------------------|------------------------------|---------------------------|
| (530) a. | æ-hàləs-àd | <i>màr-æn</i> | Ø-as |
| | Sg-man-\\Centrip | Fur-Partpl .MaSg | 3MaSgS-arrive.ShImpf |
| | | 'a man who will come' [T-ka] | |
| | | | |
| b. | mí | <i>màr-æn</i> | <i>è</i> Ø-æmmæt-t |
| | who? | Fut-Partpl .MaSg | Fut 3MaSgS-die.ShImpf-Aug |
| | | 'Who will die?' [R] | |

8.5.6.3 *Participles not used with Past kælá*

Preverbal particle *kælá* can be preposed to an inflected verb (PerfP or Reslt) to specify past time reference. When the relevant complex is part of a subject relative, we get combinations like the definite relatives in (531).

- (531) a. w-à-ʌs kælà i-qqíma
 Dem.Ma-Sg-ʌthat **Past** 3MaSgS-sit.Reslt
 ‘he who was seated’
- b. w-ĩ-ʌs kælà əqqĩmæ-n
 Ma-Dem.Pl-ʌthat **Past** sit.Reslt-3MaPlS
 ‘they who were seated’

None of the usual participial suffixes are present, either on the inflected verb (which has its normal form) or on *kælá*. Instead, we find (following the demonstrative) a cliticized Instrumental preposition *-ʌs*, which is elsewhere used in ‘that’ complements and long-distance relatives (§13.7). The same is true of the indefinite participial in (532), where the clitic is hosted by a noun.

- (532) æ-hólæs-ʌs kælá i-qqíma
 Sg-man-ʌthat **Past** 3MaSgS-sit.Reslt
 ‘a man who was sitting’

8.5.7 *Reslt Participles with “adjectival” sense*

As noted earlier, many word-families with adjectival sense include an inflected intransitive verb (‘be big’, ‘be red’, etc.), which can also occur in participial form. If the construction is definite (i.e. , when a demonstrative separates the head noun from the participle), we get the same basic construction described in earlier sections on definite relatives. However, such adjectival verbs occur more commonly in the indefinite construction, with no demonstrative. While PerfP and LoImpfP forms are elicitable, the common “modifying adjective” form is generally a Reslt participle.

A number of these have irregularities, including differences in the Sg and Pl stem in the participles. Because of their text frequency, a generous set of forms is collected together below. The FeSg forms are always based on the same stem as the MaSg, with the same accentuation. Not all variants of the inflected verb stems are shown.

In (533) I display examples involving regular verbs that allow subject prefixes.

(533) Indefinite Reslt Participles (“Modifying Adjectives”)

gloss	Reslt stem	indefinite Reslt participle		Pl
		MaSg	FeSg	
a. light stems				
‘wet’	-əbdáj-	i-bdáj-æn	t-əbdáj-æt	əbdáj-nen
‘hot’	-əkkús-	i-kkús-æn	t-əkkús-æt	əkkús-nen
‘soiled’	-ərján-	i-rján-æn	t-ərján-æt	ərján-nen
‘adult’	-əššám-	i-ššám-æn	t-əššám-æt	əššám-nen
‘ripe’	-əηηά-	i-ηηά-n	t-əηηά-t	əηηά-nen
‘wide’	-olwá-	Ø-olwá-n	t-olwá-t	olwá-nen
‘heavy’	-æzzáy-	Ø-æzzáy-æn	t-æzzáy-æt	æzzáy-nen
‘sweet’	-æzzéd-	Ø-æzzéd-æn	t-æzzéd-æt	æzzéd-nen
b. middleweight stems				
‘sated’	-əyyiwæn-	i-yyiwæn-æn	t-əyyiwæn-æt	əyyiwæn-nen
‘plump’	-əddáre-t	i-ddáre-n	t-əddáre-t	əddáre-t-nen
‘hard’	-əzzəwæ-t	i-zzəwe-n	t-əzzəwe-t	əzzəwæ-t-nen
‘dirty’	-əkkúrdæ-t	i-kkúrdæ-n	t-əkkúrdæ-t	əkkúrdæ-t-nen
‘roasted’	-ækkéwæ-t	Ø-ækkéwe-n	t-ækkéwe-t	ækkéwæ-t-nen

In ‘wet’, ‘soiled’, and ‘adult’, the Reslt stem has lengthened and accented its second syllable, and this is carried over into the participles. In ‘wide’ and ‘ripe’, the Reslt stem has an accented stem-final *á*, which is carried over to the participles. In ‘heavy’, ‘sweet’, and ‘hot’ the long V of the second stem syllable is not due to Reslt lengthening, since the V is also long in the corresponding PerfP (-æzzáy-, -æzzéd-). ‘Sated’ has an *i* in the Reslt stem and the participles. Augment verbs ‘hard’, ‘roasted’, ‘plump’, and ‘dirty’ show the usual pattern with *-t-* in the Pl but not the Sg participles.

In (534), below, I present examples involving pure adjectival verbs whose perfective (including Reslt) stems allow no subject prefixes. (Actually, a few of the less common color terms also have variant perfective stems that do allow prefixes.)

(534) Indefinite Reslt Participles (“Modifying Adjectives”), Prefixless Verbs

gloss	indefinite Reslt participle			
	Reslt stem	MaSg	FeSg	Pl
a. no Sg/Pl shift (consistent full V in stem-final syllable)				
‘bad’	læbús-	læbús-æn	læbús-æt	læbús-nen
‘narrow’	kæróz-	kæróz-æn	kæróz-æt	kæróz-nen
[also variants with geminated rr]				
‘easy’	ræqqís-	ræqqís-æn	ræqqís-æt	ræqqís-nen
‘soft’	læmméd-	læmméd-æn	læmméd-æt	læmméd-nen
‘big’	mæqqór-	mæqqór-æn	mæqqór-æt	mæqqór-nen
[also -mæqqær-, mæqqær-æn, mæqqær-æt, mæqqær-nen]				
‘cold’	sæmméd-	sæmméd-æn	sæmméd-æt	sæmméd-nen
‘thin’	sədíd-	sədíd-æn	sədíd-æt	sədíd-nen
[Pl also sädód-nen]				
‘clean’	šəddij-	šəddij-æn	šəddij-æt	šəddij-nen
[Pl also šəddój-nen]				
b. no Sg/Pl shift (short V’s in stem)				
‘sour’	səmóm-	səmóm-æn	səmóm-æt	səmóm-nen
[Pl also səməm-nen]				
‘weak’	rəkkóm-	rəkkóm-æn	rəkkóm-æt	rəkkóm-nen
[Pl also rəkkóm-nen]				
c. no Sg/Pl shift (augmented CaCa- stems)				
‘green’	dalá-t	dàlæ-n	dàlæ-t	dalá-t-nen
[dialectally dalá-t, dàle-n, dàle-t, dalá-t-nen]				
‘brown’	fawá-t	fàwæ-n	fàwæ-t	fawá-t-nen
[dialectally fawá-t, fàwe-n, fàwe-t, fawá-t-nen]				
d. Sg/Pl stem variation («V a» in Pl only)				
‘black’	kəwál-	kəwəl-æn	kəwəl-æt	kəwál-nen
‘weak’	ləqqów-	ləqqów-æn	ləqqów-æt	ləqqów-nen
[Pl also ləqqów-nen]				
‘yellow’	əráy-	əráy-æn	əráy-æt	əráy-nen
[√wry ; dialectally: MaSg əry-æn, FeSg əry-æt, Pl əráy-nen]				
‘red’	šəggáy-	šəggáy-æn	šəggáy-æt	šəggáy-nen
‘old’	wəššár-	wəššár-æn	wəššár-æt	wəššár-nen
‘stocky’	šuhár-	šuhár-æn	šuhár-æt	šuhár-nen
[arguably šuhær-; dialectally šohær-æn, šohær-æt, šohár-nen]				

e. Sg/Pl stem variation («V o» in Pl only)

'smooth'	səlíl-	səlíl-æn	səlíl-æt	səlól-nen [Pl also səlíl-nen]
'short'	kəššól-	kəššól-æn	kəššól-æt	kəššól-nen
'white'	məllól-	mæll-æn	mæll-æt	mællól-nen [Pl also məllól-nen]
'small'	mədráy-	əndərræ-n	əndərræ-t	mədróy-nen
'small'	mətkáy-	əntókkæ-n	əntókkæ-t	mətkóy-nen [Pl also əntúk-nen]
'long'	šəjrát-	šəjré-n	šəjré-t	šəjró-t-nen [Pl also šəjrát-t-nen]
	[verb švjrvt-, participles based on -švjrv- + -t-, §7.3.2.2]			
'many'	əjjót-	Ø-əjjé-n	t-əjjé-t	əjjó-t-nen
	[verb: PerfP -vjjvt-, imperfective -ijat-, §7.3.2.2]			

In some cases there are alternative accentuations for the participles, reflecting the choice between PerfP and Reslt stems as bases for adjectival participles. Example: (Reslt) əndərr-æn and (PerfP) əndərr-æn 'small (MaSg)'. However, the PerfP/Reslt aspectual distinction is often neutralized in adjectival participles that denote stable qualities, and the accentual variants are often apparent only in interdialectal comparisons. The adjectival participles also may diverge in form from the nonparticipial inflected verbs, as in the case of 'be small', where the verb has PerfP mədrəy and Reslt mədráy. The few stems (534.c) whose perfective (including Reslt) stems have a full *a* before the augment have dialectally variable singular participles, depending on whether /*a*-*æ*/ contracts to *e* or to *æ*.

A number of these verbs have **Pl participles based on a different stem** form than the Sg participles, at least as variants. Where there is Sg/Pl variation, the Sg usually has an <H> melody with surface vocalic sequence «*ə ə*» (several examples) or «*ə i*» (e.g. 'smooth'). The Pl in these pairs nearly always has <L> melody (the exception is 'stocky' with its initial-syllable *u*, though other dialects have *o*). Moreover, these Pl participles **lengthen the second stem vowel** if it is not already full, the result being surface vocalic sequence «*æ a*» (534.d) or «*æ o*» (534.e). Cf. **ablaut formative $\tilde{\chi}$ -f** (§3.4.4). In the cases of 'black', 'yellow', 'red', and 'old', the lengthened V is also characteristic of the inflected perfective (including Reslt) stems, so the Sg participles rather than the Pl participle diverge from the associated inflected Reslt verb.

As suggested by the variants listed, and as catalogued more exhaustively in the dictionary, there are dialectal shifts between the types with invariant stem (534.a-b) and those with special vocalism in Pl participles (534.d-e).

8.5.8 Participles of prefixally derived verbs

Participle formation is highly productive since the definite participles are the basic subject-relative construction. Participles can therefore be formed readily from derived verbs with Causative *-s-* and its variants, Passive *-t-* or *-tw-*, Mediopassive *-m-* (or allomorph *-n-*), or Reciprocal *-nvm-* (allomorphs *-m-*, *-n-*). A mediopassive example is in (535).

- (535) hæ̀ræt w-a i-mm-ə̀ŋkæ̀d-æn
 thing Ma-Dem.Sg 3MaSgS-**Mediop**-cut.PerfP-**Partpl**.MaSg
 ‘the thing that got cut’.

8.6 Verbal nouns

8.6.1 Ordinary verbal nouns

A pure VbIN is a nominal that denotes the relevant action or state in an unbounded fashion: ‘dancing’, ‘running’, etc. The VbIN often occurs as a complement to a higher verb like ‘begin’, ‘be/do a lot’, or ‘be ashamed to’ (§13.5). The larger construction often imposes a temporal bounding. VbIN’s are also indispensable in cases where a verb (or VP) is focalized; in this case, the verb is extracted and fronted in the form of a VbIN, and its original place is occupied by *-vju-* ‘do, make’ (§12.2.5). Some main-clause verbs (‘prevent’, ‘begin’, ‘cease’, ‘go (in order to)’, ‘be ashamed to’, ‘do a lot’, ‘do many times’, ‘do frequently’) take VbIN’s as complements (§13.5). A VbIN may also be the subject of a clause.

The various types of light verb stem tend to have idiosyncratic VbIN stem shapes that cannot be unified into a single overall ablaut model. Since each VbIN pattern is associated with a specified stem shape, we can think of these as cases of templatic rather than componential ablaut. That is, the lexical segments (chiefly C’s) are simply mapped into the C positions of the VbIN template. I will not bother to formalize these minor ablaut mapping patterns, which should be readily apparent. On the other hand, heavy verbs (including prefixed derivatives) do lend themselves to a componential ablaut model (§8.6.1.4), with a basic vocalic melody and (for non-augment verbs) a penultimate accent.

Most verbs have a basic **masculine verbal noun** (VbIN) belonging to one of the productive patterns described below.

There is often a **feminine** counterpart, with FeSg *t-...-(t-)t* or FePl *t-...-(t-)en* circumfixed around the same stem that is used in the masculine VbIN. There are also various other nominals, usually feminine, that can be used in verbal noun sense at least for specified verbs. Where the masculine VbIN has an exact feminine counterpart, the latter may function as an **instantiating VbIN** (denoting a single instance of the verbal type, e.g.

- (539) *ibà* n t-əla n ʔ-t-ə-yətte
 lack Poss Fe-have.VbIN Poss Fe-Sg-intelligence
 'lack of (having) intelligence' [K]

8.6.1.1 Verbal nouns of light V-final verbs

Verbs of type -vCCv- with initial short vowel and final full vowel do not, as a class, have a fully productive masculine VbIN, and many of them use a feminine nominal as VbIN. The attested **masculine** VbIN's are given in (540), and the more common feminine VbIN's are illustrated in (541). As a general comment, the subtypes of -vCCv- defined by PerfP and Imprt stem-final V's (a/i, a/u, u/u, see §7.3.1.3-4) do not differ systematically from each other in VbIN patterns and are intermingled here. The only masculine VbIN for a -vCv- verb is included, along with an A-grm VbIN for -vkkv- 'go to' with the geminate reduced to k (540.d). Many of the masculine VbIN's denote unbounded actions or states and do not have plurals in common use.

(540) Masculine Verbal Nouns for -v(C)Cv- Stems

gloss	Imprt	Sg VbIN	Pl VbIN
a. VbIN e-CáPPi (variant e-CáPPi), uncommon in T-ka			
'vomit'	æbs	e-bæssi (K-d) [also e-bóssi (T-ka)]	—
'go away'	əgól	e-gáelli (A-grm)	—
'spend day'	əkál	e-káelli (A-grm, R)	—
'listen'	əsál	e-sáelli (R, variant)	—
'have mercy'	əʋfu	e-ʋæffi (R)	—
'not need'	əʋnu	e-ʋænni (T, variant)	—
'err'	əxɖu	e-xæɖɖi (R)	—
'tire easily'	əzru	e-zærrri (all)	—
b. VbIN e-CáPP			
'begin'	ənt	e-náett	ʔ-náett-an
'sell'	əns	e-náezz	ʔ-náezz-an
		[for š and zz see §3.1.1.5]	
c. VbIN e-CáCi, see also (605) in §8.10.2			
'inherit'	ətru	e-tæri	i-tæ-r-an
'shout'	əʋér	e-ʋæri (or e-ʋéri)	i-ʋæ-r-an
d. VbIN íCi			
'go to'	ək	íki (A-grm)	—
'do'	əj	íji 'act'	ʔji-tæn

e. VblN borrowed <Arabic

'have mercy'	əʃfu	əlʃəfu (əlʃæfu)	əlʃæfu-tæn
'be wrong'	əxɒu	ælxæɒu	ælxæɒu-tæn

For 'vomit' (540.a), a Pl noun èbs-an 'vomit' (with no Sg) is used as a VblN or concrete noun (product of action). Both èbs-an and the -an plurals in (540.b-c) are cases of contraction of stem-final V with MaPl -æn (§4.1.2.13).

Note the geminated CC cluster ("PP") in the VblN in (540.a-b). The e-CæPPi type (540.a) is rare in T-ka, becoming more common in the east (and in Niger). The e-CæPP type (540.b) and the e-CæCi type (540.c) seem to be variants of e-CæPPi, with the final V elided (540.b), or without gemination of the medial P (540.c). The íCi type (540.d) is also rare in T-ka, but somewhat more common in the east. Note that íki 'going' has a single k versus kk in the inflected verb. For the two verbs concerned, 'go to' and 'do', see also the feminine type t-ĩCaw-t in (540.h), below. The VblN forms in (540.e) are Arabic nouns borrowed (with Arabic Definite prefix) alongside the corresponding verbs.

The **feminines** in (541) may in some cases have originated as instantiating VblN's, denoting a single event, but for stems lacking a productive masculine VblN they can also be used syntactically as ordinary VblN's.

(541) Feminine Verbal Nouns for -v(C)Cu- Stems

gloss	Imprt	Sg VblN	Pl VblN
a. VblN t-è-CæCe			
'be implanted'	æɾt	t-è-ɾæte	—
'give'	ækf	t-è-hæke	t-i-hækə-tən t-i-hækɪw-en
'kill'	æŋɾ	t-è-næɾe	t-i-néqɔ
'be ripe'	æŋŋ	t-è-næŋe	t-i-néŋŋ
'be on fire'	æɾɾ	t-è-ræɾe	t-i-réqɔ
'weave'	æzzɾ	t-è-zæte	t-i-zétt
		[for zz versus z...t see §3.2.1.4]	
'study'	əɾóɾ	t-è-ɾære	t-i-ɾóɾɾ
'listen'	əsól	t-è-sæle	t-i-sóll
		[noun also means 'eardrum']	
b. VblN t-à-CæCa			
'weep' (√hl)	ælh	t-à-hæla	t-i-hóll
c. VblN t-è-CæPPE			
'pour' (√df)	ætf	t-è-dæffe	t-i-déff
'get dressed'	æls	t-è-læsse	t-i-lóss
'shave'	ælz	t-è-læzzɾe	t-i-lózzɾ

'cave in'	ænd	t-è-nædde (K-d)	—
		[T: Imprt ænd, VbLN t-a-nèddaw-t]	
'lie down'	æns	t-è-næsse	—
'break'	ærz	t-è-ræzze	t-i-rézẏ
d. VbLN t-à-CæPPa			
'laugh' (√ɸs)	ætʃs	t-à-ɸæzẏa	t-i-ɸéẏẏ
		[arguably t-à-ɸæzẏa]	
e. VbLN t-əCCa (or t-æCCa)			
'be sick'	əkmu	t-əkma	t-əkma-w-en t-əkma-ten
'be useful'	ənfu	t-ənfɑ	t-ənfaw-en t-ənfɑ-ten
'want'	ærh	t-ærha	t-ærhaw-en
		[arguably t-ərha]	
'triumph'	ærn	t-ærna	t-ærnaw-en
		[arguably t-ərna]	
f. VbLN t-a-CəPPaw-t			
'cave in'	ænd	t-a-nèddaw-t	t-i-nèddaw-en t-i-nédd
'begin'	ænt	t-a-nèttaw-t	t-i-...w-en
		[also t-a-næto-t-t, see (h) below]	
'remember'	ækt	t-a-kèttaw-t	"
'consent;	ærd	t-a-rèddaw-t	"
'distract'	əʃəl	t-a-ʃèllaw-t	"
'go away'	əjəl	t-a-jèllaw-t	"
'spend day'	əkəl	t-a-kèllaw-t	"
'be separated'	əbɸu	t-a-bèddaw-t	"
'create'	əbnu	t-a-bènnaw-t	"
'be split'	əflu	t-a-fèllaw-t	"
'apply henna'	əɣmu	t-a-ɣèmmaw-t	"
'not need'	əɣnu	t-a-ɣènnaw-t	"
'be churned'	əndu	t-a-nèddaw-t	"
'be complete'	əmdu	t-a-mèddaw-t	"
'wring'	əzmu	t-a-zèmmaw-t	"
g. VbLN t-ìCaw-t			
'go to'	æk	t-ìkaw-t	t-ìkaw-en
'do'	əj	t-ìjaw-t	t-ìjaw-en
h. VbLN t-a-CəCo-t-t			
'begin'	ænt	t-a-næto-t-t	t-i-næto-t-en
		[A-grm Pl t-an...; see also t-a-nèttaw-t in (f) above]	

'remember'	æk̥t	t-a-kæ̃to-t	t-i-kæ̃to-t-en
'bellow'	èrku	t-a-ræ̃ko-t-t	t-i-ræ̃ko-t-en
'moo, roar'	ènju	t-a-næ̃jo-t-t	t-i-næ̃jo-t-en

i. VbIN t-a-CəCCi-t-t

'sprout'	æk̥s	t-a-kə̃ssi-t-t	—
		[also t-a-kə̃ssaw-t]	

j. VbIN t-ə̃-Cu-t-t or t-ə̃Cu-t-t

'(dog) bark'	ə̃šu	t-ə̃šu-t-t (T-ka)	t-ə̃šu-t-en
'bray'	ə̃ru	t-ə̃(-)ru-t-t	—
'cough'	ə̃su	t-ə̃-su-t-t	t-ḷ̃-su-t-en

k. VbIN t-ḷ̃PPu-t-t (or t-ḷ̃PPu-t-t)

'gag (vomit)'	ə̃qqu	t-ḷ̃qqu-t-t	t-ḷ̃qqu-t-en
		[arguably t-ḷ̃qqu-t-t]	

The subtypes in (541.a-d) form one cluster, and for all of them the most common PI is t-i-CəPP with final geminate. This PI corresponds to “tiCəPPa” in Niger Tamajak, e.g. Sg “tenǎre”, PI “tinəqqa” as VbIN of ‘kill’ (LTF2:246), but in Mali Tamashek the connection between t-i-CəPP and regular unsuffixed ablaut plurals with <HL> vocalism is less transparent (§4.1.2.24). In the Sg, the medial C is geminated in (541.c-d) but not in (541.a-b). It may be that the Sg gemination correlates with the choice of medial C (anterior fricatives including sibilants), but the small number of examples makes it difficult to confirm such a correlation. The Sg vocalic prefix is -a-, and the stem-final V is a, in (541.b,d). By contrast, the Sg vocalic prefix is -e-, and the stem-final V is e, in the more abundant types (541.a,c). a and e are elsewhere closely related phonologically. It is likely that stem-final a and e here represent original Fe suffixes (MGT 5.336ff.), but I do not favor a synchronic segmentation.

The VbIN’s in (541.e), of type t-ə̃CCa (or t-ə̃CCa), are somewhat problematic. If the first C is a BLC, as in ‘want’ and ‘triumph’, the form is heard as phonetic [tæC:a], and only the analogy to t-ə̃kma ‘disease’ and t-ə̃nfa ‘usefulness’ with clearly audible ə̃ points to representations of the type t-ə̃CCa. The short V does not function as a vocalic prefix and is therefore unchanged in the PI, which has either suffix -ten (postvocalic variant of FePI -en), or ...w-en with stem-extension w.

These t-ə̃CCa (or t-ə̃CCa) VbIN’s might also be taken as special “nominal” verbalizations of the 3FeSg form of the PerfP, e.g. t-ə̃rha [tæ̃rha] ‘she wanted’, t-ə̃kma ‘she got sick’. See also t-ə̃qqæn (and variants) ‘tying’ (546.c) in §8.6.1.2, below.

The types (541.f-k) have the complete FeSg circumfix t-...(-t)-t. They have regular suffixal plurals in -(t)-en. The most common of these has Sg t-a-CəPPaw-t in (541.f), where the w is connected (in a synchronically non-

transparent way) with the stem-final V of the inflected verb (even in the *a/I* subclass). The *w* also appears in the two VbLN's in (541.g); for 'go to' and 'do' see also the masculine type *íCi* for these two verbs (540.d). The remaining forms in (541.h-k) include some onomatopoeic VbLN's ('mooing', 'barking', 'gagging'), denoting an instance of the relevant sound as well as the action of making it.

When the verb begins with a full (not short) V, we get the forms in (542).

(542) Verbal Nouns for -uC(C)v- Stems

gloss	Imprt	Sg VbLN	Pl VbLN
a. VbLN <i>íCC</i>			
'fold'	àḏh	íḏh	ǻḏhə-tæn
'tiptoe'	àjj	íjj	ǻjjə-tæn
'dissuade'	àqq	ǻqq (R)	ǻqqi-tæn (R)
		[VbLN also t-ǻqqi-t-t]	
b. VbLN <i>iPəQQ</i> (resyllabified) from -uPQv- (§3.2.4, §3.3.2)			
'be stuck'	ǻrmu	irəmm (T-ka)	ǻrəmm-an (T-ka)
		[VbLN dialectally t-ərrma, t-ərmi-t-t]	
c. VbLN <i>áPP</i> from -uPv- (<i>a/I</i> subtype)			
'butcher'	àš	ášš, ázz	àzzə-tæn, áš-tæn (R)
'open'	àr	árr	àrrə-tæn
'arrive'	às	áss	àssa-tæn (K-d)
d. VbLN <i>áPP</i> from -uPPv-			
'leave'	àyy	áyy	àyyə-tæn
e. VbLN <i>ǻCa</i>			
'be lost'	ǻba	ǻba	ǻba-tæn
f. VbLN <i>t-íCi-t-t</i>			
'be born'	ǻwi	t-ǻwi-t-t	t-ǻwi-t-en
g. <i>t-a-CəPPaw-t</i>			
'be tranquil'	àzj	t-a-zəjjaw-t	—
		[Imprt also -əzju-, VbLN also t-ǻzji-t-t]	

h. t-üCi-t-t, t-ïCu-t-t for -vCv- (a/u subtype)			
'fall'	ïðu	t-üđi-t-t (A-grm)	—
		t-ïđu-t-t (R)	t-ïđu-t-en
'be better'	ïfu	t-üfi-t-t (A-grm)	t-üfa-ten
		"	t-üfi-ten
		t-ïfu-t-t (K-d)	—
		t-äfi-t-t (A-grm)	—

A masculine pattern $\acute{u}CC$ ($\acute{i}CC$, geminated $\acute{a}PP$) is discernible in (542.a,c,d). Such accented C-final monosyllables take MaPl -tæn rather than -æn (§4.1.2.2). However, the combination $\acute{u}CC$ -tæn is rather awkward phonologically because of the triple cluster. T-ka usually puts in an epenthetic schwa, while other dialects have a full V (K-d in particular systematically uses stem-final \acute{a} when the VbIN has <L> vocalism), or else they degeminate the PP of $\acute{a}PP$ to result in $\acute{a}P$ -tæn (e.g. $\acute{a}\acute{s}$ -tæn).

irémm in (542.b), from -vrmv-, is evidently resyllabified. It shows the usual T-ka resyllabification pattern including Epenthetic-Vowel Accentuation (70), and for VbIN's, Stem-Final Gemination (71). We will see more examples of this with VbIN's of heavy stems, below. However, in the heavy stems, adding MaPl -æn undoes the resyllabification and the gemination, whereas in Pl $\acute{i}r\acute{e}mm$ -an (not $\#i\acute{r}m$ -an) the schwa and the geminate are unaffected (but the shifted accent is erased, cf. (555)).

The verb 'leave' (542.d) is unusual in that the stem is basically -vyyv- (PerfP -ðyya-) but has Imprt $\acute{x}yy$ with shortened V. We get VbIN $\acute{a}yy$ where we might have expected $\#iyy$ on the model of (542.a), but $\#iyy$ would have homorganic V and semivowel, and the choice of $\acute{a}yy$ is consistent with other V-semivowel dissimilations. Of course $\acute{a}yy$ is also modeled on the $\acute{a}PP$ in (542.c).

The verbs -iba- 'become lost' (§7.3.2.16) and -iwi- 'be born' (§7.3.2.17) in (542.e-f) are structurally isolated, irregular verbs. 'Be tranquil' (542.g) has dialectally variable imperfectives including forms with initial short V, and the feminine VbIN shown is of the high-frequency t-a-C $\acute{e}PPaw$ -t pattern illustrated above for -vCCv- stems.

Finally, in (542.h) we see that -vCCv- verbs of the a/u subclass have various feminine VbIN's. For -vđv- 'fall' (542.h), the usual VbIN is suppletive e-jæđæł, though feminine nominals t-üđi-t-t and t-ïđu-t-t are attested dialectally.

8.6.1.2 Verbal nouns of light C-final verbs

The productive verbal nouns for light C-final verbs are summarized schematically in (543). Pluralization of these VbIN's is normally suffixal.

(543) Verbal Noun Schemata for -v(C)CvC- Stems

Imprt	Sg VblN	Pl VblN
-vPQvC-	α-PæQaC	i-PæQaC-æn
-vPPəC-	úpəC	ùPCaw-æn (dialectally ùPəC-æn, úPC-an)
-vCvC-	é-CeC	ÿ-CeC-æn

The three verb types have remarkably different VblN patterns. For the -vPQvC- verbs, α-PæQaC is a unique VblN formation. For -vPPvC- verbs, the úPaC VblN shows ungeminated medial C ("P") and simultaneously replaces the initial short V by u. The replacement of -vPP... by -uP... is also found in prefixal derivatives (e.g. causatives (453)) of the same -vPPvC- verbs. VblN úPəC has a Pl ùPCaw-æn in T-ka, which shows both α and w following the (otherwise) stem-final C (§4.1.2.6). For -vCvC- verbs the VblN is é-CeC, quite different from α-PæQaC and úPaC.

Representative examples of these patterns are given in (544).

(544) Examples of Productive Verbal Nouns for -v(C)CvC- Stems

Imprt type	gloss	Imprt	Sg VblN	Pl VblN
-vPQvC-	'stretch'	əsrəd	α-særad	i-særad-æn
-vPPvC-	'pound'	əddəh	údəh	ùdhaw-æn
-vCvC-	'unravel'	əsər	é-ser	ÿ-ser-æn

Although these VblN patterns are productive, there are some other patterns for verbs of these shapes. For -vPQvC- verbs, the alternative types are illustrated in (545). Some of these are also attested, in non-VblN function, with other verbs.

(545) Alternative Verbal Noun Types for -vPQvC- Verbs

gloss	Imprt	Sg VblN	Pl VblN
a. α-PæQoC (variant α-PæQuC)			
'beautify self'	ədləj	α-dæloj (T) α-dæluj (A-grm)	i-dəloj-æn
'come w water'	əktər	α-kætor (T) [VblN α-kætar A-grm]	—
'go to well'	əšrəj	α-šæroj (T) [VblN α-šærag A-grm]	—
'be energetic'	ətrəb	α-tærob	—
'leave'	əzjər	α-zæjor [VblN α-zægar (A-grm)]	—

b. \acute{a} -PQuC			
'malfunction'	əbrəʀ	á-brur	—
'fill'	əɖnəy	á-ɖnuy	ĩ-ɖnuy-æn
'reduce'	əfnəʒ	á-fnuʒ	—
'tilt'	əfrəʀ	á-fruʀ	ĩ-fruʀ-æn
'be lasting'	əʀləl	á-ʀlul	—
'treat'	əjmər	á-jmur	—
'learn'	əlməd	á-lmud	ĩ-lmud-æn
'complete'	əʀjəl	á-rjul	—
'be elevated'	ətkəl	á-tkul	—
'go west'	ətrəm	á-trum	—
c. \acute{u} CCeC, \acute{i} CCuC			
'be lasting'	əʀləl	úʀlel	úʀlel-æn
"	"	íʀlul (R)	ĩʀlul-æn
'be elevated'	ətkəl	útkel	—
d. CəPPoC			
'dance'	ədləl	dəllol	dəllol-æn
'walk'	əʀjəʃ	rəjjoʃ	—
'halt'	ərkən	rækkon	rækkon-æn
		[VbIN also t-ərkən-t]	
e. CəPPaC			
'choke'	əsləʀ	səlləʀ	səlləʀ-æn
'muzzle'	əʒməɖ	ʒəmməɖ	ʒəmməɖ-æn
'suffer from sand in stomach'	əjbəʒ	jəbbəʒ	—
f. t-ĩCCəCa			
'be enough'	əjdəh	t-ĩgdəha (A-grm)	—
		[VbIN more often m-ĩjdəhaw see §8.6.2]	
g. əPPəCúC-æt			
'make effort'	əɖgəʒ	əɖdəgúʒ-æt (K)	—
'feel (pain)'	əfrəy	əffəʀúy-æt	əffəʀúy-æt-en
'be serious'	əjləy	əjjəlúy-æt	əjjəlúy-æt-en
'understand'	əjrəh	əjjəʀúh-æt (K)	—
'listen'	ərdəʀ	ərrədúʀ-æt	ərrədúʀ-æt-en
'endure'	əʃməʀ	əʃʃəmúr-æt	—
h. əPPəCáC-æt			
'please'	əjrəʒ	əjjəʀáʒ-æt	—

i. CəCi				
‘feel (pain)’	əfrəy	fəri (A-grm)	—	
j. íCCi				
‘feel (pain)’	əfrəy	ífri	—	
k. á-CCi (á-CCəy), t-à-CCi-t-t				
‘impregnate’	ərləy	á-rlí (á-rləy)	ì-rləy-æn	
		[VblN also a-rælay]		
‘court’	əsrəy	á-srí	—	
‘go in AM’	ənšəy	t-à-nši-t-t	t-ì-nšəy-en	
‘crave’	ənsəy	t-à-nsi-t-t	t-ì-nsəy-en	
		[Pl also t-ì-nsi-t-en]		
‘wipe’	ərsəy	t-à-rsi-t-t	—	
‘mix’	ərtəy	t-à-rti-t-t	t-i-ráttay	
l. t-è-CæPPe				
‘stand up’	əbdəd	t-è-bædde	t-i-bàddiw-en	
m. t-à-CæCCe				
‘graze’	əfrəd	t-à-færde	t-i-fårdiw-en	
n. t-à-CæCCa				
‘kick out’	ərbər	t-à-ræbra	t-i-ràbriw-en	

α-PæQoC (545.545.a) looks like a variant of the regular α-PæQaC with o for a. á-PQuC (545.b) still has α- prefix and a final-syllable full V. The óCCeC (or úCCeC) pattern (545.c) is unique to one stem. The VblN’s in (545.d-e) have a medial geminate followed by a full V, with no vocalic prefix. Those in (545.f-g) have melodies resembling those of abstractive nominals (§8.6.5, below). (545.h) has the same shape as (545.g) but differs in one vowel. Three of the forms (545.g,i-ij) are variant VblN’s for ‘feeling (pain)’; compare ífri (545.j) to the íCi VblN pattern in íki ‘going’ and íji ‘act’ (540.d). The pattern á-CCi in (545.k), whose Pl usually points to a representation á-CCəy, resembles VblN íCCəy, see (549.c) later in this section. The feminine VblN t-è-CæPPe (545.l) is valid for ‘stand up’ alone among -vPQvC- verbs, though it occurs more often with -v(C)Cv- verbs, e.g. t-è-læsse ‘getting dressed’, see (541.c), above. The other feminine VblN’s in (545.m-n) are similar but have slightly different vocalisms; note the extra w and the lengthening of æ to a in the plurals for all of (545.l-n).

For -vPPvC- verbs, as alternatives to the regular VblN úPəC (see above), I can cite the alternative VblNs in (546).

(546) Alternative Verbal Noun Types for -vPPvC- Verbs

gloss	Imprt	Sg VblN	Pl VblN
a. éPPaC (see also in §8.12.2)			
'drip'	əddəm	édđam (A-grm)	—
		[VblN variants úđəm and t-ä-wđəm-t]	
'lending'	əffəd	éffad	əffad-æn
'cauterize'	əqqəd	éqqad	əqqad-æn
'applaud'	əqqəs	éqqas	əqqas-æn
'soar'	əlləy	éllay	—
'dive'	əlləz	éllaz	əllaz-æn
'forage'	ənnəš	énnaš	ənnəš-æn
		[A-grm VblN ánnəš]	
'swim'	əššəf	éššaf	əššaf-æn
b. éPəC			
'sleep'	ədđəs	édđəs	ədđəsaw-æn
c. t-əPPəC, t-əPPəC			
'tie'	əqqən	t-əqqən, t-əqqən	t-əqqən-en
'be bigger'	əššəm	t-əššəm, t-əššəm	—
d. t-ə-CaCa			
'chase out'	əddəɣ	t-ə-dəɣa	t-i-dəɣiw-en
e. t-ä-CəC-t (K-d dialect)			
'suckle'	ədđəd	t-ä-dəɣ-t	t-i-dud (§4.1.2.24)

While much less common than the productive úPəC (543-4), the éPPaC type (546.a) does show up with a decent number of stems. The vocalism (e..a), without the accent, recurs in the nominal derivative type CəCCaC, e.g. dərhan 'wish' (§8.12.2). éđəs 'sleep' (546.b), with Pl əđəsaw-æn, is more closely related formally to úPəC (whose Pl is ùPPaw-æn). In (546.c) we have another short-voweled VblN with t- prefix. For some speakers it is homophonous with 3FeSg PerfP t-əqqən [t-ə'q:ən] or with 3FeSg ShImpf t-əqqən [tə'q:ən]. Cf. the type t-əkma 'being sick' (541.e).

For -vCvC- verbs, the productive VblN é-CəC is found in nearly all cases checked. Alternatives, mostly feminine, are in (547).

(547) Alternative Verbal Noun Types for -vCvC- Verbs

gloss	Imprt	Sg VblN	Pl VblN
a. t- <i>æ</i> -CaCa, t- <i>è</i> -C <i>æ</i> Ce, t- <i>à</i> -C <i>æ</i> Ca			
‘run, flee’	əbəɖ	t- <i>æ</i> -baɖa (T) t- <i>è</i> -b <i>æ</i> ɖe (A-grm)	t-i-bàɖiw-en (T) t-í-baɖ (A-grm)
‘mount’	ənəy	t- <i>à</i> -n <i>æ</i> ya [A-grm VblN t- <i>æ</i> -naya]	t-i-nàyiw-en
c. <i>æ</i> PPoC			
‘throw’	əjər	əjjor	əjjor-æn
‘chase’	əšəj	əššoj	—
d. t-a-m-əCiC-t			
‘beg’	ədəl-	t-a-m-ədil-t	t-í-m-dal

For the various subtypes of -v(C)CvC- verbs, the productive patterns are those in (548).

(548) Verbal Noun Schemata for -v(C)CvC- Stems

subtype	PerfP	Sg VblN	Pl VblN
a. - <i>uw</i> vC-	- <i>əww</i> æC-	úggaC [gg for /ww/, §3.1.1.7]	àggaC-æn
b. - <i>vP</i> vC- (P ≠ w)	- <i>əP</i> æC-	íPPuC	ìPPuC-æn
c. - <i>vCC</i> vC-	- <i>əCC</i> æC-	íCCəC	ìCCəC-æn
d. - <i>uC</i> vC- (with u)	- <i>ùC</i> əC-	íCəC	ìCəC-æn

Among typical -*vC*əC- verbs, it is necessary to distinguish those with medial w (548.a) from those with any other medial C (548.b). These two subtypes also differ in the perfective, as shown. In the VblN, in (548.a) we not only get gg for expected ww, we also get <L> melody (sequence «a a»), contrasting with <H> melody (sequence «i u») in (548.b).

The -*vCC*əC- verbs that already have a medial CC cluster (548.c) have a VblN íCCəC with medial schwa. A similar VblN pattern íCəC (548.d) applies only to the single -*uC*əC- verb (with u) ‘go far’. Representative examples of these patterns are given in (549), omitting the perfectives.

(549) Examples of Regular Verbal Nouns for -v(C)CvC- Stems

	Imprt	gloss	Sg VblN	Pl VblN
a.	àwəy	'take'	ággay	àggay-æn
b.	àbər	'take handful'	íbbur	íbbur-æn
c.	àrsəy	'(animal) die'	írsəy	írsəy-æn
d.	àjəj	'go far'	íjəj	íjəj-æn

Unproductive VblN patterns for -v(C)CvC- stems are given in (550). In some cases they coexist (at least dialectally) with the regular patterns. Feminine VblN's based directly on the regular masculine VblN's, e.g. t-ìzzur-t 'suffering' for Imprt àzər, are not included in (550).

(550) Alternative Verbal Noun Schemata for -v(C)CvC-

	Imprt	gloss	Sg VblN	Pl VblN
a.	àbər	'grab handful'	t-ìbra	t-ìbraw-en
	àjær	'surpass'	t-ìjra (R)	—
	àzər	'suffer'	t-ìzra	—
b.	àðən	'need'	áððun (A-grm)	—
c.	àrəj	'contribute'	t-ìrji-t-t	t-ìrji-t-en

8.6.1.3 Verbal nouns of -v(C)CvC- and -v(C)CvC- verbs

Light verbs with medial full V, i.e. -vC(C)vC- or -vC(C)vC-, mostly have adjective-like meaning, though there are also some non-adjectival verbs with glosses like 'pray' and 'believe' (§7.3.1.9). The Imprt is often ìC(C)aC or ùC(C)aC. However, there is competition between Imprt ùCaC (with a single medial C and with u rather than i) and àCuC (the latter matching the PerfP).

The most common VblN's are feminines with Fe prefix t- and (in the singular) FeSg suffix -t, flanking the same -iC(C)aC- or -uC(C)aC- stem. Examples are t-ùsrak-k 'sneezing' (Imprt ùsraj), t-ìstak-k 'emptiness' (Imprt ìstak), t-ìzal-t 'wrestling' (Imprt ìzal), and t-ùdaq-q 'watching for' (Imprt ùdaq). Rarely, the bare stem is used as a masculine Vbln: úkmaš 'being scratched'.

There are some cases of t-àCuC-t for verbs that have PerfP -àCuC-, e.g. t-àðub-t (no Pl elicitable), alongside t-ùðab-t 'dripping' with Pl t-ùðab-en

(Imprt ùḍab, PerfP -əḍub-). There are also some masculine VblN's of similar stem-shape, usually with the final C geminated: é-mud or é-mudd 'praying' (Imprt ùmad), é-zukk (or æ-zukk) 'heaviness' (Imprt izzak), é-zumm (arguably æ-zumm) 'fasting' (Imprt əzum but LoImpfP -t-izum-), éjutt 'being many' (no Pl; Imprt ijat).

Other minor VblN patterns, some "borrowed" from other verb types, can be gleaned from the lists in §7.3.1.9.

8.6.1.4 Verbal nouns of non-augment heavy verbs

In the preceding sections I showed that light verb stems have a wide range of VblN shapes correlated with precise shape of the stem, and generally allowing some minority patterns alongside the productive ones. The heavy stems, on the other hand, have a relatively uniform VblN pattern than can be captured by a componential ablaut model.

These VblN's are masculine, with occasional feminine counterparts (generally instantiating). The Sg vocalic prefix is α-. The stem itself is characterized by the ablaut components in (551).

(551) Ablaut Components for Verbal Nouns of Heavy Stems

symbol	description
<H>	high vocalic melody
χ-pen	stem-penultimate accent (applies before deletion of final V)
α-f (optional)	α replaces ə in stem-final closed syllable
χ-f (Pl only)	final stem-syllable ə lengthened before Pl suffix

Examples including variants due to the optional α-f are in (552).

(552) VblN's for -jvynvn- 'beg'

	Sg	Pl
simple VblN	α-jáyənən	i-jəynin-æn
VblN with α-f	α-jáynan	i-jəynan-æn

The foundational VblN stem is -jáyənən-, constructed by applying <H> melody and χ-pen to the basic form -jvynvn- of the verb. The Pl involves the usual affixes (Pl i- vocalic prefix, and MaPl suffix -æn), but VblN's also require lengthening of a final-syllable schwa to i before the Pl suffix (χ-f), hence i-jəynin-æn. The Sg VblN has an optional variant showing α-f, hence α-jáynan, with the expected Pl i-jəynan-æn. α-f is roughly equivalent to the

combination of a local L melodic element and a length formative, as with unsuffixed nominal plurals, but α -f in VblN's does not affect stem-final V's (see below on VblN's of augment verbs), whereas nominal Pl ablaut converts a stem-final V to α .

It is also necessary to specify the phonological rules that apply to the outputs of these primary ablaut rules. Consider the data in (553).

(553) Verbal Nouns of Heavy C-final Verbs with Short Vowels

gloss	Imprt	Sg VblN	Pl VblN
a. middleweight -CvCvC stems			
'reject child'	bæjær	α -bájær α -bájær	i-bàjir-æn i-bàjar-æn
'be arrogant'	bæræj	α -báræj α -báræj	(etc.)
b. nonsyncoating middleweight and superheavy stems (-CvCC...)			
'dust off'	bækbak	α -bákbæk α -bákbak	i-bàkbik-æn i-bàkbak-æn
'praise God'	kæbbær	α -kábbær α -kábbær	(etc.)
'stumble'	jærtæqqæl	α -jærtéqqæl α -jærtéqqæl	i-jærtèqqil-æn i-jærtèqqal-æn
'be coarse'	færšæššæn	α -færšéššæn α -færšéššan	(etc.)
c. syncoating superheavy stems (-CvCV...)			
'shine'	mələwləw	α -mləwləw α -mləwləw	i-mləwliw-æn i-mləwlaw-æn
'fall to side'	bələdʷəy	α -blədʷəy α -blədʷəy	i-blədʷiy-æn i-blədʷway-æn
'bellow'	rəjənʲən	α -rjənʲən α -rjənʲən	(etc.)
'joy'	hələyləy	α -hləyləy α -hləyləy	
'be flabby'	bəkəwkəw	α -bkəwkəw α -bkəwkəw	
'trim'	sərəmsərəm	α -srəmsərəm (T) α -srəmsərəm	

In (553.c), we observe that **Stem-Initial Syncope** (§3.2.7.1) applies systematically to superheavy (but not -CvCvC-) stems beginning in -CvCV...

These are the same stems that syncopate after Stem-Initial V-Insertion in the perfective and (in most cases) in inflectable ShImpf stems.

The VbIN's for -CvCvC- stems in (553.a) are somewhat problematic. In principle, they are of the same type as those in (353.b-c), using the ablaut components in (551). However, when P is a BLC, the VbIN type α -C $\acute{\sigma}$ PaC is phonetically indistinguishable from the α -P $\acute{\sigma}$ QaC VbIN pattern for light -vPQvC- stems (§8.6.1.2), and there are some indications that this phonetic overlap has resulted in morphological reanalysis of α -C $\acute{\sigma}$ PaC as α -C $\acute{\sigma}$ P $\acute{\sigma}$ aC with $\acute{\sigma}$ instead of σ . The test for this, in T-ka, is Prefix Reduction, which converts α to $\acute{\sigma}$ or to σ depending on whether the following syllable has a high or low V. In cases like α -b $\acute{\sigma}$ raj, I have heard [x $\acute{\sigma}$ b $\acute{\sigma}$ rad $\acute{\sigma}$] more often than [x σ b $\acute{\sigma}$ rad $\acute{\sigma}$], where x is a Prefix Reduction trigger such as a preposition. Word-final / $\acute{\sigma}$ w/ is heard as [u], and word-final / $\acute{\sigma}$ y/ is heard as [i]. The plurals, in ...iw- $\acute{\sigma}$ en and ...iy- $\acute{\sigma}$ en, confirm the / $\acute{\sigma}$ w/ and / $\acute{\sigma}$ y/ representations. However, the Sg form behaves variably as C-final (e.g. ... $\acute{\sigma}$ w-) or as V-final (e.g. ...u-) with respect to suffixation. The relevant suffixes are pronominal possessor suffixes, and with the 1Sg suffix (postvocalic -nin, postconsonantal -in, in both cases requiring word-penultimate accent), we get both variants: α -ml $\acute{\sigma}$ wl $\acute{\sigma}$ w-in = α -ml $\acute{\sigma}$ wl $\acute{\sigma}$ -nin 'my shining'. This fluctuation does not apply to the α -variant (... $\acute{\sigma}$ w, ... $\acute{\sigma}$ y), which is clearly C-final.

If the stem has a **full V**, it appears as u or i in the VbIN, depending on the lexical item. u is much more common than i, though i is used before a w. In addition, only u occurs before a CC cluster, i.e. in a closed syllable. The examples involve nonfinal syllables, which may be open or closed, and the u shows up also in the inflected forms, so it can be attributed to the basic lexical form of the stem. There are a few cases with i instead of u, always in open syllables, and i appears to be the only possible full V when immediately followed by w (§7.3.1.7). When the V is u, we get **u-Spreading** and (if relevant) **Medial-V Shortening** (§3.4.9.3) in the Pl of the simple VbIN, though not in the Pl of the VbIN with α in the final syllable, except in A-grm dialect. Examples are in (554).

(554) Verbal Nouns of Heavy C-final Verbs with Medial Full Vowel

gloss	Imprt	Sg VbIN	Pl VbIN
a. medial u, nonsyncopating			
'be rude'	b $\acute{\sigma}$ d $\acute{\sigma}$ r	α -b $\acute{\sigma}$ d $\acute{\sigma}$ r α -b $\acute{\sigma}$ d $\acute{\sigma}$ r	i-b $\acute{\sigma}$ d $\acute{\sigma}$ r- $\acute{\sigma}$ en i-b $\acute{\sigma}$ d $\acute{\sigma}$ r- $\acute{\sigma}$ en
'be obligatory'	h $\acute{\sigma}$ šš $\acute{\sigma}$ l	α -h $\acute{\sigma}$ šš $\acute{\sigma}$ l α -h $\acute{\sigma}$ šš $\acute{\sigma}$ l	i-h $\acute{\sigma}$ šš $\acute{\sigma}$ l- $\acute{\sigma}$ en i-h $\acute{\sigma}$ šš $\acute{\sigma}$ l- $\acute{\sigma}$ en
b. medial u, syncopating			
'gape'	b $\acute{\sigma}$ l $\acute{\sigma}$ l $\acute{\sigma}$ r	α -bl $\acute{\sigma}$ l $\acute{\sigma}$ r α -bl $\acute{\sigma}$ l $\acute{\sigma}$ r	i-bl $\acute{\sigma}$ l $\acute{\sigma}$ r- $\acute{\sigma}$ en i-bl $\acute{\sigma}$ l $\acute{\sigma}$ r- $\acute{\sigma}$ en

c. medial i, nonsyncopating			
‘gesture’	šiwəj	α-šiwəj	i-šiwij-æn
		α-šiwəj	i-šiwəj-æn
d. medial i, syncopating			
‘do sorcery’	kərikəw	α-krikəw	i-krikiw-æn
		α-krikaw	i-krikaw-æn

I now turn to **non-augment heavy V-final** verbs. In the VbIN, the final V does not appear. It can therefore be assumed to be /i/, similar to the (easily deleted) underspecified high vowel /i/ that I attribute to the short imperfectives (including Imprt) of these and some other unaugmented V-final verbs. For **Stem-Final i/A-Deletion** see §3.1.2.4. Assuming the presence of /i/ permits us to reconcile the surface final-syllable accent of these VbIN’s with the penultimate marked accent of the VbIN’s already presented in this section, by ordering **Default Accentuation** before Stem-Final i/A-Deletion. There is no variant with final-syllable α like those of the VbIN’s described above. Data in (555).

(555) Verbal Nouns of Heavy V-Final Verbs

gloss	PerfP	Imprt	Sg VbIN	Pl VbIN
a. middleweight, nonsyncopating (α-CáCC, etc.)				
‘be searched’	-əffəyka-	fəyk	α-fəyk	ĩ-fəyk-an
‘become loose’	-əffugga-	fugg	α-fúgg	ĩ-fugg-an
‘fail’	-əfota-	füt	α-fút	ĩ-fut-an
b. superheavy, syncopating (α-CCáCC)				
‘be confused’	-əmtəlla-	mətəll	α-mtəll	ĩ-mtəll-an
‘be spicy’	-əxrərha-	xərərh	α-xrərh	ĩ-xrərh-an

The Pl VbIN’s shown are typical of T-ka. The -an with full α can be explained by VV-Contraction (stem-final V plus suffix-initial /æ/ combine as a). The loss of the marked stem accent in the Pl, resulting in default accent on Pl prefix i-, is typical when a stem-initial V is lost in this way, see **χ-Erasure** (§3.5.3.3). This requires Default Accentuation to (re-)apply after χ-Erasure.

For R dialect I recorded Pl VbIN’s like i-mtəlli-tæn for ‘be confused’, preserving the original stem-final V as i in the Pl only (Sg α-mtəll). A-grm generally preserves the original V as i in both Sg and Pl.

8.6.1.5 Verbal nouns of augmented verbs (with -t-)

For the augmented verbs, which are very numerous, a suffixal augment -t- occurs in most inflected forms. In VblN's and other nominalizations, **the -t is omitted**. The VblN therefore ends in a full V. Two other ablaut formatives seen with unaugmented verbs are inapplicable or moot for prosodic reasons with augmented verbs: α -f is inapplicable since there is no ə in the stem-final syllable, and $\bar{\chi}$ -f is moot since the V of the final stem syllable is already a full V. However, there is one crucial difference between VblN's of unaugmented and augmented verbs, namely the **absence of $\acute{\chi}$ -pen** (stem-penultimate accent) in the VblN's of augmented stems. These VblN's therefore have **default accent**, on the antepenult.

The stem-final V appears as i or u depending on the lexical item. When the stem has no other full V's, i is at least as common as u. However, in T-ka and some other dialects, if there is also a medial full u (even if later shortened), the stem-final V must be u (**u-Spreading**, §3.5.9). A-grm and some other eastern dialects do not display harmony, and so have many more final i's than are found in T-ka.

Stem-Initial Syncope applies as usual, deleting schwa in a stem-initial open syllable, in the same way as for unaugmented verbs.

The generally productive VblN pattern retains the skeleton (including short and full V's), with <H> melody overlaid. However, **Medial V-Shortening** does apply to underlying medial full V's when another full V occurs in a following syllable, accounting for the medial ə in VblN à-zərnu from -zurmv- 'act like a Zarma' (PerfP -əzzurmæ-t), and VblN α-fəffəru from -fūffrv- 'scrub' (PerfP -əffūffæræ-t), cf. §3.4.9.3.

The VblN patterns considered so far are exemplified in (556).

(556) Verbal Nouns with <H> Melody for Augmented Stems

gloss	Imprt	Sg VblN	Pl VblN
1. all non-stem-final V's are short			
a. nonsyncopeating, with final i			
'scatter'	wəšæ-t	à-wəši	i-wəši-tæn
'gallop'	dərbæ-t	à-dərbi	(etc.)
'be filed'	z-əzzæwæ-t	α-zəzzəwi	
b. nonsyncopeating, with final u			
'hide, lie low'	bækæ-t	à-bəku	i-bəku-tæn
c. syncopeating, with final i			
'cover self'	bəkəmbəkə-t	α-bkəmbəki	i-bkəmbəki-tæn
'(doors) close'	nəkəbbə-t	à-ŋkəbbi	(etc.)

8.6.1.6 Verbal nouns of prefixally derived verbs

Prefixal derivatives (passive, causative, etc.) have the same type of VblN beginning with *a-* prefix as we have seen in heavy unaugmented stems and in most of the augmented stems. A few examples for **unaugmented** verbs are in (558-9).

(558) Verbal Noun of Prefixal Derivatives (Unaugmented Verbs)

gloss	Sg VblN	Pl VblN
a. Mediopassive (C-final stem)		
'be chosen'	<i>a-n-əfrən</i> <i>a-n-əfran</i>	<i>i-n-əfrin-æn</i> <i>i-n-əfran-æn</i>
'become aware'	<i>a-n-əfrøy</i> <i>a-n-əfrøy</i>	(etc.)
b. Mediopassive (V-final stem)		
'be dislocated'	<i>a-n-əbd̥</i>	<i>ï-n-əbd̥-an</i>
'be drunk'	<i>a-m-əsəww</i>	<i>i-m-əswi-tæn (R)</i>
c. Mediopassive or Reciprocal of Causative (lexicalized)		
'spread (news)'	<i>a-m-s-úk</i>	<i>ï-m-s-uk-an</i>
d. TW-Passive (C-final stem)		
'be bitten'	<i>a-tw-ədəd</i> <i>a-tw-ədəd</i>	<i>i-tw-əd̥id-æn</i> <i>i-tw-əd̥ad-æn</i>
'be held' (\sqrt{df})	<i>a-tw-ətt̥af</i> <i>a-tw-ətt̥af</i>	(etc.)
e. TW-Passive (V-final stem)		
'be said'	<i>a-tw-ənn</i>	<i>ï-tw-ənn-an</i>
f. Causative (C-final stem)		
'wash'	<i>a-s-írəd</i> <i>a-s-írəd</i>	<i>i-s-ír̥id-æn</i> <i>i-s-ír̥ad-æn</i>
'put on'	<i>a-s-əwər</i> <i>a-s-əwar</i>	<i>i-s-əwir-æn</i> <i>i-s-əwar-æn</i>
	<i>á-s-wər (K-d)</i>	<i>ï-s-wər-æn</i>
'listen'	<i>a-s-əgəd (A-grm)</i> <i>á-s-jəd (R)</i>	<i>i-s-əgid-æn</i> <i>ï-s-gid-æn</i>
'injure back of'	<i>a-s-əff ídøy</i> <i>a-s-əff íday</i>	<i>i-s-əff ìdiy-æn</i> <i>i-s-əff ìday-æn</i>

g. Causative (of non-augment V-final verb, cf. PerfP stems -əss-ərɣa- and -æs-fæggə-)

'burn'	ɑ-s-əɣɣ	ĩ-s-əɣɣ-an
'cause to sprout'	ɑ-s-əffəgg	i-s-əffəgg-an

h. Causative (with irregular Causative prefix allomorph)

'cause to leave'	ɑ-səww-əyy	i-səww-əyy-an
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i. Reciprocal

'bite each other'	ɑ-nm-ədəd	i-nm-ədíd-æn
	ɑ-nm-ədád	i-nm-ədád-æn

The VblN forms are generally consistent with those of long underived stems: prefix ɑ-, <H> melody in stem, and penultimate accent (before Stem-Final I/A-Deletion (§3.1.2.4)). The VblN forms with a final syllable ...CəC have optional variants with final ...CaC, e.g. ɑ-s-əwər and ɑ-s-əwar for 'put on'. This variation does not apply to VblN's of V-final stems.

A special feature of VblN's of causatives based on heavy input verbs is the application of C₁-Gemination to the first C following the Causative prefix, if this C is intervocalic and is separated from the prefixal C by only a short V. This does not affect middleweight causative VblN ɑ-s-əCəC, whose input is light (-vCvC-). This post-prefixal C₁-Gemination also applies to the inflectable ShImpf (but not to perfectives) of the same causative derivatives. Thus, to add a new example, 'braid (sb)' has PerfP -æs-jæmbə-t and Imprt s-əjjəmbə-t, and the geminated jj of the latter recurs in VblN ɑ-s-əjjəmbu.

The causative VblN pattern exemplified in (558.f) by ɑ-s-əwər, i.e. ɑ-s-əCəC, is syncopated to á-s-CəC in some dialects. This is the usual pattern in K (to judge by my K-d data), and it is attested in the R data (558.f). For example, I recorded á-s-dəw 'fixing up' in for K-d and as an option for R, versus ɑ-s-ədəw in A-grm and T-ka (and as an option for R). The effect of Syncope here is to merge (in the relevant dialects) VblN ɑ-s-əCəC with the Instrumental nominal type á-s-CəC for the same roots. For example, corresponding to PerfP -æs-jæn- 'make (camel) kneel', T-ka clearly distinguishes VblN ɑ-s-əjən 'making kneel' from a related nominal á-s-jən 'area where animals spend the night'. By contrast, the K-d speaker gave á-s-jən in both VblN and nominal senses.

(559) presents some examples involving prefixal derivatives of **augmented** verb stems.

(559) Verbal Noun of Prefixal Derivatives (Augmented Verbs)

gloss	Sg VblN	Pl VblN
Passive (cf. PerfP -ætw-æhabæ-t) 'be dragged'	ɑ-tw-əhubu	i-tw-əhùbu-tæn
Causative (cf. PerfP -æs-tæqqæ-t) 'cluck tongue'	ɑ-s-əttəqqu	i-s-əttəqqu-tæn

8.6.2 Verbal nouns of underived verbs with -m-/-n- prefix

For some underived verbs, the form used as VblN contains the -m- (or -n-) prefix elsewhere associated with the Mediopassive. These are to be distinguished from regular VblN's of mediopassive verbs (§8.6.1.6). Examples in (560).

(560) Verbal Nouns with -m- or -n- prefix

	Imprt	gloss	VblN
a.	əjdəh	'be enough'	m-əjdəhaw
	əjdəh	'be equal'	m-əjdəhaw
	əjər	'be bigger'	m-əjraw ('majority')
	əlkəh	'underestimate'	m-əlkəhaw
	ərkəh	'rot'	m-ərkəhaw
b.	əkán	'do much'	m-əkæna, m-əkæna
	əsəl	'listen'	m-əsəla (A-grm)
c.	əsəl	'listen'	m-əsəll-æt
	əruš	'reward'	m-əruš-æt
	əssən	'know'	m-əsn-æt (A-grm K)
	əššəm	'be bigger'	n-əšm-æt ('majority')
d.	əɸən	'take to pasture'	t-ɑ-m-əɸin-t
	əsəl	'put on shoes'	t-ɑ-m-əsəl-t (A-grm)
e.	əššəm	'become big'	t-ən-ušme ('being an elder')

The VblN's in (560.a) begin with m- and show a stem-final (or perhaps suffixal) w. Those in (560.b) have m- and a stem-final ɑ. Those in (560.c) have m- and Fe suffix -æt. Note that dialectal variants for 'listen' occur in (560.b) and (560.c). The remaining forms have Fe prefix t-, with either FeSg suffix -t (560.d) or stem-final e (560.e).

8.6.3 Suppletive verbal nouns

Two verbs have VbIN's based on stems not used in the simple inflected verb forms such as PerfP and Imprt, though the special stems do recur in the long imperfectives (561).

(561) Suppletive Verbal Nouns

gloss	Imprt	PerfP	suppletive VbIN	suppletive LoImpfP
'eat'	ækš	-əkša-	t-è-tæte	/-táttA-/
'give'	ækf	-əkfa-	i-húkk, i-súff	/-hákkA-/
			[cf. t-è-hæke 'giving, generosity']	

For 'give', in addition to i-húkk (sharing a stem with LoImpfP -hákk-), there is also a second suppletive VbIN i-súff unrelated to the LoImpfP. Both i-húkk and i-súff are plural in form.

For 'go', the common VbIN is suppletive t-èkle 'going', but the main inflected motion verbs, -vjlv- 'go', -vsu- 'arrive, come', and -vkvu- 'go to' (§7.3.2.6-7), do have attested VbIN forms of their own.

8.6.4 Semantic extensions of verbal nouns

Many of the nominals that are used as VbIN's (for example, as complements of -vknv- 'be/do very much'), essentially denoting a pure activity or state, can also have more concrete senses.

For example, α -m-s-úk can be a simple VbIN meaning 'spreading, sending around (news)'. It can also be an object nominal: 'something sent'. The details are lexically specific and are best left to dictionary entries.

As a second example, for -vjvr- 'throw (stone), strike (flint)', one would expect a VbIN é-jer. This does occur, but its usual sense is 'incense'. Another form æjjor can be used as VbIN.

8.6.5 Abstractive nominals

The **abstractive** nominals in (562) are at least arguably **denominative**, derived from the nouns in the leftmost column (most of which denote human types). Most of the noun-abstractive sets shown, however, are parts of larger word-families also including verbs. While the precise derivational relationships are not always clear, in most of the cases in (562) the "related noun" seems to be basic to the word family.

(562) Denominative Abstractives with Initial (t-)əPP...

related noun	gloss	abstractive	gloss
a. feminine (five syllables with final <i>α</i> , default accent)			
ælmunáfēq	'dishonest one'	t-əlmənùfəqqa	'dishonesty'
a-mænókāl	'chief'	t-əmmənùkəla	'chiefhood'
b. feminine (four syllables with final <i>α</i> , default accent)			
e-bæydæg	'thief'	t-əbbəydəga	'thiefhood' (A-grm)
á-kli	'slave'	t-əkkələwa	'slavehood' (R)
—	—	t-əllùləya	'preaching'
ənnæbi (<Ar)	'Prophet'	t-ənnəbəwa	'prophet-hood'
		[cf. Arabic nubuww-at-	'prophet-hood']
a-wənhəð	'blacksmith'	t-əwwənhəða	'blacksmith-hood'
a-nəmm-ərru	'namesake'	t-ənnəm-ərra	'being namesakes'
æ-bábaš	'cross-cousin'	t-əbbùbəša	'cousinhood'
æ-háləs	'man'	t-əhhùləsa	'manhood' (K)
æłžáhil	'ignorant'	t-əłžùhəla	'state of ignorance'
əššərif	'sherif' (<Ar)	t-əššùrəfa	'sherif-hood'
əttálib	'student' (<Ar)	t-əttùləba	'being a student'
a-ləggəs	'in-law'	t-əllùggəsa	'being in-laws'
		[variant a-ləggus (A-grm); cf. masculine variant under (c)]	
t-à-ləqqe	'pauper'	t-əlləqqəwa	'poverty' (Gao)
a-mæðray	'young brother'	t-əmmùðrəya	'younger brotherhood'
a-mæqqar	'elder brother'	t-əmmùqqəra	'elder brotherhood'
a-šəqqar	'brother'	t-əššùqqəra	'fraternity'
à-m-idi	'friend'	t-əmm-ìdəwa	'friendship' (√dw)
æ-máwəð	'young man'	t-əmmìwəða	'youthfulness' [A-grm]
erk ə-wadəm	'bad person'	t-irwìdəma	'banditry'
ə-wadəm	'person'	t-əwwìdəma	'humanity'
t-irwa	'giving birth'	t-əttìrəwa	'kinship, family'
		[abstractive also t-əttìrwa]	
c. feminine (three syllables with final <i>α</i> , default accent)			
Ø-əynáy-æn	'new-MaSg'	t-əynəya (K-d)	'newness'
		[deadjectival; noun also t-əynəya (A-grm)]	
d. masculine (trisyllabic, C-final, default accent)			
t-a-bæxor-t	'wealth'	əbbəxər	'richness'
—	—	əbbəyyu	'shiftlessness'
e-jənzì	'low-class one'	əjjənzu	'low class'

e-læll	‘noble’	əlləllu	‘being noble’
é-kli	‘slave’	əkkelu	‘being a slave’
t-amætt	‘woman’	əmməttu	‘womanhood’ (√mɔ)
tunte	‘female’	əttəntu	‘femininity’
a-wæqqas	‘beast’	əwwərsu	‘wildness (animal)’

e. masculine (trisyllabic, C-final, penultimate accent)

a-məknud	‘dwarf’	əmməknud	‘dwarfhood’
		[abstractive also əmməknəd]	
æ-háləs	‘man’	əhhúləs	‘manhood’
æ-káfər	‘infidel’	əkkufér	‘being an infidel’
a-ləggəs	‘in-law’	əllúggəs	‘being in-laws’
æ-másær	‘warrior’	əmmúšær	‘haughtiness’
æ-máli	‘alpha male’	əmmúli	‘alpha-male-hood’
		[for /əmmúləy/, §see 3.1.2.5]	
æ-šámor	‘unemployed’	əššúmər	‘unemployment’
	[<Fr <i>chômeur</i>]		
æ-máwəð	‘young man’	əmmíwəð	‘youthfulness’ [R T]

f. masculine (four syllables, V-final, default accent)

a-mæros	‘accursed one’	əmmərusu	‘accursedness’
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g. Reciprocal derivative (feminine, with final a)

a-nəmm-ərru	‘namesake’	t-ənnəṁ-ərru	‘being namesakes’
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The abstractives in (562) show an onset -əPP... with initial schwa and gemination of the first C.

These abstractives are characterized by <H> **vocalism**, except that the feminines in (562.a-c) add -a at the end. One could argue whether the -a is a feminine suffix, reflects the L part of a <H L> melody, or is due to a kind of α-f formative. Since melodies are usually overlaid on input V’s, it may be preferable to take the -a to be suffixal. A few of the masculines end in u not corresponding to an input V, but in some cases the corresponding input noun arguably has a covert final V, e.g. e-læll ‘noble’, cf. feminine t-e-lælli-t-t ‘noble woman’.

The <H> melody generally favors u over i when overlaid on an input full V, except that i appears immediately following w or when a w occurs later in the stem (e.g. ‘humanity’, ‘youthfulness’, cf. §3.4.10, §4.1.2.17), or when the input already has i (‘friendship’). Moreover, there is a reorganization of V-length patterning. The resulting pattern of length is, with S = short and X = variable length, the following: (S)SXS(-a), where X is a full V if the input has one or two nonfinal full V’s in its last two syllables, otherwise X is a short V. An exception is ‘dwarfhood’ in (562.e), where the verb -muknvd- ‘be a dwarf’

may have played a role (the two variant forms for 'dwarfhood' were obtained only from the main T-ka informant). Another apparent exception is əllúggəs 'being an in-law' (562.e) and its feminine counterpart in (562.b), if the input is α-lággəs with no full V in the stem, but there is a dialectal variant α-lággus that does have a full V.

Since the abstractive nominals in (562.a-f) are taken from large word-families including other nouns ('noble') and verbs ('be noble'), there is some ambiguity as to the input form on which the abstractive ablaut is based. For example, æ-bábaš 'cross-cousin' is associated with a verb (-vbubvš-, e.g. PerfP -əbbobəš-) 'be a cross-cousin'. Depending on precisely how abstractive ablaut is formulated, either æ-bábaš or -vbubvš- could serve as input form (the latter is actually closer to the abstractive in V-length patterns). In the case of 'shiftlessness' in (562.d), the abstractive is most likely based on the verb -buyyu- (+ -t) 'be shiftless'. The only human noun similar to those in the left column of (562) is the agentive α-n-əbbayyu 'shiftless one', and its Agentive prefix -n- is absent in the abstractive. Likewise, 'preaching' in (562.b) may well be based directly on the verb -lulvy- 'preach'. These considerations suggest that the other abstractives in the right column of (562) may also be directly based on verbs. However, the verbs in many word-families are themselves arguably denominal, e.g. -lullo- (+ -t).

'Cousinhood' denotes a kind of joking relationship widespread in West Africa, and may apply between ethnicities (for example, Dogon and Boso), extended clans (the Maiga and the Touré among Songhay), or to kinship-defined cross-cousins. The word-family for the "root" √bydj usually denotes 'off-white color (of camel)' in the Timbuktu area, and (as √bydg) 'theft' in A-grm (and in Niger). The abstractives 'cousinhood' and 'thievery' denote behavioral complexes, e.g. 'acting as a X'. 'Blacksmith-hood' refers to the distinctive caste of blacksmiths (and leather-workers). 'Kinship, family' is interesting morphologically since the apparent Fe prefix of t-irwa is treated as part of the (inner) stem for derivational purposes.

The same kind of abstractive sense is seen in the masculine abstractives in (562.e-f). For example, əlləllu denotes the quality of being free-born (not slave or vassal), and əkkəlu does the same for being born a slave. əmmúšəɾ denotes the bellicose and haughty behavior of warriors, a traditional Tuareg caste after whom "Tamashek" is named.

In the cases in (563), abstractives beginning in ə relate to **qualities or states** rather than fixed human categories, so a deverbal origin makes more sense. Except for the irregular case in (563.c), the forms resemble the masculines in (562.c-e), above.

(563) Deverbal Abstractives with Initial əPP...

verb (PerfP)	gloss	abstractive	gloss
a. four syllables, with default accent			
-əmmüttæsæ-t	'be afraid'	əmməttəsʉ	'fear'
b. three syllables, with default accent			
-əddofæ-t	'be plump'	əddufu (K-d)	'plumpness'
-əḍkæḍ-	'describe'	əḍḍəkʉḍ	'description'
-əjjujrə-	'be sterile'	əjjəjrʉ	'sterility'
-əkkulkæ-t	'have lice'	əkkəlku	'having lice'
-əkkurdæ-t	'be dirty'	əkkərdu	'dirtiness'
-ərrumsæ-t	'crave'	ərrəmsʉ	'craving'
-əttuhmæ-t	'suspect'	əttəhmʉ (R)	'suspicion'
-əmmoræ-t	'be forceful'	əmmuru	'forcefulness'
-əss-əmdə-	'complete'	əss-əmdʉ	'completion'
c. three syllables, with default accent and full ə in final syllable			
-ənnukkæl-	'be dirty'	ənnikkəl	'dirtiness'
d. three syllables, with penultimate accent			
-əbbəræḍ-	'be resolute'	əbbərəḍ (K)	'resoluteness'
-əbrær-	'be weak' (K)	əbbərrər (K)	'weakness'
-əkkulæf-	'be adult'	əkkúlləf	'age of majority'
e. irregular (with apparent Passive prefix)			
-əmmukkæn-	'be possible'	ətt-əməkkin	'possibility'
-əššəwwəš-	'be fretful'	ətt-əššəwwiš	'fretfulness'
f. irregular (masculine with Mediopassive prefix and final ə)			
-ənn-ukmæm-	'be squeezed'	n-əkmeḿə	'being squeezed'

In some cases these abstractives cooccur (within or across dialects) with a regular VbIN. For 'fear' in (563.a), the A-grm dialect has a regular VbIN ə-məttəsʉ.

There are also a few unprefixed **C-initial** abstractives, with no prefix or stem-initial gemination, that function as abstractives of stative verbs (564.a-b). In such cases, the "abstractive" could be thought of as a functional equivalent of VbIN.

(564) Unprefixed Stative Abstractives

Imprt	gloss	abstractive	gloss
a. <H> melody			
əbdən	'be crippled'	bəddən	'being crippled'
ĩrləl	'need clothes'	ɣəlləl	'needing clothes'
əjrəʒ	'be stingy'	jərrəʒ	'stinginess'
əksən	'dislike'	kəssən	'dislike' (noun)
əkyað	'have a grudge'	kəyyəð	'grudge'
əšləð	'pester'	šəlləð	'being a pest'
b. with penultimate accent and final a			
ləŋkæm	'ride double'	ləŋkəma	'riding double'

The forms in (564.a) are similar in shape to the masculine abstractives in (562.b) above, notably in having strict <H> melody.

For unprefixed sèndad 'laziness' see the CèCCaC nominal pattern (not always stative), (595.a) in §8.12.2, below.

Another probably deverbal abstractive type (used instead of a VbIN), with Fe prefix t- and FeSg suffix -t, is typical of **color adjectives** (and some other adjectives, especially those denoting surface qualities). The adjectives have associated verbs in the same word-family. In (565) I give a number of examples, using the PerfP to represent the verb (modifying "adjectives" are participles based on the verb). The abstractive most often has <L> melody, but cases with <H> melody (hence with ə instead of æ) are recorded at least as variants for a few adjectival verbs with PerfP CəCCəC- (565.a). All of the abstractives are characterized by **gemination of C₁**, and the stem's **final-syllable V is short** in all cases.

(565) Abstractives for Color and Surface Adjectival Verbs

PerfP	gloss	abstractive
a. Stems with PerfP CəCCəC-		
fəltəɣ-	'be flat and wide'	t-æffə̀ltæq-q (T) t-əffə̀ltæq-q (A-grm)
məðrəy-	'be small'	t-əmmə̀dri-t-t [also t-əmmə̀dri-t-t]
mətkəy-	'be small'	t-əmmə̀tki-t
məymər-	'be runty'	t-əmmə̀ymər-t [also t-əmmə̀ymər-t]
məʒʒəj-	'be deaf'	t-əmmə̀ʒʒək-k (T) t-əmmə̀ʒʒək-k (A-grm R)

b. other C-final stems

bəhəw-	'be smoky grey'	t-æbbəhəw-t
bəšəw-	'be hard of hearing'	t-æbbəšəw-t
bənəw-	'be dark brown'	t-æbbənəw-t
bəzəw-	'be yellow-brown'	t-æbbəzəw-t
dəbar-	'be grey (donkey)'	t-əddəbær-t
-əddəær-	'be needy'	t-əddəær-t
-əddəmdæm-	'be mute'	t-əddəmdæm-t
-əgræz-	'be stingy'	t-əggərəz-t (A-grm)

c. V-final (augmented) stems

dələ-t	'be green'	t-əddələ-t-t
-əffewæ-t	'be greyish brown'	t-əffūwæ-t-t
dərə-t	'be dark brown'	t-əddərə-t-t
-əddərə-t	'be plump'	" "
-əbbəkæ-t	'be spotted'	t-əbbəkæ-t-t

d. V-final (augmented) stems

-əšohær-	'be stocky'	t-əššühær-t
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The abstractives in (565) denoting colors can usually be glossed by English color nouns: 'dark brown (color)', etc. The verbs in (565.c) are all V-final stems, so the abstractives have the extra postvocalic Fe -t- suffix. The form in (565.d) seems to belong here on grounds of semantics, but since r is a BLC we cannot tell whether the final vowel is ə or æ, and in view of (admittedly nonadjectival) nominal t-əbbilæn-t 'wrestling', see (605) in §8.10.2, we cannot completely rule out a <H L> rather than <H> melody.

Another abstractive pattern typical of **adjectival verbs**, mostly non-color, with imperfectives based on a stem -iCCaC-, is illustrated in (566).

(566) Abstractives for Other Adjectival Verbs

Imprt	gloss	abstractive
a. t-ə-CPəQe		
ἵbləh	'be tame'	t-ə-bləhe
ἵdras	'be few'	t-ə-drəse
ἵkraʒ	'be tight'	t-ə-krəʒe
ἵmɣar	'be red'	t-ə-mɣərə
ἵrɣas	'be easy, cheap'	t-ə-rɣəse
		[variant t-ə-rəʒse]
b. t-ə-CəPQe		
ἵlmaɖ	'be soft'	t-ə-ləmdə
ἵsmaɖ	'be cold'	t-ə-səmdə (Pl t-i-səmdɨw-en)

c. t-ə-CəPPe

ifrar	'be useful'	t-ə-fərre
ifsas	'be lightweight'	t-ə-fəsse
irral	'need clothes'	t-ə-rəlle (A-grm)
ismam	'be sour'	t-ə-səmme

d. t-ə-CuCe

ərəf	'be greedy'	t-ə-rufe
irwax	'be yellow'	t-ə-ruxre (or t-ə-rorxe)
išwax	'be red'	t-ə-šuxre (Pl t-i-šūraw-en)

In (566.a) we have abstractive t-ə-CPəQe based on verbs with C sequence $\sqrt{\text{CPQ}}$ (disregarding intervening V's). In (566.b) there are two $\sqrt{\text{CPQ}}$ verbs with abstractive t-ə-CəPQe, where P is a nasal. In (566.c), where the C sequence is $\sqrt{\text{CPP}}$ with two identical C's, we get abstractive t-ə-CəPPe. Evidently the choice between t-ə-CPəQe and t-ə-CəPQe, though dialectally variable and perhaps not completely predictable, does depend in some way on features of P and on the geminate or nongeminate status of PQ. In (566.d), the stem has just two C's, and we get abstractive t-ə-CuCe with medial u.

Another similar noun 'fear' has dialectal variants t-ə-ksəḏa, t-ə-ksəḏe, t-ūksəḏa. The final a is notable; compare (562.a-b,g), above. The verb 'fear' has PerfP -əksoḏ- or -əksuḏ-.

A number of the feminine abstractive and VbIN's considered in this and preceding sections (541.a-e, 562.a-c,g, 566) have stem-final a or e with no further FeSg suffix. On these archaic Feminine endings see (603) in §8.12.2, below.

8.7 Adjectival nouns without derivational prefix

Many adjectival word-families include a stem with a meaning like 'a/the short one', 'a/the red one', etc. These are nouns, with the gender-number affixation typical of common nouns. The Sg vocalic prefix may be a-, ə-, or e-. The plural is suffixal. Sample paradigms are V-final 'short one' and C-final 'old man/woman' in (567).

(567) Adjectival Nouns 'short one' ($\sqrt{\text{kšl}}$), 'old man/woman' ($\sqrt{\text{mɔr}}$)

	Sg	Pl
a. 'short one'		
Ma	a-kəššəlu	i-kəššəlu-t-æn
Fe	t-a-kəššəlu-t-t	t-i-kəššəlu-t-en

b. 'old (person)'

Ma	á-mʁar	ĩ-mʁar-æn
Fe	t-ä-mʁar-t	t-ĩ-mʁar-en

The set of adjectival nouns known to me is in (568), showing the PerfP and Imprt of the verb alongside the adjectival noun in MaSg form. The adjectival noun seems to be more closely associated morphologically with the perfectives than with the imperfectives in those cases where the two inflectable stems diverge formally. Adjectival nouns are effectively limited to verbs with **heavy perfective stems**, e.g. -Cv(C)CVC-. The exception is 'be yellow' with PerfP -æraʁ-, but this appears to be shortened from /-wæraʁ-/ (which occurs as such in K-d), to judge from e.g. Imprt ĩwraʁ (§7.3.2.4).

Verbs with light perfective stems do not have adjectival nouns of the sort described in this section, but may have nominals taking the form of agentives (§8.8, below) that function like adjectival nouns.

(568) Adjectival Nouns

gloss	PerfP	Imprt	adj noun
a. á-CCaC			
'grey'	bəhaw-	ĩbhaw	á-bhaw
'dark brown'	bənaʁw-	bənaʁw	á-bnaʁw
'yellow-brown'	bəzəʁw-	bəzəʁw	á-bzəʁw
'dark grey'	həraʁs-	həraʁs	á-hraʁs
'old' (√mʁar)	məqqor-	ĩmʁar	á-mʁar
	[PerfP also -məqqær-]		
'deaf'	məzzəj-	ĩmzaj	á-mzaj
'red' (√swʁ)	šəggəʁ-	ĩswəʁ	á-šwəʁ
'yellow' (√wraʁ)	-æraʁ-	ĩwraʁ	á-wraʁ (§7.3.2.4)
b. a-CáCCaC			
'blunted'	-əddəmdəʁm-	dəmdəʁm	a-dəmdəʁm
'white'	məlləl-	ĩmləl	a-məlləl
	[PerfP also məlləl-]		
'small-eared'	kərrəw-	kərrəw	a-kərrəw
'off-white'	šəmləl-	šəmləl	a-šəmləl
'blind'	qərrəl-	qərrəl	a-qərrəl
	[noun arguably a-qərrəl]		
'blackish'	ʁəndəw-	ʁəndəw	a-ʁəndəw
'cloudy (liquid)'	šəwšəw-	šəwšəw	a-šəwšəw
'old'	wəššəʁ-	ĩwšəʁ	a-wəššəʁ

- c. <L> melody, two full a's
- | | | | |
|-----------|------------|---------|---------------------|
| 'green' | dàla-t | dàlæ-t | æ-dala |
| 'greyish' | fāwa-t | f īwə-t | æ-fawa |
| 'mute' | -əddəndæm- | dændæm | æ-dándam
(A-grm) |
| 'young' | -əməwæɖ- | mæwæɖ | æ-máwəɖ |
- d. <L> melody, two short æ's, no a
- | | | | |
|-------------------|------------|--------|---------------------------------|
| 'hard of hearing' | -əbbəʃæw- | bəʃæw | e-bæʃæw (A-grm)
bæʃæw (T-ka) |
| 'off-white' | -əbbəydæj- | bəydæj | e-bæydæj |
- e. <L> melody, two short æ's, final a added
- | | | | |
|--------|--------|-------|----------|
| 'grey' | dæbar- | dæbær | a-dæbæra |
|--------|--------|-------|----------|
- f. e-CæCeC
- | | | | |
|---------|--------|-------|---------|
| 'black' | kæwal- | ikwal | e-kæwel |
|---------|--------|-------|---------|
- g. á-CoC for augmented -CuCv- stem
- | | | | |
|---------------|-----------|--------|-------|
| 'white-faced' | -əmmolæ-t | mùlə-t | á-mol |
|---------------|-----------|--------|-------|
- h. e-CæCi
- | | | | |
|--------------|------------------------|--------|----------------|
| 'spotted' | bækə-t | bækæ-t | e-bæki |
| | [PerfP also -əbbækæ-t] | | |
| 'dark brown' | dæra-t | dæra-t | e-dæri, e-dári |
| 'spotted' | mæja-t | mæjæ-t | e-mæji |
- i. <H> melody
- | | | | |
|---------|---------|-------|-----------|
| 'short' | kəʃʃəl- | ikʃal | a-kəʃʃəlu |
|---------|---------|-------|-----------|

In (568.a) we get adjectival noun á-CCaC. The verbs mostly have Imprt ÿCCaC, but a few have CæCæC. Some have PerfP CæCaC-, and -CCaC in the adjectival noun might be derived from this CæCaC- by Syncope. Better yet, since Stem-Initial Syncope (§3.4.8) arguably applies only to /ə/, and since an accent on a syncopated ə surfaces in the preceding syllable, we can derive á-CCaC from /a-CáCaC/. This /a-CáCaC/ is very close to the audible a-CáCCaC for adjectival nouns with <HL> melody in (568.b), whose medial cluster prevents Syncope. However, the small number of a-CáCCaC adjectival nouns and the less than transparent nature of Stem-Initial Syncope make this interpretation of the á-CCaC cases somewhat opaque. It is probably better to just recognize á-CCaC as an adjectival noun pattern.

In (568.c-g) we see various adjectival noun patterns with <L> melody, counting e and o as compatible with <L>. We get an apparent <LH> melody in (568.h). The example in (568.i) has <H> melody.

Certain adjectival nouns, especially those denoting precise hues, are used as **biological species** names ('white one' = 'addax antelope') or as color-specified terms for **domestic animals**. Adjectival nouns denoting life stages are commonly used as human nouns ('young man', 'old woman'). Sometimes the species terms have distinctive plurals in the masculine, e.g. unsuffixed ablaut Pl *i-mállal* 'addaxes' versus suffixal Pl *i-məllal-æn* 'white ones-MaPl' (both from MaSg *α-mállal*), or use a different stem altogether than the adjectival noun, e.g. *á-wræx* 'yellow (or light brown) one' versus *α-wæræra* 'light-brown donkey'.

8.8 Agentives

8.8.1 Deverbal agentives with -m-/n- Prefix

Many nouns are derived from simple verbs using the -m-/n- prefix. As with the Mediopassive prefix, -n- is used when the stem contains a labial {m b f}, otherwise we get -m-.

These nominals are basically **agentive**, most often denoting a regular or professional agent. This can be seen most clearly with transitive verbs. When the verb is intransitive, the agentive quality is weak, so here it might be more appropriate to speak of the resulting form as a **subject participle**. Still others correspond functionally to **adjectival nouns** (§8.7, above), see e.g. several examples in (569.h), below.

While the agentive is fairly productive, there are quite a few verbs for which I was unable to elicit an agentive. I did not succeed in eliciting agentives for any u/u-class -vCu- verb, for example. For -m-/n- nominals of the same or similar formal types, with senses other than agentive, see §8.9, below.

Examples involving light verbs as input are in (569). For subsets where no ablaut plurals are shown, only suffixal plurals are attested: MaPl *i-...-æn*. Even where ablaut plurals are shown, suffixal plurals are also possible. Feminine agentives are formed from the same stem shapes with the addition of the usual feminine prefixes and suffixes, e.g. FeSg *t-...(-t)-t*, FePl *t-i-...(-t)-en*.

(569) Agentives with -m- or -n- from Light Input Verbs

gloss	Imprt	Agentive
a. -vPQvC-, Agentive <i>æ-m-áPQaC</i>		
'split'	əftək	<i>æ-n-áftak</i> (A-grm)
'capture'	əkfəl	<i>æ-n-ákfal</i>
'guide'	əlwəy	<i>æ-m-álway</i>
'admonish'	ənʃəh	<i>æ-m-únʃah</i>
'graze freely'	əntəj	<i>æ-m-ántaj</i>
'stray'	ərdəl	<i>æ-m-árdal</i>

'pick up'	ət̪kəl	æ-m-át̪kəl
'show off'	əxyəz	æ-m-áxyəz
'create'	əxlək	æ-m-áxlək

b. -vPPvC-, Agentive ə-m-úpæC (dialectally æ-m-úpæC)

'be alive'	əddər	ə-m-údær
'pound'	əddəh	t-ə-m-ùdæh-t (female)
'sleep' (√ds)	əttəs	ə-m-úðæs
'hold' (√df)	əttəf	ə-n-úðæf
'be crazy'	əssəð	æ-m-úšæð (K-d)
'be big'	əssəm	ə-n-úšəm ('[an] elder')
'dwell'	əzzər	ə-m-úzær
'return'	əqqəl	ə-m-úræl

c. -vCvC- (and -vCvC-), Agentive a/e-m-æCaC and variants

'bite'	ədəd	a-m-ædad e-m-ádæd (A-grm) e-m-ædæd (Im)
'herd'	ədən	a-m-æðan æ-m-áðan (A-grm)
'beg'	ədəl	e-m-ædæl
'dig'	əxəš	a-m-æxəš e-m-æxəš (Im)
'pray'	ùməd [cf. PerfP -əməd-]	a-n-æməd
'hit'	əwət	a-m-æwət
'be fond'	ənəm	a-n-ænəm

d. -vCvC- (except -ujvj-), Agentive æ-m-áCaC- or a-m-æCaC

'give birth'	árəw	æ-m-áraw 'parent'
'carry'	áwəy	æ-m-áway
'watch over'	áwəl	æ-m-áwal
'wipe'	òmæs	a-n-æmas

e. -ujəj- (PerfP -ùjəj-), Agentive ə-m-íCæC

'be far'	újəj	ə-m-íjæj
----------	------	----------

f. -v(C)Cv-, Agentive e-m-æCC (FeSg t-e-m-æCCi-t-t)

'laugh' (√dz)	æʔs	e-m-æʔs (Pl i-m-æʔs-an)
'pardon'	æʔf	e-n-æʔf (Pl i-n-æʔf-an)
'kill'	æŋɣ	e-m-æŋɣ (Pl i-m-æŋɣ-an)
'eat'	ækš	e-m-ækš (Pl i-m-ækš-an) [feminine t-e-m-ækši-t-t]
'break'	ærz	e-m-ærz (Pl i-m-ærz-an)
'do, make'	æj	e-m-æjj (Pl i-m-æjj-an)

	'drink'	əsów	e-m-æsæww (Pl i-m-æsw-an)
	'read'	əʔár	e-m-æʔærr (Pl i-m-æʔr-an)
g. -vCv-, Agentive æ-m-áC			
	'butcher'	ǎš	æ-m-ǎš (Pl i-m-aš-an)
h. -v(C)CaC-, Agentive ə-m-í(C)CæC			
	'be ahead'	ìzar	ə-m-ízær
	'be equal'	ǎjdəh	ə-m-íjdæh
	'be sour'	ìsmam	ə-n-ísmæm
	'be red'	ìšwær	ə-m-íšwær
	'black'	ùzzaf	ə-n-ízzæf
			[agentive also e-n-ézzæf]
i. -vCCaC-, Agentive m-əCCeC			
	'be hungry'	ùllaz	a-m-éllez
j. -vCaw-, Agentive à-m-íCi (one example, lexicalized)			
	'accompany'	ìdaw	à-m-idi 'friend'
			[Pl i-m-ìdiw-æn]

The Sg vocalic prefix is e- before -CæCæC and -CæCC, and dialectally before -CæCaC and -CáCæC. Elsewhere we generally get æ-/ə- before -Cá... and a- before -Cæ... Most other dialects have æ- corresponding to (harmonized) T-ka ə- as vocalic prefix when the following syllable has a high V (569.b,e,h). Thus T-ka ə-m-úzæʔ 'dweller, inhabitant' (569.b) appears as æ-m-úzæʔ in most other dialects (T-md, R, A-grm).

A lexicalized agentive æ-n-áhaz 'close kinsman' has **-n-** instead of **-m-** although no labial is present, cf. -vʔvz- 'approach'. This agentive was recorded in A-grm, but a feminine counterpart t-æ-n-ðhaz-t was recorded for T-ka with the sense 'the approaches (to a location)'. The regular form æ-m-áhaz was recorded for R dialect.

The various agentive formulae do not lend themselves to a convincing unifying analysis, beyond the -m- (or -n-) prefix. As shown below, even this prefix is not always present in nominals functioning as agentives (§8.12.1).

Disregarding the vocalic prefix, and focusing on the types with <L> stem melody, we see a predominant vocalic sequence «a a» in (569.a) for -vPQvC- verbs, and in (569.d) for -vCvC- verbs. For -vCvC- verbs, on the other hand, (569.c) shows considerable variation between «a a», «æ a», «a æ», and «æ æ». This variation is partly dialectal, but it is also more lexicalized; for example, e-m-ædæl 'beggar' occurs in all dialects checked. My sense is that a-m-æCaC is now the productive or default pattern at least in T-ka.

The patterns e-m-æCC (569.f) and æ-m-áC (569.g) show the same <L> melody in the one audible stem V, but the underlying stems in question are V-final, and feminines like t-e-m-æ̀kši-t-t with stem-final i suggest that the

masculine agentives end in deletable /i/. This is really a <L H> stem melody, as found for the same verbs in the short imperfective. The presence of an underlying stem-final V in the masculine agentive is also indicated by Pl allomorph -an (from /-æn/), which results from VV-Contraction. This analysis shows that the surface final-syllable accent in e-m-æCC is an underlying penultimate accent like that in the other cases. Note that e-m-æjj ‘doer, perpetrator’ from -vju- geminates the j, resulting in the same e-m-æCC shape seen for inputs with a CC cluster. The plurals in (569.f), e.g. ì-m-ætʃ-an and ì-m-æjj-an, show **χ-Erasure** (§3.5.3.3), so the marked accent seen in the Sg is replaced by default antepenultimate accent.

In (569.f), e-m-æsæww and e-m-æxærr show **resyllabification** (by Final-CC Schwa-Insertion (44)) as with the VblN, hence (in T-ka) also with Epenthetic-Vowel Accentuation (70) and Stem-Final Gemination (71), with the difference that the epenthetic V appears as æ instead of the usual ə. This requires a different interaction between Final-CC Schwa-Insertion (44) and Melodic Association (82) than we get in the short imperfective (including Imprt) of the same stems: contrast agentive e-m-æsæww ‘drinker’ with Imprt əsáw (or əsú) from /æswi/, and agentive e-m-æxærr ‘reader, pupil’ with Imprt əxár from /æxri/. See (45) in §3.2.3.5, and §3.2.4 for analysis. The plurals, e.g. ì-m-æsw-an ‘drinkers’, are identical to those of the other agentives in (569.f) and show no sign of resyllabification.

There are also some agentives with <H L> stem melody, where the stem has a **high full V** in the first syllable and low æ in the second. The type ə-m-údær ‘living (being)’ in (569.b) reflects the replacement of -vPPvC- (with medial geminate) by a stem-variant -uPvC-. Similar replacements for -vPPvC- verbs are seen in their productive VblN úPəC, and in their causative derivatives with basic shape -s-uPvC-.

Several more cases with initial high V are in (569.e,h), this time with i instead of u. These are verbs whose imperfectives are based on -i(C)CaC- or -u(C)CaC-. In the case of ‘be ahead’, the agentive has a single z as in the imperfectives (Imprt ìzar), not the geminate seen in perfectives (PerfP -æzzar-), further strengthening the connection between the agentive and the imperfectives. However, ‘pray’ in (569.c), PerfP -ə̀mud- (dialectally -æ̀mud-) and Imprt ùmad, has the a-m-æCaC agentive.

a-m-əllez ‘hungry one’ (569.i) is rather isolated structurally. Because z is a BLC, -əllez would be another possible phonemicization. I recorded this agentive only for T-ka, but it is attested dialectally for Niger as “amə̀llez” alongside “ə̀mulə̀z” (LTF2 206).

à-m-idi ‘friend’ (569.j) is a high-frequency noun. It is also structurally isolated, for example in its default accent. It is probably still connectable to some extent with the verb ‘accompany’ (Imprt ìdaw, PerfP -æ̀ddew-), cf. abstractive t-ə̀mm-ìdə̀wa ‘friendship’ including the w.

Disregarding the isolated cases in (569.i-j), the following summary points can be made about agentives from light stems: -m- or dissimilated -n- prefix, marked penultimate accent (**χ-pen**), a tendency (in the few clear cases) to align

with the (short) imperfective rather than with the perfectives, and <L> vocalism except that a stem-initial high full V (u, i) can be retained (as i). There are additional, idiosyncratic V-length patterns in the various subtypes that could be represented by special $\bar{\chi}$ formatives, but meaningful generalization across subtypes is lacking. Both χ -pen, and the particular form taken by resyllabification including (in T-ka) Stem-Final Gemination (71) in e.g. agentive e-m-æwsæww (569.f), suggest at least a weak morphological connection with the VbIN.

Consider now the agentives from heavy input verbs in (570).

(570) Agentives with -m- or -n- from Heavy Input Verbs

gloss	Imprt	Agentive
a. -PvCvC-, Agentive e-m-æPPæCæC		
'boast'	bæwæj	e-m-æbbæwæj
'be sated'	yæwæn	e-m-æyyæwæn
'be filty'	mæðæs	e-n-æmmæðæs
'be resolute'	næhæð	e-m-ænnæhæð
'imitate'	næhæð	e-m-ættæðlæ (Pl i-m-ættæðlæ-læn)
b. -PvCu- (with augment -t), Agentive e-m-æPPæCi or a-m-æPPæCu		
'gather'	kæmæ-t	a-n-ækkæmu (Pl i-n-ækkæma)
'be coiled'	lækæ-t	e-m-ællæki (Pl i-m-ællæka)
'be hard'	zæwæ-t	e-m-æzzæwi (Pl i-m-æzzæwa)
c. -PvQRvC-, Agentive e-m-æPPéQRæC		
'be blind'	dæwæ	æ-m-æddéwæ (A-grm)
'peck'	kæwkæw	e-m-ækkéwkæw
'shake'	kæykæy	e-m-ækkéykæy
'die'	æmmæt	e-n-æmméttæn ('corpse')
		[agentive also e-n-æmméttæn; for 'die' see §7.3.2.1]
d. -PvQQvC-, Agentive e/æ-m-æPPáQQuC		
'witness'	wæyyæn	æ-m-æqqáyyun (R) [verb <Ar]
e. -CvCCv- (only clear example), Agentive e-m-æPPéCC		
'witness'	jæyh (gæh)	e-m-æjjéyh (Pl i-m-æjjuyha)
		[agentive also e-m-æjjæyh, e-m-æjjayhi]
f. -CvCCv- (with augment -t), Agentive e-m-æPPéCCi and variants		
'be freed'	dæwfæ-t	e-n-ædderfi (Pl i-n-æddurfa)
		e-n-æddærfe (A-grm)
'be farmer'	wærhæ-t	e-m-æqqrhi (Pl i-m-æqqrha)

- g. -PuCvC-, Agentive æ/e-m-æPPéCəC
 'be rude' bùdər æ-n-æbbédər
 æ-n-æbbédər (A-grm, K)
 'be afraid' hùrər e-m-æhhérər
 'walk past' rùbən e-m-ærrébən (R)
- h. -PuCCvC-, Agentive e-m-æPPéCCəC
 'pilgrimage' hùjjəj e-m-æhhéjjəj (Pl i-m-əhhújjəj)
 'be adult' kùlləf e-n-ækkélləf
 'envy' mùnsər e-n-æmménsər
 'inspect' sùjjər e-m-æsséjjər
 'be lazy' sùndəd e-m-æsséndəd
 æ-m-æsséndəd (A-grm)
 'hide' tùŋkəl e-m-ættéŋkəl (uncommon)
- i. -PuCCvC-, Agentive æ-m-æPPáCCul
 'be lazy' sùndəd æ-m-æssándud (R)
 'dupe' kùrrəs æ-m-ækkárrus (R)
 'hide' tùŋkəl æ-m-ættáŋkul (all dialects)
- j. -PuCu- (plus-t), Agentive e-m-æPPeCi
 'be strong' şùhə-t e-m-æşşehi (Pl i-m-əşşuha)
 'be cocky' ləwə-t e-m-əllewi (Pl i-m-əlliwa)
- k. -Cu(C)Cu- (plus-t), Agentive æ-m-æPPa(C)Cu
 'be shiftless' bùyə-t æ-n-əbbayyu (Pl i-n-əbbuyya)
 'be in trance' gürə-t æ-m-əggaru (A-grm)
 'inherit' küsə-t æ-m-əkkasu 'heir' (Pl i-m-əkkusa)
- l. -PvCvCCvC-, Agentive e-m-æPPæCéCCəC
 'dance' wələŋkən e-m-æwwələŋkən
- m. -CvCvCCv- (plus-t), Agentive e-m-æPPæCeCCi
 'disinter' şərəkkə-t e-m-əşşərekki (Pl i-m-əşşərukka)
 'be rude' fərəşşə-t e-n-æffəreşşi
 'be impolite' zələbbə-t e-n-əzzələbbi
- n. -CvCCvCu- (plus-t), Agentive e-m-æPPæCCəCi
 'rinse' ləlləwə-t e-m-əlləlləwi (Pl i-m-əlləlləwa)
 'file (metal)' zəzzəwə-t e-m-əzzəzzəwi (Pl i-m-əzzəzzəwa)
- o. -CvCuCvC-, Agentive e/æ-m-æPPæCáCaC
 'be needy' mərutər æ-n-əmməvútər (Pl i-n-əmməvútar)

p. -CvCvCvC-, Agentive e-m-æPCéCəC
 'sing' gèrurəs e-m-ægrérəs (Pl i-m-ægrúrəs)

These agentives show **Stem-Initial Gemination**, applying to the first C of the stem proper (following the -m- or -n- prefix). The only exception in (570) is e-m-ægrérəs 'singer', an elicited form recorded for T-ka but worth rechecking with other informants, and not yet verified for other dialects.

The Sg vocalic prefix is æ- or e-, with considerable dialectal and even intradialectal variation.

Short V's (either one or two in number) between the prefix -m- or -n- and the **diagnostic penultimate V** are nearly always æ, though there are rare dialectal variants with ə after the prefix: æ-n-əbbédər (570.g). Using the diagnostic V for labeling purposes, we have three vocalic patterns, most clearly characterized in C-final stems.

The first is an **æ-type** with vocalic sequence ending «...æ æ», consistent with stem-wide <L> melody, seen in (570.a). The second is an **e-type** with vocalic sequence ending «...e ə» consistent with <L H> melody, seen in (570.c,g,h,l,p). The third is an **α-type** with vocalic sequence ending «...a u», again consistent with <L H> melody, seen in (570.d,i). The α-type is limited in T-ka to verbs with at least one full V, but occurs in R even with all-short-V stems.

V-final stems in (570) are mostly augment verbs, but also include the non-augment verb in (570.e). The V-final stems generally have agentives ending in i or u regardless of whether the diagnostic penultimate V is æ, e, or α. For example, (570.b) with stem -PvCv- is the V-final equivalent of -PvCvC- (570.a), and the corresponding agentive has the same æ-type vocalism up until the final V, where we get u or i. We get a similar string of æ's followed by final i in (570.n). We get e-type vocalism with final u or i in (570.f,j,m), and α-type vocalism with final u or i in (570.k). e-m-æjjéyh in (570.e) shows deletion of a stem-final V.

Both the «æ α u» (α-type) and «æ e ə» (e-type) patterns are consistent with <L H> melody. In the case of «æ α u», there is a clean break between L vowels æ and α and the high vowel u. In «æ e ə», the æ is L, the ə is H, and the e is mid-height. Since in most relevant agentives there is no lexical i (or other lexical full V), we cannot speak here of V-Height Compromise, which elsewhere produces e from a mix of lexical i and an overlaid L melodic segment. In effect, e in «æ e ə» agentives results from the overlapping of the L and H components of the <L H> melody itself.

In (570), we find **default antepenultimate accent** in agentives of augment verbs, otherwise we get marked penultimate accent (**χ-pen**). In the case of (570.e), χ-pen applies prior to the deletion of the stem-final V. This accentual behavior is identical to what we get with VbIN's.

For superheavy verb stems, the agentive with -m- (or -n-) is of low productivity. Instead, these verbs typically use an unprefixed nominal form

with <L> melody as agentive. I refer to this formation as “Agent/Instrument” since some cases are instrumental rather than agentive (§8.12.1, below).

Marginal, lexicalized agentive-like forms with unusual vocalism are given in (571). The base verbs are intransitive verbs denoting handicaps or disease.

(571) Irregular Agentives

gloss	Imprt	Agentive	Agentive gloss
a. æ-m-áCCiC			
‘be sick’	ĩrhan	æ-m-úrhin	‘sick person’
‘be crippled’	əbdən	æ-n-ábđin	‘cripple’ (A-grm, K)
		[see also variant under (c)]	
b. æ-m-áCCoC			
‘crave’	ənsəy	æ-m-ánsoy	‘one who craves’
		[agentive also æ-m-ánsay (K-d)]	
c. a-m-æCCoC			
‘be crippled’	əbdən	a-n-əbdon	‘cripple’
‘blaspheme’	əkfər	a-n-əkfor	‘violent person’
‘be quick’	əmsəd	a-n-əmsod	‘quick one’
‘be pampered’	ənhøj	a-m-ənhøj	‘spoiled child’
‘be weak’	ərəkəm	a-n-ərəkəm	‘weak one’
d. a-m-æCoC			
‘be greedy’	ərəf	a-n-ərof	‘greedy one’
e. æ-m-áCiC (or æ-m-áCeC)			
‘be near’	əhəz	æ-m-áhiz	‘one who lives nearby’
f. e-m-éCCeC			
‘change’	mæskæl	e-m-éskel	‘crazy person’
g. e-m-áCCəC			
‘be thin’	ĩsdəd	e-m-əsdəd	‘very thin one’

In the case of ‘one who lives nearby’ (571.a), the regular agentive would be #æ-m-áhəz. However, a slightly irregular variant of this, namely æ-n-áhəz, is already in use in a specialized sense ‘close kinsman’.

Perhaps a-m-æhol ‘fearless one’ is another case involving o (cf. t-àhol-æt ‘fearlessness’), but the simple verb seems not to occur.

8.8.2 Passive agentives with -m-ætt- and -m-

This combination -m-ætt- is rare for mainly semantic reasons, but I was able to elicit (572.a-b).

- (572) a. e-m-ætt-ædæd
Sg-**Agent-Pass**-bite
'one who is bitten'
- b. e-m-ætt-éræw
Sg-**Agent-Pass**-give.birth
'relative, kinsman' [K-d]

The underlying verb in (572.a) is -vdvd- 'bite', cf. Imprt of passive t-ædæd. The vocalism of e-m-ætt-ædæd is consistent with that of underived verbs with the Imprt shape CæCæC, e.g. yæwæn 'be sated', Agentive e-m-æyyæwæn, see (570.a) in §8.8.1, above.

The verb -m-vlrvn- 'be inept, worthless' (PerfP -əmm-əlrvæn-) has a nominal α-m-ælvon 'worthless one'. Based on comparative evidence, it is likely that the nominal was originally based on an underived (unprefixed) verb. The verb as attested is arguably back-formed from the nominal.

There is no alternative productive derivation with "agent of passive" sense, but cf. §8.9, below.

8.8.3 Reciprocal agentives with -n-æmm-

The reciprocal agentive is illustrated in (573).

- | | | | |
|-------|------------|----------|---------------------------------|
| (573) | gloss | Imprt | Agentive |
| | 'be close' | nəm-ihəz | e-næmm-éhəz (Pl i-næmm-èhəz-æn) |

The usual sense is 'close kinsman'. It is indetermine whether the n of -næmm- is equatable with the -m- (-n-) of the simple agentives described in earlier sections.

In any event, the vocalism and prosodic structure of e-næmm-éhəz are parallel to those of e.g. agentive e-m-ækkéykəy 'shaker' (570.c) in §8.8.1.

For æ-næm-áhəz, usually in the Pl i-næm-àhəz-æn 'the one(s) who approach each other', see §8.12.1, below. This belongs to a type with <L> stem-vocalism, ̄x-f (final-syllable lengthening), and no Agentive prefix.

8.8.4 Causative agentives with -m-/n- plus -s-

Causative agentives are fairly easy to elicit, and some occur naturally in speech. Again, speakers were not always willing to produce agentives from the inflected verbs suggested, so there are some lacunae. Moreover, for superheavy verb stems, causative as well as underived, the unprefixated Agent/Instrument form is used; see §8.11.1, below.

(574) Agentives of Causatives

gloss	Imprt	Agentive
a. -s-vPQvC-		
‘inquire of’	s-əstən	e-m-æss-éstən
‘inform’	s-əlməd	e-n-æss-élməd
‘provoke’	s-əknəs	e-m-æss-éknəs
‘question’	s-əstən	e-m-æss-éstən
b. -s-vCvC-		
‘do sorcery’	s-əhər	e-m-æss-əhær (Pl i-m-æss-əhær-æn)
‘heat’	s-əkəs	e-m-æss-əkæs
‘peddle’	s-ətəj	e-m-æss-ətəj
c. -s-vCCV- (with deletable final V)		
‘teach’	s-ərər	e-m-æs-ærær (Pl i-m-æs-ær-an)
		[dialectally e-m-æs-ærær; resyllabified (§3.2.4, §3.3.2)]
‘cook’	s-æŋŋ	e-m-æs-æŋŋ (Pl i-m-æs-æŋŋ-an)
		[Pl variant i-m-æss-æŋŋa-tæn]
‘buy’	š-əns	e-m-æsš-əns (Pl i-m-æsš-əns-an)
d. -s-vCvCvC-		
‘harvest’	s-əhhəjəy	e-m-æs-həjəy
‘heal, treat’	s-əssəfər	e-n-æs-səfər
e. -s-vCvCCvC-		
‘wish’	s-əddərən	(?) e-m-æss-ədərən
		[informant unsure of agentive form]
f. -s-vCvC- with agentive e-m-æss-éCəC		
‘wash’	s-irəd	e-m-æss-érəd
‘tame’	s-inən	e-m-æss-énən (Pl i-m-æss-únən)
‘shut up’	s-üsəm	e-n-æss-ésəm
‘milk’	ʒ-ùzəj	e-m-æʒʒ-ézəj (Im)

- g. -s-vCvC- with agentive e-m-æss-áCuC
 ‘travel’ s-íkəl æ-m-æss-ákuł (Pl i-m-æss-úkał)
 ‘heal’ z-ùzəy æ-m-æzz-ázuy (Pl i-m-æzz-úzay)
 ‘milk’ z-ùzəj æ-m-æzz-ázuj (R)
- h. -s-uCCvC-
 ‘scratch’ š-ùkməš e-n-æšš-ékməš (Pl i-n-æšš-úkmaš)
 ‘be lazy’ s-ùndəd e-m-æss-éndəd (Pl i-m-æss-úndəd)
- i. -s-vsvCu- (+ -t)
 ‘strengthen’ š-əššuhə-t e-m-æšš-əšehi
- j. multiple prefixal derivatives
 ‘narrate’ -əss-n-álæs- e-m-æs-néləs (R)

From these data we can see that the (morpho-)phonology of causative agentives is closely related to that for underived causatives. Note the penultimate accent for unaugmented stems, versus the default antepenultimate accent in (574.i) for an augmented stem. The e in the penult also appears in several examples. There is competition between a type with ...éCəC and one with ...áCuC in (574.f-g).

8.9 Nonagentive nominals with -m- or -n-

In addition to agentive nominals, there are a number of nonagentive (instrument, product of action, etc.) nominals with prefix -m-, with the usual shift to -n- if the following stem contains a labial. Since these nominals are nonagentive, there is some ambiguity as to whether this prefix is the “same” as that in agentive nominals (§8.8, above), or the same as the Mediopassive derivational prefix.

First, there are some nonagentive nominals with agentive form (575).

(575) Nonagentive Nominals with the Form of Agentives

	verb gloss	stem	Nominal	gloss
a.	‘be sewn’	-vzmvy-	æ-n-ázmay	‘needle’
	‘lay out’	-vftvʀ-	æ-n-áftaʀ	‘guest’
			[bedding or a mat is laid out for a guest]	
	‘see’	-vnhvy-	t-æ-m-ànhay-t	‘mirror’
b.	‘be planted’	-vʀtv-	e-m-æʀt	‘tree’
	‘wear’	-vlsu-	e-m-æls	‘garment’

	'drink'	-vswv-	e-m-æsæww	'water source'
	'decorate'	-vɣmv-	t-e-n-æ̀ɣmi-t-t	'dye'
c.	'emasculate'	-vddvš-	ə-m-údæš	'emasculated one'
d.	'look to side'	-všlvm-	ə-n-úšlem	'a look to the side'

The plurals are also compatible with those of agentives (e.g. ʃ-m-æɣt-an 'trees'), except that 'water source' has, alongside regular Pl ʃ-m-əsw-an (R T-ka) an alternative Pl i-m-æsæww-an (A-grm). The latter Pl suggests that e-m-æsæww is no longer closely associated with agentives in that dialect.

Consider now (576).

(576) Nonagentive with Archaic Form of Agentive

verb gloss	stem	Nominal	gloss
'hear'	-vslv-	e-m-æsli	'voice'

While the form e-m-æsli is a good "agentive" shape for eastern dialects, for T-la and several other dialects a true agentive produced by productive rules would have been appeared as #e-m-æsæll (with Stem-Final i/A-Deletion (29) leading to resyllabification). This is another indication that a nonagentive "agentive" can separate itself morphologically from the agentive pack. One cannot tell whether T-ka e-m-æsli is an inherited archaism or a dialect borrowing.

A similar case retaining the final i is in (577), but here the nominal is semantically related not to the unprefix verb (-vktv- 'remember') but to a lexically and phonologically irregular Mediop stem (-n-vktv-).

(577) Another Nonagentive with Archaic Form of Agentive

verb gloss	stem	Nominal	gloss
'do by habit'	-n-vktv-	e-n-ækti	'habit'

In other cases, the nonagentive nominal is clearly distinguished by vocalism from agentives. A number of distinct patterns can be identified, none of them highly productive. The type labels show m- but of course this appears as n- if the stem contains a labial.

(578) Nonagentive Nominals with Distinctive Vocalism

verb gloss	verb	Nominal	gloss
m-əCCo (compare s-əCCo, §8.9)			
'eat'	-vkšv-	m-əkšo	'pest'
'do well'	-vknv-	m-əkno	[occurs in a cpd]
ə-m-úCəC			
'tie up'	-vqqvn-	ə-m-úrən	'bound animal'
m-əCCuC			
'see'	-vnhvy-	m-ənhuy	'something visible'
m-èCCaC (compare CèCCaC, §8.11).			
'be chosen'	-n-vfrvn-	n-èfran	'being chosen'
m-əCCaC			
'glue, affix'	-vɸrvr-	m-əɸrar	'glue, paste'
a-m-æCCaC			
'dwell'	-vzzvɣ-	a-m-æzzar	'tent cluster'
'be owed'	-vrwvs-	a-m-ærwas	'debt, credit'
		[A-grm: æ-m-úrwas, in Agentive form]	
ə-m-aCiC			
'count'	-vɸun-	ə-m-aɸin	'number (of ...)'
a-m-æCoC			
'tend (flock)'	-vɸvn-	a-m-æɸon	'grass, fodder'
a-m-əPPəCəC (etc.)			
'fight'	-vknvs-	a-m-əkkónəs	'fighter'
		e-m-əkkénnəs	
		[cf. VblN a-kónnəs 'fight']	
a-m-əCeC, t-a-m-əCeC-t, t-æ-m-əPPeC-t			
'employ'	-vfvr-	a-n-əfer	'employee'
		[cf. <Fr (un) ouvrier 'a laborer]	
'tie knot'	-vkrvs-	t-a-m-əkres-t	'knot' (A-grm)
'hold' (√ɸf)	-vɸɸvf-	t-æ-n-əɸɸtef-t	'enjoying holding' (K-d)

Another case worth mentioning is a-májin 'milk of cow that had been left un-milked for a few days'. In this case the m also occurs in the relevant verb,

-mvjvn- '(cow) be left un-milked', but the verb is arguably a frozen Mediopassive (-m-vjvn-).

8.10 Denominal agentives (-mæs-, -næs-, etc.)

Another agentive-like formation involves a prefix complex -mæs- or, if the following stem contains a labial {m b f}, -næs-. Further segmentation is opaque, but one might take the prefix complex as consisting of Agentive -m- (variant -n-) plus a prefix -s- that might be connected in some unclear way with Caus -s- or with Instrumental -s-. The Sg vocalic prefix varies between æ- and α-. Based on the small sample of attested forms for T-ka, it seems that the length of the vocalic prefix may be carried over from the prefix of the base noun in isolation, with æ- as default (i.e. when the base noun in isolation lacks a vocalic prefix).

For T-ka, the -mæs- element is subject to Short-V Harmony. In other words, its surface V in the Sg is determined by the V of the following syllable. As usual {i ə u} are high V's, while all other V's including {e o} are treated as low V's. In all dialects, we get -mæs- (-næs-) in unsuffixed ablaut plurals due to the H part of the <H L> plural melody.

The base of the derivation is a **VbIN or other noun** denoting a characteristic behavior. Any vocalic prefix before the inner noun is omitted. Accentuation of the compound respects a marked accent carried over from the base noun, and is otherwise the usual antepenultimate default accent.

(579) Masculine Denominal Agentives with -næs-

input noun	gloss	Agentive	gloss
a. no change in noun stem (accent on core stem)			
α-bæraj	'boasting'	α-næs-bæraj	'boaster'
α-bærid	'road'	α-næs-bærid	'guide' (A-grm Im)
α-bárij	'road'	α-næs-bárij	'guide'
t-α-bæ̃xor-t	'wealth'	α-næs-bæ̃xor	'rich man'
b. no change in noun stem (default accent on -mæs-)			
bəhu	'lie'	æ-næs-bahu	'liar'
æ-damu	'farming'	æ-næs-damu	'farmer'
æ-garu	'trance'	æ-mæs-garu	'subject to trances'
æ-gayyu	'work'	æ-mæs-gayyu	'worker' (K-d)
æ-yaru	'breast-smearing'	æ-mæs-yaru	'smearer'
s-ærho	'integrity'	α-mæs-s-ærho	'decent person'
æ-dala	'green one'	α-mæs-dala	'wearer of green'

- c. change in noun stem (<L> melody and $\bar{\chi}$ -f)
- | | | | |
|-----------------------|----------------|-------------------------|-------------------|
| α -dúbøn | 'marrying' | $\bar{\chi}$ -næs-dában | 'bridegroom' |
| (α -s-əddərfi | 'freeing') | $\bar{\chi}$ -næs-dærfa | 'freer of slaves' |
| $\bar{\chi}$ -jafu | 'doing evil' | $\bar{\chi}$ -næs-jafa | 'evil-doer' |
| (əłziwab | 'reply' [<Ar]) | $\bar{\chi}$ -mæs-jáwab | 'respondent' |
- d. change in noun stem (irregular)
- | | | | |
|---------|---------|-------------------------|----------------|
| t-ídətt | 'truth' | $\bar{\chi}$ -mæs-detti | 'truthful one' |
|---------|---------|-------------------------|----------------|

For A-grm I also recorded α -næs-bayyu 'shiftless one', which is problematically related to the abstractive nominal əbbəyyu 'shiftlessness'. I suspect that α -næs-bayyu is a mutation from Agentive α -n-əbbayyu 'shiftless one' (recorded for T-ka), but #ə-bayyu would be an acceptable VbIN form (in eastern dialects) for the verb -buyyu- (+ -t) 'be shiftless'.

There are two combinations in (579) glossed 'guide', reflecting two different stems for the base noun 'road'.

α -næs-bəraj 'boaster' is phonologically interesting, since the VbIN α -bəraj should in theory be α -bəraj (variant of α -bərəj with optional α in the final syllable, §8.6.1.4). The verb is -bvrvj- (PerfP -əbbəraj-). Since r is a BLC, the preceding short V is heard as [æ] whether it represents underlying /ə/ or /æ/. The fact that the prefix is -næs- instead of -nəs- indicates that native speakers have no clear sense that the first V of -bəraj is an underlying schwa.

The examples in (579.c-d) show modification of the form of the noun. In $\bar{\chi}$ -næs-dában 'bridegroom' and some other examples, we observe a <L> melody corresponding to <H> or <L H> in the noun. $\bar{\chi}$ -næs-dában also shows lengthening of the final syllable ($\bar{\chi}$ -f), though I cannot determine whether $\bar{\chi}$ -f is valid for the other cases in (579.c). In unsuffixed ablaut plurals, we get the usual <L H> melody overlain on the vocalism of the Sg, e.g. $\bar{\chi}$ -næs-dában 'bridegroom' and Pl i-nəs-dúbən 'bride and groom' (or 'bridegrooms'). In this particular case, the Pl is more common than the Sg, raising the suspicion that the Sg has been back-formed. Other plurals are i-nəs-durfa 'freers of slaves' and i-nəs-duma 'farmers'.

A specialized offshoot of the -mæs- derivation, for K-d dialect, is shown in (580).

(580) Sheep Dentition Terms

	Sg	Pl	gloss
a.	α -mæs-səđis	i-məs-səđas	'ram with complete dentition'
b.	α -m-əkkəzo	i-m-əkkəza	'ram with partial dentition'

These terms are used to describe age grades of (castrated) rams. (580.a) is morphologically straightforward, being based on the numeral səđis (variant of əđis) 'six'. The reference is to the full set of six lower front teeth in a mature

ram. Note that the s of -mæs- and the s of -sæðis form a surface geminate. In (580.b) we find a morphologically irregular counterpart based on the numeral ðkkoʒ ‘four’. One might have expected #a-mæs-ðkkoʒ or the like, but the actual form a-m-ækkæʒo has a geminate kk in roughly the same position as the geminate ss in (580.a). The shift of o to stem-final position is vaguely reminiscent of u-Spreading (§3.4.9.3). For numerals see §5.1.2.1.

8.11 Instrumental (and related) nominals with -s- or -s-vg- prefix

There is a fairly productive instrumental nominal form with -s- prefix, identical to the -s- prefix on causative verbs (§8.1.1). Like the Causative prefix, the Instrumental prefix assimilates to any sibilant in the following stem, reflecting sibilant harmony (§8.1.2). Compare also the Instrumental preposition əs or just s (with pronominal sær-). The nominals vary in sense from denoting true instruments to locationals and products of action. For a rare variant type s-əgg- with -g- after the -s- see the final paragraph of this section.

If a-sæyʌr ‘key’ is synchronically connectable to the verb -vrv- (PerfP -ðra-) ‘open’, we have a **y-extension**, with an extra y between the prefixal C and the stem proper. One might take the y as an extension of either the prefix (a-sæy-ar) or of the stem (a-s-æyʌr). A similarly rare and frozen **y-extension** for Mediopassive prefix -m-/n- was noted in §8.3 (-nvyufa- ‘be compared’).

One type of instrumental is **identical in form to a causative VbIN**. Perhaps this is best considered a semantic extension of a causative VbIN. However, some examples are lexicalized and not all have a corresponding causative verb in the dialects studied. A common logical type is ‘instrument of VERB-ing’, e.g. ‘broom’ for verb ‘sweep’. The sense can also be ‘product of VERB-ing’, as in ‘handle’ from ‘join (handle to implement)’, or ‘place for VERB-ing’, e.g. ‘storage area’ for verb ‘store’.

(581) Instrumental Nominals with <H> Melody in the Form of Masculine Causative Verbal Nouns

instrumental	gloss	related verb/VbIN and gloss
a. ə in final syllable, homophonous to attested causative VbIN		
a-s-ədləj	‘ornaments’	= VbIN ‘decorating’
a-s-əfrəð	‘broom’	= VbIN ‘cause to sweep’
a-s-əʀjəj	‘handle’	= VbIN ‘join (handle)’
a-s-əsləy	‘curdled milk’	= VbIN ‘cause to curdle’
a-s-ətʷər	‘storage area’	= VbIN ‘store’
b. like (a) but no attested homophonous VbIN		
a-s-əgrəs	‘tobacco cover’	[none]
a-s-əʀnəs	‘veil’	-vʀnvs- ‘put on veil’

α-s-əjbəs	'belt'	-vjbvs- 'tie belt'
α-s-əkməs	'cloth bag'	-vkmvs- 'tie (in garment)'
α-s-əkrəm	'livestock area'	-vkrvm- 'gather livestock'
α-s-ərwəy	'kneading stick'	-vrwvy- 'knead'
α-s-ərsəm	'slipknot'	-vrsvm- 'tie knot'

c. α in final syllable, homophonous to attested causative VbIN

α-s-ərdəl	'loan'	= VbIN 'give as credit'
	[variant α-s-ərdəl]	

d. like (c) but no attested homophonous VbIN

α-s-ənfəs	'water in mortar'	-vnfvs- 'moisten (grain)'
-----------	-------------------	---------------------------

e. i in final syllable, homophonous to attested causative VbIN

α-s-əkkík	'high spot'	= VbIN 'lift'
-----------	-------------	---------------

Most of these instrumentals have schwa (581.a-b) rather than α (581.c-d) in the final syllable, while the VbIN alternates more freely between the two variants. The instrumentals also usually have unsuffixed ablaut plurals. Thus instrumental α-s-əkməs has Pl i-s-əkmas, and instrumental α-s-ərwəy 'kneading stick' has Pl i-s-ərway. By contrast, true VbIN's have suffixal plurals (§8.6.1.6).

In the Sg, stem-final əy is often treated as i, and presumably stem-final əw would be treated as u (I have no instrumental examples of the latter), for purposes of suffixal and clitic allomorphy. Thus α-s-ərwəy 'kneading stick' can be treated as α-s-ərwī in e.g. α-s-ərwī-nin 'my kneading stick', alongside variant α-s-ərwəy-in, showing the postvocalic allomorph (˘)-nin and the postconsonantal allomorph (˘)-in.

The examples in (581) are masculine, but there are also some **feminine** counterparts, again usually lexicalized (582). These feminine instrumentals are more easily distinguished from simple VbIN's, though feminine VbIN's can be formed (often with instantiating sense).

(582) Instrumental Nominals in the Form of Feminine Causative Verbal Nouns

instrumental	gloss	related verb and gloss
t-α-s-əftəq-q	'bedding'	-vftvɣ- 'lay out (bed)'
t-α-s-əyrəs-t	'chisel'	-vyrvs- 'slaughter'
t-α-s-əkrəf-t	'awl'	perhaps -vkrvf- 'hobble'
t-α-s-ərsəm-t	'trap string'	-vrsvm- 'tie knot'
t-α-s-əstək-k	'padding'	-vstvɟ- 'put padding'
t-α-s-əjbəs-t	'wrap' (garment)	-vjbvs- 'tie belt'

t-a-s-əkət-t	'finger'	[none]
[Pl t-i-s-əkad]		
t-a-s-əqəəsən-t	'chewstick'	-s-vʀvsvn- 'clean teeth'
t-a-s-əss-ìwi-t-t	'(sent) package'	-s-vs-iwvy- 'send'

There are also a few cases where the nominal has the form of a doubly derived causative-mediopassive verb (583).

(583) Instrumental Nominals in the Form of Doubly Derived Verbal Noun

a-s-əmm-énəy	'sth to ride on'	-vnvy- 'mount'
a-s-əmm-úləy	'(bone) joint'	-ulvy- 'hang'
[variants ə-s-əmm-áli, etc.]		
a-s-əmm-ávrəs	'slaughtering place'	-vrvs- 'slaughter'

The remaining instrumentals (and locationals etc.) with prefix -s- discussed in this section are **distinct in form from VbIN's**. There are many variant shapes. In (584) I show the types with stem-wide <L> melody.

(584) Instrumental Nominals with <L> Melody

form	gloss	related verb and gloss
a. Ma æ-s-áCaC or s-àCaC, Fe t-æ-s-àCaC-t (from -vCvC-)		
s-àtaf	'blister beetle'	-s-utvf- 'spit'
æ-s-ánan	'animal being tamed'	-unvn- 'be tamed'
t-æ-s-àgat-t	'feather'	[none]
[variants t-a-s-əggit-t, t-a-s-əggət-t]		
b. Ma æ-s-àCCaC (from -vPQvC-)		
æ-s-áɣkas	'suckling animal'	-vɣkvs- 'suckle'
c. Ma a-s-æCCaC (from -vPQvC-)		
a-s-ændaw	'tip to milker'	-vnɟvw- 'discard'
d. Fe t-æ-s-ðCCa-t-t (from -s-uPQv-)		
t-æ-s-ðnfa-t-t	'rest'	-s-unfu- 'rest'
e. Fe t-a-s-əCaC-t		
t-a-s-əɣar-t	'non-milk cow'	Imprt ɣar 'be dry'
t-a-s-əkaf-t	'non-nursing cow'	Imprt ùkaf 'be inflated'
[herders blow into its vagina to induce nursing]		

f. other patterns ending in ...CaC		
s-æwaf	'scary thing'	-vwvf- 'be scared'
š-æʀšad	'waste, damage'	-vʀšvd- 'ruin'
s-àwaf (A-grm)	'being scared'	-vwvf- 'be scared'
a-s-æýar	'key'	(cf. -uʀu- 'open')
[arguably a-s-æý-ar with y-extension of prefix]		
g. Ma s-æPPæCCæC (frozen)		
s-æffæltæs	'snake sp.'	-s-vfvltvs- 'flatten'
s-æqqærnæn	'whooping cough'	[none]

Except in (584.g), a pattern with no vocalic prefix and with all short æ's, there is a full *a* in the final stem syllable (584.a-f). One might compare this to the alternative heavy VbIN pattern with *a* in this syllable. The type æ-s-ánkas from -vŋkvs- (584.b) resembles the agentive type æ-m-ánkas 'nursling'.

There are some similar cases where the <L> melody allows a stem-final *o*, in instrumental nominals from V-final verbs (585).

(585) Instrumental Nominals with Stem-Final *o*

form	gloss	related verb and gloss
a. Ma à-s-æCCo, Fe t- <i>a</i> -s-æCCo-t-t (from -vCCv-)		
à-s-æʀmo	'dye'	-vʀmu- 'apply henna to'
à-s-æklo	'place for mid-day'	-vklv- 'spend mid-day'
à-s-ækto	'souvenir'	-vktv- 'remember'
à-s-ælso	'garment'	-vlsu- 'get dressed'
à-s-ænso	'tomb'	-vnsu- 'lie down'
t- <i>a</i> -s-æʀto-t-t	'spot for pole'	-vʀtv- 'be planted'
t- <i>a</i> -s-ækto-t-t	'memento'	-vktv- 'remember'
b. Ma s-æCCo (from -vCCv-)		
s-æm̄do	'end'	-vmdv- 'be complete'
s-ænto	'beginning'	-vntv- 'begin'
s-ærho	'well-behaved one'	-vrhv- 'want, need'
c. Ma s-æPPayCo (from -vPvC-)		
s-æggayfo	'scarecrow'	-s-vwvf- 'scare'
d. a-s-æPPæCCo (from -PuCCv-)		
a-s-æhhæsko (R)	'decoration'	-huskv- + -t 'be pretty'
[variant a-s-èhhæsku, a-s-èhhæski]		

Another set of instrumentals and similar nominals has <L H> melody. Most cases involve a stem-final *u* (586.a).

(586) Instrumental Nominals with <L H> Melody

form	gloss	related verb and gloss
a. Ma æ-s-áCəC, Fe t-æ-s-ðCəC-t (from -uCvC-)		
æ-s-ádəd	'prop'	-udvd- 'press against'
æ-s-ájəð	'strap'	-ujvd- 'tap (donkey)'
æ-s-ákəl	'leg, paw'	-ukvl- 'tread'
æ-s-áləy	'hook'	-ulvy- 'hang'
æ-s-ánəs	'hobble rope'	-unvs- 'hobble (animal)'
æ-s-ásəx	'joining cord'	-usvx- 'join'
t-æ-s-äsəs-t	'tying strap'	-usvs- 'squeeze'
t-æ-s-əwəq-q	'obstruction' (K-d)	-uwvx- 'keep back'
b. Ma æ-s-áCəC, Fe t-æ-s-ðCəC-t (from -vPPvC-)		
æ-s-ádər	'staple food'	-vddvr- 'live'
æ-s-ádəf	'knife handle'	-vttvf- 'hold' (√df)
æ-s-ákəs	'substitute'	-vkkvs- 'remove'
t-æ-s-əti-t-t	'tent matting'	-vttvy- 'surround'
	[with /əy/ → i]	
c. Ma æ-s-áPQəC		
æ-s-áltəf	'shovel'	[none]
d. Ma ...əCCu		
æ-s-əjjarhu	'future status'	-vjrvh- 'understand'
	[cf. Caus -s-vjrvh- 'look']	
ə-s-əggəmmu	'covering (coat)'	-gəmmu- (+ -t) 'cover self'
ə-s-əkəkəðəmmu	'tweezers'	-kvdvmmu- (+ -t) 'pinch'
e. Ma e-s-éCəC (from augmented -CvCu-)		
e-s-ékər	'sourness'	-kvrυ- (-t) 'be sour'

The cases in (586) all have a full *α*, or in (586.e) *e*, in the penult and end either in əC or in stem-final *u*. These -uCvC- stems are treated as -iCvC- in causatives. In (586.a), the full *α* corresponds to a lexical full *V*. In (586.b), the input stem is -vPPvC-, but this is replaced by an alternative stem-shape -uPvC- in causatives and agentives. Therefore the instrumental shape æ-s-áCəC is appropriate for (586.a-b), as the L part of the <L H> melody converts both /i/ and /u/ to *α*.

For e-s-éCəC, see the common nominal pattern e-CéCəC (595.c) in §8.12.2, below.

The stems of the nominals in (587) have <H> melody.

(587) Other Instrumental Nominals with <H> Melody

form	gloss	related verb and gloss
a. Ma á-s-CəC, Fe t-ä-s-CəC-t (from -vCvC-)		
á-s-fəl	'roof material'	-vfv - 'be roofed'
á-s-jən	'animal area'	-vjvn - 'kneel'
á-s-hər	'lid'	-vhvr - 'shut, block'
á-s-kəḍ	'landmark'	[none]
t-ä-s-hər-t	'door'	-vhvr - 'shut, block'
t-ä-s-həṭ-ṭ	'bellows'	perhaps -vhvḍ - 'swear'
t-ä-s-jər-t	'flint cloth'	-vjvr - 'throw'
t-ä-s-ni-t-t	'vehicle'	-vnvy - 'mount'
[with /əy/ → i]		
b. Fe t-ə-s-əCCi-t-t (from -vCCv-, or -vCCvy-)		
t-ə-s-ənji-t-t	'channel'	-vnjvy - '(water) run'
[with /əy/ → i]		
t-ə-s-əswi-t-t	'drinking place'	-vswu-

In (587.a), the core stem is reduced to -CəC. One can argue that á-s-CəC is syncope from ə-s-əCəC. In T-ka and several other dialects, ə-s-əCəC is in fact the surface pronunciation of the corresponding causative VblN, so there is a clear opposition between causative VblN ə-s-əCəC and instrumental nominal á-s-CəC. In K-d, on the other hand, both patterns have fallen together as á-s-CəC.

The two examples in (587.b) have identical shapes, but 'channel' involves /əy/ monophthongizing to i, while 'drinking place' is based on a true V-final stem.

In (588), I present instrumentals that have i or u in the penult. When the final is a CvC syllable with short V, we get æ in (588.a), and ə in (588.b-c). In (588.d), one cannot distinguish between æ and ə because of the BLC.

(588) Instrumental Nominals with {i u}

form	gloss	related verb and gloss
a. Ma ə-s-íCCæC, Fe t-ə-s-íCCæC-t (from -vPQvC- or -uPQvC-)		
ə-s-ílkæw	'dipper, ladle'	-vlkvw- 'draw water'
b. Fe t-ə-s-íCəC-t (frozen)		
t-ə-s-íək-k	'Bergia herb'	[none]

- c. Ma s-ùCCəC (from -uPQvC-)
 s-ùnsəj 'poison' (Im) VblN a-s-únsəj 'sniff'
 [variant s-ənsəg]
- d. Ma a-s-íCCə/æC (from -vPQvC-)
 a-s-ínjəd 'turban' (T-md) -vnjvd- 'roll (turban)'
 [arguably a-s-ínjəd ; variant a-s-ənjəd]
- e. Ma a-s-úCeC (only example)
 a-s-údem 'last bit of liquid' -s-udvm- 'drain'

Finally, in (589) we observe three-part melodies. That in (589.a) is isolated, and it has no corresponding verb as input. The <HLH> pattern in (589.b) could be thought of as the trisyllabic counterpart of <LH> in (586), above.

(589) Instrumental Nominals with Complex Melodies

form	gloss	related verb and gloss
a. <LHL> sðhəjjar	'Chamaecrista herb'	[none]
b. <HLH> a-s-əkkákəl	'sole (of foot)'	-ukvl- 'tread'
ə-s-əss-ánjər	'obstacle'	-vnjvr- 'hide'
ə-s-əwwənáwən	'stair(s)'	-uwwn- 'go up'
	[usually in Pl form i-s-əwwəníwən]	
a-s-əbbárbər	'exit (place)'	-bvrbvr- 'go out'

In (590), the nominal (more or less instrumental) is related not to an underived stem, rather to a causative stem that already has the -s- prefix.

(590) Nominals Containing Causative -s-

form	gloss	related verb and gloss
a. t-ə-s-íCCəC-t (or ...CəC-t) t-ə-s-ínsəq-q	'whistle'	-s-unsvx- 'whistle'
	[arguably t-ə-s-ínsəq-q ; variant t-ə-s-únseq-q (A-grm)]	
b. Fe t-ə-s-ù(C)CeC-t (for Caus -s-u(C)CvC-) t-ə-s-ùtef-t	'(a) spit' (T-md)	-s-utvf- 'spit'
t-ə-s-ùdmer-t	'(a) reply'	-s-udmvr- 'reply'

For *s-èmv̄ar* ‘respect’ and *s-èrkam* ‘domination’, see (595.a), below.

A type in *-s-əgg-* with a velar stop after the prefixal *-s-* is attested but rare. The only clear case is *α-s-əgg-əfəy* ‘funnel’ (Pl *i-s-əgg-əfəy*), compare verb *-vffvy-* ‘pour; be poured’. The *g* is geminated as though in a ShImpf verb form with Caus *-s-* prefix. For A-grm I recorded this as *α-s-əgg-əfi* (Pl *i-s-əgg-əfa*), where the Pl form (without final *y*) shows that the Sg has been reanalysed. A possible relic of this formation is *i-səggūḡḡan* ‘footholds’ (Pl only). The formation is known in Algerian Tuareg, e.g. DTF 1.335 “*äseggeffer*” glossed as ‘cachette’ (i.e. ‘hiding place’), cf. verb *-vffvr-* ‘hide’. Since *gg* can reflect **w w*, a connection with the rare Causative prefix allomorph *-svw-* is possible (§8.1.1).

8.12 Other nominals

8.12.1 Agent/instrument nominal with <L> melody

One common nominal formation is closely related to a VbIN of the type characteristic of superheavy stems. The VbIN has MaSg *α-* (or occasionally *e-*) prefix, <H> melody, and (where permitted by the syllabic structure) Syncope of schwa in an open stem-initial syllable. The Agent/Instrument nominal, by contrast, has <L> rather than <H> melody, and **does not syncopate**; the MaSg prefix can be *α-* or *e-*; and frequently a final-syllable **short V is lengthened** (\tilde{x} -f). Examples are in (591). In (591.c), note that the four syllables of the <L> nominal, in this case reduplicated, have vocalic sequences «*æ α æ α*», where both parts of the reduplication lengthen the second V.

(591) Agent/Instrument Nominals with <L> Melody from Underived Stems

verb gloss	VbIN	<L> nominal	gloss
a. no V's lengthened			
‘sneak’	<i>α-dkúkəm</i>	<i>æ-dækúkəm</i>	‘one who sneaks’
‘be flabby’	<i>α-bkə̀wkəw</i>	<i>t-e-bækə̀wkəw-t</i>	‘tassels’
‘rattle’	<i>α-ɣrə̀wrəw</i>	<i>α-ɣærə̀wrəw</i>	‘acacia pod’
		[also <i>α-ɣærə̀wrəw</i>]	
‘dream’	<i>α-mnə̀wnəw</i>	<i>e-mænə̀wnəw</i>	‘dream’ (A-grm)
‘be confused’	<i>α-mtə̀ll</i>	<i>e-mætə̀ll</i>	‘misrecognition’
		[verb stem <i>-mvtvllv-</i>]	
b. final-syllable V lengthened			
‘stutter’	<i>α-hdə̀ndən</i>	<i>α-hədə̀ndan</i> (R)	‘stutterer’
‘chatter’	<i>α-klə̀stəf</i>	<i>α-kələ̀stəf</i>	‘chatterer’
‘creep’	<i>α-lmúməs</i>	<i>æ-ləməməs</i>	‘creeper’
‘shine’	<i>α-mlə̀wləw</i>	<i>α-mələ̀wləw</i>	‘sth that shines’

'chatter'	a-mléstər	a-mæléstər	'chatterer'
'slur'	a-həddóddəʃ	a-hæddæddaʃ (R)	'one who slurs'
'be slippery'	a-zəlbábbəy	a-zælbæbbay	'sth slippery'

c. reduplicated nominals with two lengthened V's, type -PæQaRPæQaR

'pound'	a-jrəfjəɾəf	a-jærafjæraf	'pounder'
'smile'	a-kməzəkəməz	a-kæmazkæmaz	'smiler'
'chomp'	a-kɾəwkəɾəw	a-kærawkæraw	'chomper'
'chatter'	a-mləɾmələɾ	a-mæləɾmæləɾ	'chatterer'
'have disease'	a-wɾəɾwəɾəɾ	t-a-wæɾəɾwæɾəɾq-q	'hepatitis'

d. from augmented verb stems (with -t in inflected forms)

'hide'	à-bkəmmi	a-bækæmma	'one who hides'
'beat (music)'	à-ɾləbbi	a-ɾæləbba	'large tomtom'
'glimmer'	à-sməqqi	a-sæmæqqa	'bright spot'
'file (metal)'	a-z-əzzəwi	a-z-əzzəwa	'file (tool)'
'nibble'	a-jmənjəmi	a-jæmənjəma	'nibbler'
'stir up'	a-ɾləŋɾili	t-a-ɾləŋɾələ-t-t	'sediment'
'roll'	a-bləmbulu	a-bæləmbala	'one who rolls'

[also æ-bæləmbala]

e. irregular

'stir (milk)'	a-frənfuru	e-færənfær	'stirring stick'
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The same <L> melody Agent/Instrumental nominal is also available for verbs with a derivational prefix such as **Causative** -s- (592). The same C₁-Gemination that applies in the causative VbIN (and ShImpf) occurs in the <L> nominal. This formation competes with the combination of Agentive -m- (-n-) plus causative stem exemplified in (574) in §8.8.4, above. In general, the unprefixed pattern (592) is normal for the causative stems based on superheavy input stems, though there is some overlap.

(592) Agent/Instrument Nominals with <L> Melody from Causative Stems

verb gloss	VbIN	<L> nominal	gloss
'lean on'	a-s-əttəhəl	a-s-əttæhal	'(a) prop'
'stick out rear'	a-s-əkəkəttəy	a-s-əkættay	'bustard sp.'
'smile'	a-s-əkəkəryəs	a-s-əkəkæryas	'smiler'
'free'	a-s-əqqəwili	a-s-əqqəwala	'one who frees'
'close (door)'	a-s-ənnəkəbbi	a-s-ənnəkəbba	'one who closes'
'free'	a-s-əqqəwili	a-s-əqqəwala	'one who frees'
'organize'	a-s-ənnəmənnək	a-s-ənnæmænnək	'organizer'

There is also an attested Agent/Instrument <L> nominal with **Reciprocal** -nvm-. For semantic reasons it is normally found in the plural (593). The Sg æ-n-æm-ðhaz is not common but can be elicited.

- (593) i-næm-ðhaz-æn
 Pl-**Recip**-approach-MaPl
 '(the) ones who approach (=are near) each other'

A more common (and more regular) form is agentive e-næmm-éhæz 'close kinsman' (cf. also æ-n-ðhaz 'close kinsman' in A-grm).

The Agent/Instrument <L> pattern can also apply to **complex prefixal derivations** involving e.g. Caus -s- preceding Reciprocal -nvm- or Mediopassive -m- (-n-). Examples are in (594). Note the final-syllable a.

- (594) Agent/Instrument Nominals with <L> Melody from Complex Prefixal Derivations

verb gloss	VbIN	<L> nominal	gloss
a. causative of Reciprocal -nvm-			
'adjust'	α-s-ənnəm-éhəl	α-s-ənnæm-эхал	'adjuster'
	[VbIN also α-s-ənnəm-éhəl]		
b. causative of Mediopassive or Reciprocal -m- (-n-)			
'pour'	α-s-ənn-эффəy	α-s-ənn-эффəy	'one who pours'
'tie'	α-s-əmm-эхрəs	α-s-əmm-эхкрас	'one who ties rope segments'

8.12.2 Other nominal derivations

Other nominal formations, in most cases not involving a derivational prefix, are listed below with the available examples. Several of these patterns involve feminine morphology. Some of these resemble patterns that have a derivational prefix. For example, the pattern á-CCəC could be connected with á-s-CəC (§8.11).

In (595) I give a number of patterns involving e after the first C of the stem.

(595) Nominals with -Ce...

nominal	gloss	related verb and gloss
a. CèCCaC (from -CvCCvC- or -CvCCvC-) [all known exx]		
dèrhan	'(a) wish'	-durhvn- 'desire'
sèndad	'laziness'	-sundvd- 'be lazy'
wèzzan	'distrustful look'	-wvzzvn- 'be wary'
s-èmɣar	'respect'	-s-vmɣvr- 'make bigger, respect'
s-èrkam	'domination' (K-d)	-s-vrkvm- 'hold sway over'
n-èfran	'being chosen'	-n-vfrvn- 'be chosen'
t-èzzar	'1st daytime prayer'	-æzzar- 'be in front' (PerfP)
b. e-CéCCaC (from -CvCCvC-)		
e-ménɖar	'returning in PM'	-mvnɖvr- 'return home in PM'
c. e-CéCəC (from -vPQvC- or -CvCvC-)		
e-dékəl	'underside of hand'	-dukvl- 'have sore feet'
e-férəs	'piece'	-vfrvs- 'cut'
e-rétəs	'cut-off branch'	-vrtvs- 'cut off'
e-kéfəl	'captive'	-vkfvl- 'capture'
e-kénəf	'cooked meat piece'	-vknvf- 'cook (meat) in hot sand'
e-kérəs	'shapely one'	-vkrvs- 'be shapely'
e-lérəs	'overdue foetus'	-vlrvs- 'lie low'
e-nébəh	'sth left to soak'	-vmbvh- 'soak'
e-nékəɖ	'castrated male'	-vɳkvd- 'castrate'
e-nékər	'regrown grass'	-vɳkvr- 'get up'
e-nésər	'regrown tree'	-vnšvr- 'regrow'
e-rétəy	'metis'	-vtrvy- 'be mixed'
e-téwər	'sth kept'	-vtwvr- 'keep'
d. e-CéCi (from -vPQvy-)		
e-šéri	'new one, novelty'	-všrvy- 'be recent'
	[for e-šérəy]	
e. e-CéCu (from -vCCv-, u/u subclass)		
e-nédu	'churned milk'	-vndu- 'churn'
f. t-è-CeCe (from -vCvC-), with Pl t-i-CiC		
t-è-deje	'(a) jab; sharp pain'	-vdvj- 'jab'
t-è-jere	'(a) throw; projectile'	-vjvr- 'throw'
t-è-wete	'(a) blow'	-vwt- 'hit, strike'

CèCCaC in (595.a) is a kind of VblN, as is the type in (595.b) with a vocalic Sg prefix. Perhaps *nèrbaš* 'kicking out' (A-grm) belongs in (595.a) but no related verb is known. The vowel sequence «e a» in (595.a) is the same as that in the alternative VblN type éPPaC for -vPPvC- verbs, e.g. *èddam* 'drip(ping)' (546.a) (§8.6.1.2). (595.a-b) are compatible with stem-wide <L> melody. The important nominal pattern e-CéCəC in (595.c), along with its variants (595.d-e), is more of an object or product-of-action nominal. The type (595.f) functions as an instantiating VblN for -vCvC- stems (547.a).

The nominals in (596) have ə as the only non-stem-initial V.

(596) Nominals with Stem-Medial ə

nominal	gloss	related verb and gloss
a. á-CCəC, t-ə-CCəC-t (from -vPQvC- or in one case -CvCCv-)		
á-ɖkəɾ	'anger'	-ɖukɾv- (-t) 'be angry at'
á-ɖrəʒ	'sauce'	-vɖrvʒ- 'mix with water'
á-ršəj	'large herd'	-vršvj- 'be frequent'
t-ə-ɖləm-t	'oppression'	-vɖlvɪm- 'oppress'
t-ə-dhəl-t	'help'	-vdhvl- 'help'
t-ə-ftəq-q	'laying out'	-vftvɾ- 'lay out'
t-ə-ɾdər-t	'betrayal'	-vrɾtvɾ- 'betray'
t-ə-rkəb-t	'departure'	-vrkvb- 'depart'
t-ə-rkən-t	'halt'	-vrkvɪn- 'stop'
t-ə-rsəm-t	'slipknot'	-vrsvɪm- 'tie slipknot'
t-ə-ršəʔ-t	'dropping'	-vršvɖ- 'defecate'
t-ə-ršəm-t	'diarrhoea'	-vršvɪm- 'expel diarrhoea'
t-ə-sləʔ-t	'carcass section'	-vslvɖ- 'cut up at joints'
b. t-ə-CCi-t-t (from -vCCvy-, elsewhere a VblN pattern)		
t-ə-rʒi-t-t	'short-cut'	-vrʒvy- 'take short-cut'
c. t-əWCəC-t (like preceding but from -vPPvC-)		
t-əwdəq-q	'chasing away'	-vddvɾ- 'chase away'
t-əwdək-k	'direction'	-vddvk- 'settle (somewhere)'
t-əwdəm-t	'drip'	-vddvɪm- 'drip'
d. á-CəCC (from -vPQvC-), perhaps a variant of á-CCəC		
á-fərs	'cut-off piece'	-vfrvs- 'cut forcefully'

(596.a) shows that á-CCəC or feminine t-ə-CCəC-t can function as a secondary VblN (especially in feminine instantiating VblN's), or as an associated nominal (e.g. product-of-action). This pattern is common with -vPQvC- verbs. (596.b) is a variant of this with y as final C. (596.c) is another variant, with -vPPvC- verbs, for which we have seen a stem variant -uPvC- in

causative and other derivatives; here we get *aw* instead of *u*. (596.d) is evidently a distinct, though minor, formation with product-of-action sense.

The nominals in (597) have a «æ e» vocalic sequence, compatible with <L> melody. As with many nouns whose stems begin in *-Cæ...*, the Sg vocalic prefix is *-e-*.

(597) Nominals with «æ e» Vocalic Sequence

nominal	gloss	related verb and gloss
t-e-CæCeC-t (from -vPQvC-, -CvCvC-, etc.)		
t-e-dæber-t	'grey spots'	PerfP dæbar- 'be grey'
t-e-mæhet-†	'threat'	cf. Caus -s-vmvhvđ- 'threaten'
t-e-mæter-t	'formal advice'	-mvtvr- 'be advised'
t-e-ræješ-t	'walking'	-vrjvš- 'walk'
t-e-tæhel-t	'prop'	cf. Caus -s-vtvhvl- 'lean on'
t-e-CæPPeC-t (from -vPQvC-)		
t-e-kærres-t	'knot'	-vkrvs- 'tie knot'

The examples in (597) vary between secondary VblN's and product-of-action or similar nominals. The same is true of many of the nominals in the next set, (598), which have a similar vocalic sequence «ə e». The Sg vocalic prefix is *-a-*.

(598) Nominals with «ə e» Vocalic Sequence

nominal	gloss	related verb and gloss
a. a-PəQQeC and t-a-PəQQeC-t (from -vPQvC- or in two cases -PuQQvC-)		
a-ræffek	'(a) bruise'	-vrfvk- 'be bruised'
a-sájjel	'loss of animal'	-sujjvl- '(animal) stray'
t-a-bædder-t	'travel gift'	-vbdvr- '(traveler) offer gift'
t-a-đækkel-t	'handful'	-vʔkvl- (= -vkkvl-) 'take'
t-a-ræbber-t	'kick'	-vrɔbvr- 'kick'
t-a-kærres-t	'trickery' [A-grm]	-vkrvs- 'dupe'
t-a-kærres-t	'knot place'	-vkrvs- 'tie (knot)'
t-a-lækkew-t	'(a) scoop'	-vlkw- 'scoop, draw (water)'
t-a-nædder-t	'jump'	-vnđvr- 'jump'
t-a-næffež-t	'punch'	-vnfvž- 'punch'
t-a-ræbber-†	'insult'	-vrbd- 'insult'
t-a-ræqqem-t	'cry of "hey!"'	-vrɔvm- 'cry "hey!"'
t-a-rækkeb-t	'departure'	-vrkvb- 'depart'

t-a-rə̀kkeṭ-t	'hop'	-vrkvd- 'hop'
t-a-rə̀mmeq-q	'fright'	-vrmvɣ- 'be frightened'
t-a-sə̀tteq-q	'(a) slap'	-vstvɣ- 'slap'
t-a-sə̀rreṭ-t	'line, stripe'	-vsrvd- 'draw'
t-a-tə̀kkel-t	'handful'	-vtkvl- 'take in hand' (√dkl)
t-a-zə̀lley-t	'part in hair'	-vzlvy- 'separate'
t-a-lə̀mmez-t	'chance event'	-lummvz- 'have by chance'
b. t-a-CCə̀CCe-t- (from -CvCvCCv-)		
t-a-ksə̀nne-t-t	'vaccination'	-kvsvnnu- (-t) 'vaccinate'
t-a-srə̀mme-t-t	'(a) sip'	-svrvmmu- (-t) 'sip'
t-a-twə̀qqe-t-t	'(a) pinch, dram'	-tvwvqqv- (-t) 'take handful'
t-a-wlə̀qqe-t-t	'quick lick'	-wvlvqqv- (-t) 'taste by licking'
c. t-a-Pə̀QQe-t-t (from -vPQv-, a/ɪ subclass)		
t-a-nə̀qqe-t-t	'sacrificial animal'	-vɣɣv- 'kill'
	[variant ...i-t-t]	

There are also some examples similar to those in (598), but with full u or i, not ə (599). The Sg vocalic prefix is now -ə- (T-ka), dialectally -æ-.

(599) Nominals with «u e» or «i e» Vocalic Sequence

nominal	gloss	related verb and gloss
a. ə-CùCCeC (from -CvCCvC- or -CuCCvC-)		
ə-túktek	'whisper'	cf. Caus -s-vtvktvk- 'whisper'
æ-túnjel (K-d)	'invisibility'	-tuŋkvl- 'be invisible'
b. t-ə-CùPPe-t-t (from -CuPPv-)		
t-ə-dùqqe-t-t	'poke'	-duqqv- (-t) 'poke'
t-ə-ɣùbbe-t-t	'gulp'	-ɣubbu- (-t) 'gulp'
t-ə-mùlle-t-t	'kiss'	-mullu- (-t) 'kiss'
t-ə-küsse-t-t	'whistling'	Caus -s-vkvssv- + (-t) 'whistle'
t-ə-tùbbe-t-t	'(a) whack'	-tubbu- (-t) 'whack'
t-ə-zùmme-t-t	'helping hand'	-zummv- (-t) 'help out'
c. t-ìPPeC-t (from -vCvC-)		
t-ìddek-k	'(a) sting'	-vdvj- 'sting'

The patterns in (597-9) have featured e as final-syllable V. There are also a number of similar cases with i instead of e. Examples are in (600). In some cases, where phonetic [ɛ] is followed by a BLC like r or ɣ (q), one cannot

determine whether we are dealing with phonemic *i* or *e*, so in transcription of such cases I rely on parallelism with other similar nominals not involving a BLC.

(600) Nominals with *i* as Final-Syllable Vowel

nominal	gloss	related verb and gloss
a. t-e-CæCi-t-t (from -CvCv-)		
t-e-dæwi-t-t	'joy'	-dvwu- (-t) 'be joyful'
t-e-ræri-t-t	'(a) shout'	-vrvu- 'call'
b. t-e-CæCCi-t-t (from -CvCCv-)		
t-e-dærbī-t-t	'speed'	-dvrbv- (-t) 'gallop'
t-e-n-æymi-t-t	'dye'	cf. -vymu- 'apply henna'
t-e-ræfti-t-t	'sth frightening'	-rvftv- 'have a scare'
c. t-æ-CùCi-t-t (from -CvCv-)		
t-æ-dùbi-t-t	'being able'	-dubv- (-t) 'be able'
t-æ-dùki-t-t	'calming down'	-dukv- 'calm down'
t-æ-dùmi-t-t	'sowing'	-dumu- (-t) 'sow'
t-æ-fàti-t-t	'failing'	-futv- 'fail'
t-æ-làwi-t-t	'brash action'	-luwv- 'act brashly'
t-æ-màyi-t-t	'thanking'	(ShImpf) -imoy- 'thank'
d. t-æ-CùCiC-t (from -CuCvC-)		
t-æ-kùyis-t	'audacity'	-kuyvs- 'dare'
e. t-æ-CàPPiC-t (from -CuPPvC-)		
t-æ-hùššil-t	'duty'	-huššvl- 'be obligatory'
t-æ-mùňšiq-q	'envy'	-munšvɤ- 'be envious'
t-æ-tàjjir-t	'money for grain'	-tujjvr- 'bring to market'
f. t-æ-CàCCi-t-t (from -CuCCv-)		
t-æ-tàhmi-t-t	'suspicion'	-tuhmv- 'suspect'
g. t-à-CCiC-t (from -vPQvC-)		
t-à-ɣlif-t	'sth entrusted'	-vɣlvf- 'be entrusted'
	[Pl t-i-ɣóllaf]	
h. t-æ-CòPPi-t-t (from -CuPPv-)		
t-æ-fòqqi-t-t	'sprout'	-fuqqv- (-t) 'sprout'
i. a-CóCiC (from -vPQvC-)		
a-máhis	'riposte'	-vmhvs- 'reply in kind'

- j. t-æ-CCəCi-t-t (from -CvCvCu-)
t-ə-ɾl̩li-t-t ' (a) cry for joy' cf. Caus -s-vɾvɾlv- (-t)
- k. t-a-CCəCCi-t-t (from -CvCvCCv-)
t-a-hnəqqi-t-t 'hiccup' -hvnvqqv- (-t) 'hiccup'
- l. t-a-CəCCi-t-t (from -CuCCv-)
t-a-jəjji-t-t ' (a) load' (K-d) -jujju- 'load'
- m. t-ɪPPiC-t or t-əPPiC-t (from -vPPvC-)
t-ɪqqit-t 'cauterizing mark' -vqqvd- 'cauterize'
- n. t-ɪPQi-t-t or t-əPQi-t-t (from -vPvQ-)
t-ɪzmi-t-t 'slander' -uzvm- 'slander'
- o. t-ə-CūCCiC-t (from -CuPPv- and others)
t-ə-buššir-t 'good news' -buššvr- 'give good news'
t-ə-kūrris-t 'trickery' -vkrvs- 'dupe'
t-ə-tūɾfir-t 'saying "oh my!"' Caus -s-vtvɾfv- 'say "oh my!"'

Cases where the final syllable of the stem has u are in (601).

(601) Nominals with u as Final-Syllable Vowel

- | nominal | gloss | related verb and gloss |
|--|------------------------------|---|
| a. t-ä-CCu-t-t (from -vCCv-, a/u subclass)
t-ä-flu-t-t | 'nut half' | -vflu- '(nut) be split' |
| b. á-CCuC (from -vPQvC-)
á-ɬfus (√dfs)
á-ɾrud | 'full udder'
'total' | -vɬfvs- '(udder) be full'
-vɾrvd- 'reach maximum' |
| c. a-CáCuC, t-a-CəCuC-t (from -vPQvC- or -CvCvC-)
a-kérus
t-a-bəkkun-t | 'shapely one'
'(a) stack' | -vkrvs- 'be shapely'
-bvkv- 'be stacked up' |
| d. a-PəQQuC, t-a-PəQQuC-t (from -vPQvC- or -PuQQvC-)
a-rəssuɖ
t-a-kəmmus-t | 'pus'
'sth tied up' | -russvɖ- 'be infected with pus'
-vkmvs- 'tie in corner of garment' |
| e. t-æ-CəPPu-t-t (from -CuPPv-)
t-æ-fəqu-t-t | 'sprout' (T-ka) | -fuquv- (-t) 'sprout' |

Consider now the nominals with strict stem-wide <L> in (602). The type in (602.a) is interesting, since the initial *a* is part of the stem, not a vocalic prefix. It is therefore not affected by Prefix Reducation, as in *dær ðmæhæš* ‘in the dispersion’, and is carried over to the Pl, as in *amæhæš-æn* ‘dispersions’. ‘Blink’ in (602.b) has a form not very different from that of Agent/Instrument nominals with <L> melody (§8.12.1, above), but those nominals (if based on V-final stems) end in *a* rather than in *e*. The pattern in ‘stretched tent’ (602.c) is rather isolated.

(602) Other Nominals with Strict <L> Melody

nominal	gloss	related verb and gloss
a. ðCæCæC (with invariant stem-initial <i>a</i>)		
<i>ðmæhæš</i>	‘dispersion’	-mvhvš- ‘disperse’
<i>ðn-æwæl</i>	‘(a) stroll’	-n-vwv - ‘stroll’
[the nasal here is an irregular, frozen Mediop prefix]		
b. e-CæCæCCe (from -CvCvCCv-)		
<i>e-šæfælle</i>	‘(a) blink’	-švfvl - (-t) ‘blink’
c. æ-CáCCaC (from -CvCCvC-)		
<i>æ-ráyray</i>	‘stretched tent’	-rvyrvy- ‘stretch out’

In (603) I give a number of feminine nominals ending in ...*e* or ...*a*, probably an **archaic Feminine ending**, also seen in some feminine VbIN patterns (541.a-e, 562.a-c,g, 566). Some of the forms in (603) function as secondary VbIN’s.

(603) Feminine Nominals with Final ...*e* or ...*a*

nominal	gloss	related verb and gloss
a. t-ð-CuCe (from -CvCvw-)		
<i>t-ð-hure</i>	‘occupation’	-hvrvw- ‘produce’
b. t-ð-CoCe (from -vCvC-)		
<i>t-ð-hoðe</i>	‘oath’	-vhvð- ‘swear’
c. t-ð-CCəCa (from -vPQvC-)		
<i>t-ð-ɣləla</i>	‘eternity’ (A-gram)	-vɣlv - ‘endure’
d. t-ð-CæCCa (from -vPQvC-), see also as VbIN (§8.6.1.2)		
<i>t-ð-ɣæbra</i>	‘kicking’	-vɣbvr- ‘kick’

Another pattern that can be used either as a VbIN or in more lexicalized nominals is that shown in (604.a). The type in (604.b) seems to be a variant of this.

(604) Nominals Based on -ePPaC- and -ePPeC-

nominal	gloss	related verb and gloss
a. éPPaC, t-èPPaC-t (from -vPPvC-), also a VbIN pattern (§8.6.1.2)		
éttab	'eyedrops'	-vttvb- 'apply eyedrops' (√df)
éqqar	'thunder'	-vqqvɣ- 'thunder'
éqqad	'forest fire'	-vqqvd- 'cauterize'
t-èddam-t	'(a) drop'	-vddvm- 'drip'
b. t-èPPeC-t, t-èPPaC-t (from -vPPvC-)		
t-èddes-t (T-ka)	'(a) move'	-vddvs- 'play game'
	[in other dialects: t-èddas-t]	

A number of minor nominal types, some closely related to those already presented, are given in (605).

(605) Other Minor Nominal Types

nominal	gloss	related verb and gloss
e-CæCi (from -vCCv-; T-ka also e-CáCi), see also (540.a) in §8.6.1.1		
e-sæli	'news'	-vslv- 'listen'
	[usually in Pl i-sæli-an]	
áCoC (arguably á-CuC, from -vCvC-)		
ájor	'fighting spear'	-vjvr- 'throw'
t-a-CCüCæC-t (from -CvCuCvC-)		
t-a-blülæq-q	'ball, lump'	-bvlulvɣ- 'be ball-shaped'
t-ə-CüCæC-t (from -CuCvC-)		
t-ə-düjæn-t	'secret sign'	(Imprt) s-əddujæn 'make a sign'
a-PəQQəC (from -vPQvC-)		
a-nəkkəð	'cut-up grass'	-vɣkvð- 'cut'
t-ìPPa-t-t (from -vPPv-)		
t-ìyya-t-t	'sth left'	-vyvu- 'leave, abandon'

t-əPPiCCæC-t (from -PvCCvC-) [cf. adjectival abstractives §8.6.5]

t-əbbillæn-t 'wrestling' -bvllvn- 'wrestle'
[variant t-əbbillæn-t]

t-æ-CæCðCCi-t-t (from -CvCvCCv-)

t-æ-læfðrsi-t-t 'disappointment' -lvfvrsu- (-t) 'be dis-
appointed'

t-æ-mævðlsi-t-t 'grieving' -mvrvlsu- 'grieve'

t-æ-CæCðCiC-t (or t-æ-CæCðCeC-t, from -CvCvCvC-)

t-æ-læmðmiq-q 'blister' -lvmmvrv- 'have blisters'

t-e-CæCæCCi-t-t (from -CvCvCCv-)

t-e-šæwæŋki-t-t 'speeding up' -švwvŋku- (-t) 'walk faster'

t-æ-PðQQeC-t (or t-æ-PðQQiC-t, from -vPQvC-)

t-æ-bðšser-t 'pre-dawn meal' -vbšvr- 'break fast'

Chapter 9

Verb phrases and other predications

9.1 Voice (valency) types of verbs

9.1.1 Subject and object

There is one subject NP in each clause. There may also be one direct object NP (with verbs like ‘give’, the recipient may appear as a second direct object NP under limited conditions, §9.1.6). Other NP’s occur as PP’s or as adverbials. Except when focalized or topicalized, all NP’s (and PP’s) follow the verb. If all arguments are expressed as nonpronominal NP’s, the order is VSOX, where X is everything else.

The **subject** is always expressed as a pronominal subject affix on the verb. If it is also expressed as a noun (or NP), this immediately follows the verb (unless fronted by focalization or topicalization). A verb plus a following subject noun is treated as a single accentual phrase, so if the noun is mono- or bisyllabic and has no lexical accent, a phrasal accent appears on the final syllable of the verb. In addition, nouns that begin with a gender-number suffix (MaSg a-, MaPl i-, FeSg t-a-, FePl t-i-), i.e. the majority of nouns, undergo **Prefix Reduction** when in subject function following the verb (§3.5.1). The reductions, which apply more generally to nouns in “dependent” state (hence also in possessive constructions or after a preposition), are repeated in (606).

(606) Prefix Reduction in Postverbal Subject Noun

MaSg	a-, e-	→	æ-, ə-
MaPl	i-	→	ə-, Ø-
FeSg	t-a-, t-e-	→	t-æ-, t-ə-
FePl	t-i-	→	t-ə-, dialectally t-Ø-

In texts and sentence examples, I use the symbol ˘ before a noun to indicate that audible Prefix Reduction has occurred. These nouns are therefore either subjects, possessives (in annexation constructions), or complements of prepositions. The symbol is not applicable to nouns that lack vocalic prefixes, even in “dependent” syntactic positions.

If an **object** noun directly follows the verb, the accentual patterning is the same (verb and object noun form a single accentual phrase), but there is no Prefix Reduction. The presence or absence of Prefix Reduction is therefore a key indicator of subject versus object status of an immediately postverbal noun. Examples in (607).

- (607) a. ĭ-wæt ʾə-jənnə
 3MaSgS-hit.PerfP Sg-rain
 ‘The rain struck (=fell).’
- b. ĭ-nhæy à-jənnə
 3MaSg-see.PerfP Sg-rain
 ‘He saw the rain.’

In (607.a), Prefix Reduction has applied, so the postverbal noun must be the subject (which is therefore coindexed to the 3MaSg subject prefix.) In (607.b), the absence of Prefix Reduction tells us that the postverbal noun is the object.

The object may be pronominalized, in which case it appears as an **object clitic** such as 3MaSg -ʾtt varying with -ʾe. For clitics see Chapter 10.

9.1.2 Intransitive

Of course the usual one-place predicates (‘go’, ‘sleep’, etc.) are intransitive. More interesting is the fact that many pairs of intransitive and (derived) causative are translation equivalents, respectively, of passives (e.g. ‘be cut’) and simple transitives (‘cut’), reversing the derivational directionality of English and other European languages. Examples of such intransitives are (Imprt) ùmam ‘be sucked’ and ùkmaš ‘be scratched’; see §8.1.1.

9.1.3 Ambi-valent intransitive/transitive verbs

There are some **ambi-valent** verbs that can be used intransitively or transitively without affixal differentiation (i.e. with no overt derivational directionality). The intransitive may function as an **agentless (medio-)passive** (608.a). In these cases it is not immediately clear which valency is more basic. Often the intransitive is resultative in function, and takes the Reslt stem shape, whereas the transitive occurs in the PerfP to denote a past action. Or the intransitive may function as an **objectless antipassive** (608.b). In these cases the transitive function seems primary, and the intransitive function merely omits an unspecified (or obvious) object. In addition to high-frequency cases like those in (608.b), quite a few transitives can be used occasionally in this antipassive, or unspecified-object, construction.

(608) Ambi-valent Verb

verb	intransitive gloss	transitive gloss
a. intransitive = (medio-)passive		
-vbsvy-	'break up, disperse'	'dismantle (tent)'
-vdrvɣ-	'be adorned'	'adorn (sth)'
-vffvy-	'be poured'	'pour (sth)'
-vftvl-	'be put down'	'put (sth) down'
-vhvr-	'(pot) be covered'	'cover (pot)'
-vkrvy-	'(cow) be drained of milk'	'drain (cow) of milk'
b. intransitive = antipassive		
-vɣrv-	'read'	'read (sth)'
-vkšv-	'eat, have a meal'	'eat (sth)'

9.1.4 Transitive

The semantic range of Tamashek transitive verbs is unremarkable in most respects. The prototypical transitive concepts, involving creation or physical impact, like 'make', 'hit', 'twist', and 'cut', are simple transitives. So are perception verbs like 'see'. Somewhat more interesting are the transitives listed in (609).

(609) Transitive Verbs

-vkkv-	'go to'
-vflv-	'leave, go from'
-vwvr-	'be on (sth)'
-vhu-	'be in' (usually Reslt -əhá-)
-vlv-	'have' (usually Reslt -əlá-)
-vllv-	'exist' (usually Reslt -əllá-)
-vbv-	'lose'

-vkkv- 'go to' is the 'go' verb used with a specified destination, which is expressed as the direct object. A PerfP example with object NP is t-əkká é-hæn 'she went to the house'. Note that the object NP has no locative preposition. The destination can also be expressed as an object clitic: əkkæ-n-t 'they-Ma went to him'. The verb can be passivized: Ø-ətw-ækka 'he was gone to'. A reciprocal version: ænm-əkkæ-n 'they went to each other'. A different verb -vjlv- expresses intransitive 'go, go away, depart' with no specified destination.

Likewise, -vflv- 'go from, leave' takes an object NP denoting the departure point. Example: i-fæl-ləd bæmæko 'he left Bamako (on the way

here)'. -\ád(d) here is the Centripetal clitic. This transitive verb, along with the use of preposition \rðr 'chez, at the place of' in composite 'from X to Y' adverbial expressions (§6.7), makes an **ablative preposition unnecessary**, and Tamashek has none.

-vwvr- '**be on**' takes a direct object, rather than a PP, to specify the object or surface on which the subject rests. In the (positive) stative sense it occurs in the Reslt form -əwár-. An example with full noun as object: i-wár t-ə-hun-t 'he is on the stone'. An example with object clitic is i-wár-t 'he is on it-Ma'. The passive sounded dubious to informants, but I was able to elicit a reciprocal -nvm-vwvr-, 3MaPl PerfP: ænm-əwær-æn 'they were on each other'.

-vhu- '**be in**' takes an object NP denoting the object, region, or space in which the subject is located. Example: n-əhú é-hæn 'we are in the house'. The verb can also be used in extended senses of the type 'be produced (caused) by'. Example: i-h-é ə-ş-əşşuhu n 'ə-rəzzej 'strengthening of the livestock is in (=is brought about by) it (=a pasture grass sp.)'. In positive main clauses it is always in the Reslt form. -vhu- is a defective verb with no imperfective stems (§7.3.2.12). It occurs in many idiomatic phrases, for example with a nominal denoting a personality trait or other characteristic as subject, and a human NP as object, e.g. t-əh-é 't-ə-hæke 'he is generous' (lit. "giving is in him").

Another defective transitive verb is -vlu- '**have**', the ordinary verb of possession. It too appears (in positive sentences) in the Reslt form -əlá-. See §7.3.2.14. One can extract the object to give sentences like é-hæn mi-tt 'i-læ-n 'the house [topic], who has it?' (i.e. 'to whom does the house belong?'). For an alternative construction 'X be mine' etc. see §9.4.

Still another defective transitive verb is -vllu-, which combines with a referentially empty 3MaSg object clitic to form an existential sense '**exist, there is/are**'. See §9.3, below, and §7.3.2.11 for the irregular morphology and the dialectally variable omission or reinterpretation of the 3MaSg clitic.

The sense '**get lost**' is expressed as (PerfP) Ø-əba-, with invariant 3MaSg subject form (here Ø- before a) plus an object NP or clitic denoting the person or object lost. Example: Ø-əba-tæt 'she got lost', also a common polite expression for 'she died'. The 3MaSg subject is audible as i- in LoImpfP i-t-iba-tæn 'they are (often) lost'. See §7.3.2.16 for more forms of this defective verb.

9.1.5 Intransitives with dative complement

The following verbs take a dative rather than accusative complement, and are therefore technically intransitive: -vslu- 'hear, listen to', (PerfP) -əllil- 'help' (as simple transitive this verb means 'follow'), -vrvs- 'slaughter, cut the throat of (animal)', -vlkv- 'follow', and -vmmv- 'look (search) for'.

- (613) əkfe-ɾ-\\ä-sæn-\\t
 give.PerfP-1SgS-\\Dat-3MaPlS-\\3MaSgO
 'I gave it to them-Ma.'

9.1.7 Complex causatives

When a transitive verb is causativized, a double-object construction results. (614) illustrates this with *-s-vlvl-* '(X) cause (Y) to follow (Z)' from *-vllvl-* '(Y) follow (Z)'.

- (614) əs-ləl-æɾ α-hænðy-in é-hæn
Caus-follow.PerfP-1SgS Sg-see.VblN-1SgPoss Sg-house
 'I made my view follow (=I looked over) the house.'

With *-s-vrvlf-* '(X) cause (Y) to keep (Z) in trust', or more freely '(X) entrust (Z) to (Y)' = '(X) entrust (Y) with (Z)', if both objects Y and Z are expressed as nouns, or if both Y and Z are pronominalized, the usual syntax is 'X cause-keep Z [Dative Y]', but if just one of Y and Z is pronominalized, the double-object construction (one object clitic and a following NP interpretable as object) is usual (615).

- (615) a. əss-əɾlæf-æɾ-\\α-s-\\tæt
Caus-keep.PerfP-1SgS-\\Dat-3Sg-\\3FeSgO
 'I entrusted it-Fe (e.g. cow) to him.'
- b. əss-əɾlæf-æq-\\q t-əss-in
Caus-keep.PerfP-1SgS-\\3MaSgO Fe-cow-1Sg
 'I entrusted my cow to him.' (= 'I entrusted him with my cow.')
- c. əss-əɾlæf-æq-\\qæt æŋŋe-ɾ
Caus-keep.PerfP-1SgS-\\3FeSgO brother-1Sg
 'I entrusted it-Fe to my brother.'

The verb *-vɾrvs-* 'slaughter, cut the throat of' is intransitive with a dative complement denoting the victim. When it is causativized, the causative verb can express this complement as either direct object (616.a) or dative (616.b-c).

- (616) a. əss-əɾræs-æɾ α-mæðræy-in
Caus-slaughter.PerfP-1SgS Sg-elder.sibling-1SgPoss
 t-è-hæle
 Fe-Sg-sheep
 'I made/had my brother slaughter the sheep.' [K-d]

- b. əss-ərræs-æ̀r-\|a-s-\|t
Caus-slaughter.PerfP-1SgS-\|Dat-3Sg-\|3MaSgO
 ‘I made/had him slaughter it.’ [K-d]
- c. əss-ərræ̀s-æ̀q-\|q [e ʔt-æ-hæle]
Caus-slaughter.PerfP-1SgS-\|3MaSgO [Dat Fe-Sg-sheep]
 ‘I made/had him slaughter the sheep.’ [K-d]

Other intransitives with dative complement whose causatives were checked were -v|kvm- ‘help; follow’, -vslv- ‘listen to’, and -vmmvʔ- ‘look for’. My data show that the complements remain in dative form for the first two (617.a-b), but are direct objects with ‘look for’ (617.c-e). The partial difference in causative syntax among these verbs may reflect such factors as the semantic naturalness of the dative (rather low for ‘slaughter’), and neutralization of case-coded semantic distinctions for the input verb (transitive ‘follow’ versus intransitive-with-dative ‘help’ for -vllul-).

- (617) a. əss-əlkæm-æ̀r æ̀-wadəm [è ʔt-Ø-hatt-en]
Caus-follow.PerfP-1SgS Sg-human [Dat Fe-Pl-sheep-FePl]
 ‘I made/had someone follow the sheep.’ [K-d]
- b. əss-əsl-æ̀r æ̀-sáhæ̀r [y ʔé-lyad]
Caus-listen.to.PerfP-1SgS Sg-song [Dat Sg-child]
 ‘I made/had the boy listen to the song.’ [K-d]
- c. əs-s-ə̀mæ̀r-æ̀r æ̀ŋŋ-er
Caus-Caus-seek.PerfP-1SgS brother-1SgPoss
 t-ä-ʔa-t-t
 Fe-Sg-goat-Fe-FeSg
 ‘I had/made my brother look for the goat.’
- d. əs-s-ə̀mæ̀r-æ̀q-\|q t-ä-ʔa-t-t
Caus-Caus-seek.PerfP-1SgS-\|3MaSgO Fe-Sg-goat-Fe-FeSg
 ‘I made him look for the goat.’
- e. əs-s-ə̀mæ̀r-æ̀q-\|qæt æ̀ŋŋ-er
Caus-Caus-seek.PerfP-1SgS-\|3FeSgO brother-1SgPoss
 ‘I made my brother look for it.’

In (617.d) the agent of ‘seek’ (Y) is expressed as an object clitic on ‘cause to seek’. In (617.e), the object of ‘seek’ (Z) is expressed as an object clitic on ‘cause to seek’.

9.1.8 Double datives

Verbs like ditransitive ‘give’ and ‘show’, as well as intransitive dative-object verbs like ‘slaughter, cut the throat of’ (-vʀʀʀvs-), can add an extra dative in benefactive or purposive sense. In (618), the two datives are both expressed as clitics, with the first (inner) clitic representing the normal dative complement.

- (618) ʀʀʀʀʀs-ʀʀʀ-\\à-s-\\hʀ-sʀn
 slaughter.PerfP-1SgS-\\Dat-3Sg-\\Dat-3MaPl
 ‘I slaughtered it (e.g. ram) for them.’

9.2 Copular predications (‘be’, ‘become’)

The verbs that can function as ‘be’ **equational copulas** (‘X is a blacksmith’), or as ‘become’ **inchoative** verbs, are -ʀʀʀmos- ‘be’ (PerfP) and -vqqʀʀl- ‘be’ (also ‘wait’ and ‘go back’ in other contexts). The complement is a noun (or NP).

In positive stative copular ‘be’ function, these two verbs occur in the Reslt stems -ʀʀʀmós- and -ʀʀʀqʀʀl-. Examples are in (619).

- (619) a. é-šed à ʀʀʀqʀʀl-ʀʀʀ (= ʀʀʀmós-ʀʀʀ)
 Sg-donkey Focus be.Reslt-1SgS
 ‘A donkey [Focus] is what I am.’
- b. t-ʀʀʀqʀʀl t-à-kli-t-t
 3FeSgS-be.Reslt Fe-Sg-slave-Fe-FeSg
 ‘She is a Bella.’

In ‘become’ (i.e. inchoative) sense with past time reference, the regular PerfP is used: -ʀʀʀmos-, -ʀʀʀqqʀʀl- (620.a-b). A future counterpart is (620.c).

- (620) a. Ø-ʀʀʀmos á-wen
 3MaSgS-be.PerfP Dem-Dist
 [ʀ ʀ-knʀ-n
 [Dem 3MaSgs-do.much-Partpl.MaSg
 ʀʀʀlʀʀʀrʀʀ-ʀʀt [ʀs ʀ-šʀkkʀʀtew-ʀn]]
 trouble-FeSg [Instr Pl-child-MaPl]]
 ‘That has become what what disturbed the children very much.’
- b.. ʀ-qqʀʀl (= Ø-ʀʀʀmos) ʀ-mʀnókal
 3MsSgS-be.PerfP Sg-chief
 ‘He became chief.’

- c. **ad** **əqqəl-ær** **ɑ-mænoːkɑl**
 Fut **be.ShImpf-1SgS** Sg-chief
 'I will be/become chief (next year).'

The difference between 'be' and 'become' is neutralized in the negative, where PerfN stems *-æmos-* and *-əqqel-* are used for present or past time reference.

- (621) a. **wær** **əqqel-ær** **é-šed**
 Neg **be.PerfN-1SgS** Sg-donkey
 'I am not (or: did not become) a donkey.'
- b. **wær** **æmòs-ær** **á-kli**
 Neg **be.PerfN-1SgS** Sg-slave
 'I am not a Bella.'

Both *-vmus-* and *-vqqv1-* in copula function can take object pronominals (622). The usual object clitic is 3MaSg *-t*, referring to something previously introduced into the discourse (622). Passive versions of the copulas were not elicitable.

- (622) a. **æmòs-æq-ıq**
be.Reslt-1Sgs-ı3MaSgO
 'I am it.' [K-d]
- b. **wær-t** **Ø-æmos**
 Neg-ı3MaSgO 3MaSgS-**be.PerfN**
 'He isn't it.' [K-d]
- c. **i-qqál-t**
 3MaSgS-**be.Reslt-ı3MaSgO**
 'He is it.' [K-d]

For alternative 'not be' constructions see §9.5.

'Become A' for a typical adjectival sense A is normally expressed by a directly inflectable stem from the relevant adjectival verb ('it reddened', 'it will redden'), rather than as a construction with a 'become' verb.

There are occasional instances of "nonverbal" predicates without copula (623).

- (623) a. **àra-tæn** **æmærá-dær** **səmmós**
 child-MaPl now five
 'The children are now five (in number).' [K]

- b. [a-šæɪ í-dæʀ] æ-mud
 [Sg-day Prox-Anaph] Sg-prayer
 'Today is a holy day.' [K]

9.3 Locational and existential predications

Existential predications are expressed with the verb *-vllu-*, normally occurring as *Reslt -əllá-* 'there is/are' (or 'be present') in the positive, and as *PerfN -əlla-* after Negative *wær*. The existent is expressed as the subject. This verb normally takes a referentially empty 3MaSg object clitic (allomorphs *-tt*, *-t*, *-e*), though the clitic is omitted in some combinations, the details varying dialectally. See §7.3.2.11 for more on the forms.

- (624) a. t-əll-\\é ʔ-t-èdi-t-t
 3FeSgS-exist.Reslt-\\3MaSgO FeSg-dog-Fe-FeSg
 'There is a she-dog.'
- b. əllá-n-\\t ʔə-yəḏ-an
 exist.Reslt-3MaPlS-\\3MaSgO Pl-dog-MaPl
 'There are (some) male dogs.'

The 3MaSgO clitic is usually omitted with 1st-2nd person subject: *əllé-ʀ* 'I am (present)', *t-əllé-d* 'you-Sg are present'. I have, however, recorded *t-əllá-m-\\t* 'you-MaPl are present' with the 3MaSgO ending (*-t*).

The synonymous verb *-vmvl-* 'exist', which also takes a dummy 3MaSgO clitic, has a full stem-paradigm (*PerfP -əməɪ-* or *-mæɪ-*, *Imprt əməɪ*, *LoImprfP -əmmál-* or *-t-əmmál-*), and *Infin é-mel*. An example is *Imprt əməɪ-\\t* 'be!'.

-vllu- also occurs in a specialized adverbial construction translatable '**on the near/far side of X**'. Here we get a 3MaSg subject, a directional clitic (*Centripetal* or *Centrifugal*), and either *PerfP -əlla-* or *Reslt -əllá-* (the marked accent of the latter would be overridden by that of the clitic). This is followed by the spatial reference point X, which takes **dative** form (625). In (625.c), it appears that *i-lla-\\hín* is treated as a noun (preceded by *Poss* '\$n).

- (625) a. i-llá-\\d
 3MaSgS-exist.Reslt-\\Centrip
 [y [ʔæ-mm n ʔé-hæn]]
 [Dat [Sg-mouth Poss Sg-house]]
 'just this side of the door (house entrance)'
- b. á-ʀrəm i-ll-\\é
 Sg-town 3MaSgS-exist-\\3MaSgO

[i-lla-\hín [y 'æ-jréw]]
 [3MaSgS-exist.PerfP-\Centrif [Dat Sg-river]]
 'The town is (located) on the far side of (=across) the river.'
 [K-d]

- c. əzzæy-æn [dæɾ æ-kall én-dæɾ]
 dwell.PerfP-3MaPIS [in Sg-land Dist-Anaph]
 ən *frontière* t-én-dæɾ
 Poss border Fe-Dist-Anaph
 n i-lla-\hín [e hùmbəri]
 Poss 3MaSgS-exist.Reslt.\Centrif [Dat Hombori]
 'They have lived in that land of (=around) that border area
 (with Burkina Faso) that is located to the far side of Hombori.'

That the combination of 'exist' and directional clitic is tending to become a frozen unit is suggested by variable positioning of pronominalized datives. These should normally intervene between -əllá- and the directional, and may do so (626.b-c), but are also attested following the directional (626.a).

- (626) a. i-llá-\d-\ha-k
 3MaSgS-exist.Reslt.\Centrip-\Dat-2Sg
 'just this side of you-Sg' (i.e., in front of you, if you are facing me)
- b. i-llæ-\ha-k-\ódd
 3MaSgS-exist.Reslt-\Dat-2Sg-\Centrip
 [= a]
- c. i-llæ-\ha-k-\ín
 3MaSgS-exist.Reslt-\Dat-2Sg-\Centrif
 'just beyond you-Sg' (next to you on the side away from me)

Locational predicates are generally based on the verb -vhu- 'be in' or -vwvr- 'be on', both of which are simple transitives; see §9.1.3 for examples, and see §7.3.2.12 for the irregular morphology of -vhu-. However, it is also possible to use the existential verb in Reslt form -əllá- with a following locational. This is appropriate when the specific locational nuances of -vhu- 'be in' or -vwvr- 'be on' do not apply, as in (627) with 'in front of X' as the locational phrase.

- (627) t-əllé-d [dat 'æ-hæn]
 2S-exist.Reslt-2SgS [in.front.of Sg-house]
 'You-Sg are in front of the house.' [R]

9.4 Possessive predications

With the possessum as point of departure ('X belong to Y', 'X be Y's'), we get a **predicate genitive** construction involving either a possessive PP (with Possessor preposition *ən* plus NP) or a pronominal possessive suffix, following one of the reduced demonstrative forms in (628), which specify the gender-number of the possessum.

(628) Reduced Demonstratives in Possessive Predication

MaSg	MaPl	FeSg = FePl
ĩ	w-ĩ	t-ĩ

For 1Sg possessor 'is/are mine' the forms are therefore *ĩ-nin*, *w-ĩ-nin*, and *t-ĩ-nin*. The latter can mean 'it-Fe is mine' or 'they-Fe are mine'. The full set of pronominal endings with the MaSg form *ĩ* is in (629). The forms are from T-k, but several were verified for K-d.

(629) Paradigm of MaSg Possessive Predication

person/gender	Sg	Pl
1st	<i>ĩ-nin</i>	<i>i-nǎnǎɾ</i>
2nd Ma	<i>ĩ-nnǎk</i>	<i>i-nǎwǎn</i>
2nd Fe	<i>ĩ-nnǎm</i>	<i>i-nǎkmǎt</i>
3rd Ma	<i>ĩ-nnes, ĩ-nnet</i>	<i>i-nǎsǎn</i>
3rd Fe	"	<i>i-nǎsnǎt</i>

One could argue that the first *n* in *ĩ-nin* and the other forms is segmentable, and specifically identifiable with Possessor preposition *ən* 'of'. However, the same pronominal forms are also used as ordinary possessor clitics (§5.2.2), and the segmentability of *-n-* is questionable.

With both possessed and possessor taking the form of nouns, we get examples like (630).

- (630) *é-hǎn* [i n *abbǎ-nin*]
 Sg-house [Dem Poss father-my]
 'The house belongs to my father.'

It is also possible to put the possessor in subject position with transitive verb *-vlu-* 'have' (§9.1.3, and for the irregular morphology §7.3.2.13). One can further extract the object of this verb, e.g. as a 'what?' interrogative, the effect being to approximate a predicate genitive ('what does X have?' = 'what belongs to X?').

- (631) *mí-\tæt* *ì-læ-n*
 who?-\3FeSgO 3MaSgS-**have**.PerfP-PartplMaSg
 'Who has it-Fe?' (= 'Whose is it-Fe?')

The T-ka speaker was checked for whether Past preverbal particle *kæld* (§8.4.6.3) can be used with e.g. *ì-nin* 'it is mine'. The answer was negative: *#kæld ì-nin* was ungrammatical. Instead, *kæld* can combine with *-vlo-* 'have' (632).

- (632) *kæld-\tt* *øle-ɾ*
 Past-\3MaSgO have.PerfP-1SgS
 'I used to have it.' (= 'It used to be mine.')

Likewise, predicate genitive forms like *ì-nin* 'it is mine' **cannot be directly negated** by the usual preverbal Neg particle *wær*. Instead, a biclausal (external) negative construction is used; see §9.5. Yet another construction is used as a the **focalized** counterpart of predicate genitives; see (753.a) in §12.2.6. Clearly, the predicate genitive type *ì-nin* has none of the morphosyntactic attributes of a true verb.

9.5 External negation and negative copular clauses

In addition to the normal clause-internal negation, expressed with *wær* as a preverbal particle (§9.6.2), there is an external negative element (arguably segmentable) with the dialectal variants indicated in (633).

(633) External Negation (Dialectal Variants)

form	dialect(s)
<i>wædden</i>	A-grm K-d R T-ka T-md
<i>wædder</i>	T-ka
<i>wærjen</i>	K
<i>wærgen</i>	A-grm

The variants that are arguably segmentable are the last two, which can be taken as Neg *wær* plus 3MaPl PerfN *je-n* (A-grm variant *-ge-n*), hence 'they were not done'. However, the *...er* of the second variant looks like a 1Sg ending. In any event, the dialectally predominant form *wædden*, and its variant *wædder*, are not cleanly segmentable in this way, since there is no suitable verb stem *-vdu-*. A similar variation in ending is seen in *sædder* 'not yet', variant *sæddén* (§11.3.5). However, *sæddén* is a rare variant limited to certain eastern dialects, while *wædden* and its variants are widespread.

The external negation can be used with an NP argument X in the construction [wædden X] ‘it is/was not X’.

It can also be used with a following clause, in the sense ‘it is/was not (the case) that ...’ or ‘it is/was not true that ...’. This construction is convenient in providing an easy way to negate predications containing no inflectable verb stem, such as the predicate genitive construction (§9.4, above).

- (634) wæddèr ì-nin
 Neg Dem-1SgPoss
 ‘It is not mine.’

Likewise (K-d) wædden ì-nin.

The negative forms in (635) are also used as **negative equational copulas** ‘X is not Y’, and in **negative identificational** clauses with presupposed “subject” of the type ‘(it) is not Y’. In ‘X is not Y’ with both arguments overt, X precedes the negative form as a kind of topicalized NP.

- (635) a. a-w-a wæddèr édi
 Dem-Ma-Dem.Sg Neg dog
 ‘This is not a dog.’
- b. wæddèn édi
 Neg dog
 ‘It’s not a dog.’

9.6 Preverbs

9.6.1 Past (kæló)

This particle is generally used with stative expressions (often Resultative verbs) that would otherwise be understood as having present (or gnomic) time reference. The particle is especially useful with defective verbs like -lá- ‘have’ that occur only in the Resultative, and with other verbs denoting states or situations.

- (636) a. kæló lé-ɾ X
 Past have.Reslt-1SgS X
 ‘I had X’
- b. kæló æmòðæn-æn
 Past abound.Reslt-3MaPIS
 ‘They-MaPl were numerous’

- b. wær Ø-ærbæqqæ-t
 Neg 3MaSgS-be.dented.PerfN-Aug
 'It didn't get dented.'

The perfective negative corresponds to both simple perfective (PerfP) and resultative (Reslt). This makes sense, since a past negative statement denies that an event took place over a generous time span, making aspectual distinctions less useful than in the positive. As a result, (638.a) negates both PerfP æssæn-ær 'I knew, found out' and the more common Reslt æssán-ær 'I know' (stative).

The normal imperfective negative construction consists of wær and a special LoImpfN stem (a negative variant of LoImpfP). The LoImpfN blocks the ablaut accent $\acute{\chi}$ and the first-syllable full-V feature $\bar{\chi}$ that appear in the LoImpfP, while allowing final-syllable $\bar{\chi}$ and all consonantal adjustments found in the LoImpfP (prefix -t-, gemination). The LoImpfN also has strict «H» melody, while the LoImpfP has «H» or «L» melody depending on verb class (§7.2.5.1).

To negate an imperfective, we get wær plus a special LoImpfN stem that is related to, but distinct from, the LoImpfP. For the future negative see §9.1.4 below. The negative imperative (=prohibitive) includes wær but the stem-choice is somewhat complex; see §7.2.4.4.

- (639) wær ÿ-bæddæd
 Neg 3MaSgS-stand.LoImpfN
 'He is not standing/stopping.' (= 'He doesn't stand/stop.')

In (639), -bæddæd- is the LoImpfN corresponding to LoImpfP -búddæd-. The basic form of the verb is -vbdvd- (PerfP -æbdæd-).

For special forms like wædden used in biclausal negatives ('it is not the case that [...]'), see §9.5.

Forms used as **negative polarity** items (like 'anything' in 'not ... anything') include ordinary generic nouns like æ-waðem 'person', hææt 'thing', and é-dægg 'place', but also the specialized and somewhat emphatic polarity form wæld 'nothing' (nonhuman). Its extension wæld ÿ-æn 'not (even) one, none at all' can be added to any NP. For abstractions and other mass nouns, wæld èndærr-æn 'not (even) a little' can be used. The form wæld, in other contexts, has a range of uses from emphatic 'even' to disjunctive 'or'. A more general '(not) at all' polarity item is the interjection-like element fæww! (640.f).

- (640) a. wær-t i-lla wæld
 Neg-\3MaSgO 3MaSgS-exist.PerfN **nothing**
 'There is (absolutely) nothing.'

- b. wær Ø-okæy wæłá
 Neg 3MaSgS-goe.past.PerfN **nothing**
 ‘Nothing has been finished.’
- c. é-dægg [wæłá ÿ-æn]
 Sg-place [even one-MaSg]
 ‘nowhere’
- d. wær-\\d Ø-osa æ-wadəm
 Neg-\\Centrip 3MaSgS-come.PerfN Sg-person
 [wæłá ÿ-æn]
 [even little-Partpl.MaSg]
 ‘Not even one person came.’
- e. wær i-ja [wæłá èndərræ-n]
 Neg 3MaSgS-be.done.PerfN [even little-Partpl.MaSg]
 ‘Nothing at all happened.’
- f. wær ərhe-ɾ [a-\\d əjjəš-æn
 Neg want.PerfN-1SgS [Dem-\\Comit enter.ShImpf-3MaPlS
 ara-tæn-in ÿ-ɾərm-an fæww!]
 child-MaPl-1SgPoss Pl-town-MaPl **at.all!**
 ‘I don’t want my children to go into the towns at all!’ [K]

For wæłá ... ‘nor ...’ in a second, parallel negated phrase bound by the same Neg particle, see §14.1.2. For external negation, e.g. ‘(it’s) not (the case that ...)’ , see §9.5. For bà-\\Ø-s and variants ‘no longer’, see §13.6.7. For combinations of wær with Participial suffixes, e.g. MaSg wær-æn, see §8.5.6.1.

9.6.3 Future (àd, àr, màr, màd, è)

The Future particle has a form àd in **clause-initial** position. It is followed (after any clitics that may be present) by a ShImpf or (rarely) LoImpfP verb stem. I was told by informants that there is a dialectal variant àr, but I cannot identify the dialect(s) in question, and àd is usual in all the dialects I worked on.

The d of àd is **dropped before any clitic**, as in a-\\hĩ i-wət ‘he will hit me’ (1SgO clitic -\\hi). Perhaps a trace of the *d lingers in the geminated tt of the 3MaSgO clitic -\\tt (postvocalic allomorph), as in a-\\tt əwət-æɾ ‘I will hit him’, but the geminated tt is now part of the clitic and is also heard after V-final verb stems (§10.3.1).

The alternation of àd and à in the Future particle results in partial convergence between this particle and the combination à-\\d consisting of a

For è, a postvocalic variant hè is recorded after V-final interrogative words like *má* ‘what?’ (643.a), and after demonstrative heads in definite relatives (643.b).

- (643) a. *má* *he* *t-ə̄rhu-d*
 what? **Fut** 2S-want.ShImpf-2SgS
 ‘What will you-Sg want?’ [Imeddedeghan]
- b. *æ-hóləs* [*w-a* *he* *ə̄khʷə-n*]
 Sg-person [Ma-Dem.Sg **Fut** eat-Partpl.MaSg]
 ‘the man who will eat’ [K]

The dialectal variants *màr* and *è* combine in different ways with a preceding Negative particle (and any clitics present); see §9.6.4, just below. The two variants also interact differently with participial endings (§8.5.6.2).

9.6.4 Combinations of preverbs

The relative ordering in T-ka is **Past + Neg + Fut**. To my knowledge Past and Fut do not co-occur, so the attested combinations are Past + Neg and Neg + Fut.

Past + Neg is not particularly common, since the simple perfective is the common translation equivalent of English past negatives (‘he did not go’, ‘she was not sick’). The combination *kælá wær* plus PerfN stem (which is sometimes homophous to the PerfP) is used to denote a temporally extended negative state, and can be generalized as an experiential negation ‘not ever’. Examples of *kælá wær* and of the simple perfective negative are in (644.a-b).

- (644) a. *kælá* *wær* *ĩ-qqima*
 Past **Neg** 3MaSgS-sit.PerfN
 ‘He was not sitting.’ or ‘He has not ever sat.’
- b. *wær* *ĩ-qqima*
 Neg 3MaSgS-sit.PerfN
 ‘He didn’t sit down.’

The K-d speaker often put *kælá* after *wær* (645), though he also allowed *kælá wær* ordering. The examples below, which were glossed with ‘never’, mostly show verbs in the Reslt stem (as shown by the accent). The Reslt verbs are subject to the ablaut modification (\bar{x} -pc1 Erasure) elsewhere typical of definite relative clauses (§3.5.3.1), as shown by the failure of lexical short V’s to lengthen. Further grammatical study of this dialect is needed to clarify the significance of the ablaut modification.

(647) Future Negative (T-ka)

u-mər	ənhəy-æɾ
Neg-Fut	see.ShImpf-1SgS
'I will not see.'	

The uncertain segmentability of T-ka *ù-mər* is brought out in combinations involving a clitic. Three distinct constructions are attested (648).

- | | | | |
|----------|------------------------|----------------|--------------------|
| (648) a. | u-mər-ʌtæn | | əwət-æɾ |
| | Neg-Fut-ʌ3MaPIO | | hit.ShImpf-1SgS |
| | 'I won't hit them.' | | |
| b. | wər-ʌtæn | mər | əwət-æɾ |
| | Neg-ʌ3MaPIO | Fut | hit.ShImpf-1SgS |
| | 'I won't hit them.' | | |
| c. | wər-ʌhĩn | u-mər | ʔtaw-æɾ |
| | Neg-ʌCentrif | Neg-Fut | forget.ShImpf-1SgS |
| | 'I won't forget.' | | |

In (648.a), *ù-mər* functions as a unit and **precedes the clitic**. This is the most common pattern. In (648.b), *ù-mər* is replaced by the more transparent *wər ... mər*, with the clitic intervening. (648.c) is like (648.b) except that we get *wər ... ù-mər* with the fused form *ù-mər* after the clitic. In this case, the fusion of *ù-mər* is such that it can be taken as a variant Fut allomorph used in negative contexts.

For R (which however prefers *wər ... è*) I have also heard a variant Neg + Fut form *əmmər* instead of *ù-mər*. This results in an even more opaque form hardly worthy of hyphenation. An example is *əmmər i-səw* 'he will not drink'.

The Diebok dialect near Gao was not investigated in detail, but the two examples in (649) were obtained for this dialect from literacy specialists in Gao. It appears that *-šà-* is a Future element fused with Neg *wər*, much as *-mər-* is for T-ka. In (649.b), it appears that *-šà-* is reduced to *-š-* before a V-initial verb, but the overall allomorphy and its morphosyntactic distribution are not clear to me.

- | | | |
|----------|-------------------------|------------------|
| (649) a. | wər-šà-ʌdd | Ø-as |
| | Neg-Fut-ʌCentrip | 3SgS-come.ShImpf |
| | 'He won't come.' | |
| b. | wər-š | Ø-ækšu |
| | Neg-Fut | 3SgS-eat.ShImpf |
| | 'He won't eat.' | |

9.7 Verbs borrowed from French

French verbs are not borrowed as inflectable verbs. Instead, the borrowed verb stem is accompanied by the verb *-vju-* ‘do’ functioning as an auxiliary. The borrowed stem generally ends in *e*, which can be taken as a composite of the productive French infinitive *-er*, participial *-é*, “vous” form *-ez*, and perhaps the imperfective (*-ait*, etc.). The borrowed verb functions as direct object of *-vju-*. If the sense calls for a real object, this appears as a dative (650.a).

- (650) a. *je-x-\a-sàèn* *repáse*
 do.PerfP-1SgS-\Dat-3MaPl **iron**
 ‘I ironed them (=clothes).’ [French *repasser*]
- b. *i-ja* *páse*
 3MaSgS-do.PerfP **pass**
 ‘He passed (exam).’ [French *passer*]

Chapter 10

Clitics

10.1 Sentential clitics

Clitics are normally realized at the end of the first word (perhaps a preverbal particle or a verb) in the relevant clause (for occasional repetition of a directional clitic on a noninitial word, see below). The clause onset for this purpose excludes the following: a) topicalized NP or adverb (preverbal); b) focalized NP or adverb; and c) the head noun in a definite relative (the following demonstrative functions as clause-initial). Certain sentence-initial particles like *mušúm* ‘but’ are also disregarded. When a preverbal particle hosts a directional clitic, this clitic is optionally repeated on the following verb as in (655) and (662) below, but other clitics are not doubled in this way.

Clitics include directionals (§10.2), object and dative pronominals (§10.3), pronominal PPs, and (in extraction constructions) cliticized prepositions. For details on the relative ordering of clitics, see §10.4.

The double symbol \backslash is used to indicate the boundary between a clitic and a preceding stem, suffix, or clitic. I use this since it can be typed within the phonetic font used here and in the dictionary.

10.2 Directional clitics

The Centripetal and Centrifugal clitics may not co-occur with each other. They follow any pronominal clitics hosted by the same word. Where there is both a preverbal clitic position (e.g. after Negative *wær* or Future *àd*) and a verb, there is a tendency to **double the directional clitic** so it appears both on the preverb and on the verb, as in [Neg-*Centrip* verb-*Centrip*] (655, 662).

The directional clitics are accented, and the accent is clearly heard in post-verbal clitic position. In preverbal position the accent can be overridden by phrasal accents (including secondary phrasal accents).

10.2.1 Centripetal \backslash ádd (\backslash ídd, \backslash dád, etc.)

10.2.1.1 *Forms*

The **Centripetal** clitic has a basic form \backslash ádd in T-ka (for dialectal variants see below). The set of surface forms for the main T-ka informant are in (651).

(651) Centripetal (Surface Allomorphs, T-ka)

form	preverbal position	postverbal position
-\ódd	—	between C's, or phrase-final after C
-\ód	between C's	—
-\dd	between V's	after <i>α</i> (before V or pause)
-\d	C_V or V_C	after <i>α</i> (before C)
-\hódd	—	after high V {u i} phrase-finally or before V
-\hód	—	after high V {u i} before C

[for dialectal -\dód etc. see (656), below]

/dd/ is **degeminated** to d before C, especially in preverbal position. After factoring this out we have just three allomorphs as shown in (652).

(652) Centripetal Allomorphs (Revised)

form	preverbal position	postverbal position
-\ódd	C_C	after C
-\dd	V_ or _V	after <i>α</i> (which shortens to <i>æ</i>)
-\hódd	—	after {u i}

The variant with h is used after verb stems ending in a high V, an uncommon combination. This seems to be an h-Insertion process rather than an underlying /h/ that is lost everywhere else; in comparison, the initial h of dative clitics has a broader distribution (e.g. after Negative *wær*).

(653) **h-Insertion**

Insert h before Centrip -\ódd after {u i} of the verb; insert h before Centrif -\ín after Neg *wær* or any vowel (except after 1Sg -\hi-)

The h is not inserted after 1Sg object or dative clitic \-(h)*α*-hi, so we get \-(h)*α*-hí-\dd, from underlying /-*α*-hi-\ódd/. There are no other clitics, and no preverbal particles, ending in u or i in T-ka. (For dialectal 3MaSgO allomorph -\tti-, see below).

The dropping of the initial short V after another V occurs in many suffixal combinations (VV-Contraction). When the schwa of -\ódd is contracted, the accent appears on the surviving V. Future ðd takes the form ð- before clitics and does not reduce further before the clitic (*á*-\dd...). However, stem-final *α* of a perfective inflected verb is **shortened** to *æ* before the clitic: /Ø-osa-\ódd/ appears as *osæ*-\dd 'he came' (**Stem-Final V-Shortening**). Cf. (115).

- (654) a. osæ-n-\\ádđ
arrive.PerfP-3MaPl-\\Centrip
'They came (here).'
- b. à-\\dd Ø-as
Fut-\\Centrip 3MaSgS-arrive.ShImpf
'He will come (here).'
- c. wær-\\d Ø-osa
Neg-\\Centrip 3MaSgS-arrive.PerfP
'He didn't come (here).'
- d. a-\\tt-\\ádd àwøy-ær
Fut-\\3MaSgO-\\Centrip bring.ShImpf-1SgS
'I'll bring it/him.'
- e. i-t-iwi-\\hádd
3MaSgS-LoImpf-be.born-\\Centrip
'He/It is born (coming) here.'
- f. a-\\hĩ-\\dd Ø-awøy
Fut-\\1SgO-\\Centrip 3MaSgS-bring.ShImpf
'He'll bring me.'
- g. i-su-\\hádd
3MaSgS-cough.PerfP-\\Centrip
'He coughed (while coming this way).'

The optional doubling of the Centrip clitic, appearing before and after the verb, is exemplified in (655).

- (655) a-\\dd às-ær-\\ádđ
Fut-\\Centrip arrive.ShImpf-1SgS-\\Centrip
'I'll come (here).'

For some dialects other than T-ka, the Centripetal has a **basic form** -\\idd with a full i, heard as such after a C, though (as for T-ka) it is reduced to -\\dd after a V. However, an apparent (but false) “-\\ídd” can also occur in dialects where the 3MaSg object clitic has a syllabic allomorph -\\tti- (postconsonantal -\\ti-). For example, in the R dialect, the Centripetal is -\\ádd after a C in ordinary contexts but combines with 3MaSg object -\\tt to give -\\ttí-\\dd. Here the i is part of the object clitic (and therefore also occurs in some other combinations not involving a directional clitic).

For the K-d speaker (I did not check all dialects on this point), the h extension appears not to be used after verb-final {i u}: əglú-\\dd 'come!', i-t-iwí-\\dd 'he was born (in this direction)'.

In several dialects (but not T-ka), **C-initial syllabic variants** -\\ddád (after vowel) or -\\dád (after consonant) are also in use. Note that the syllabic variants are accented (except of course when the accent is overridden within a longer phrase). Postconsonantal -\\dád is common in these dialects before another C, and to some extent phrase-finally (656).

(656) Dialectal variants -\\ddád (after vowel) or -\\dád

- a. osæ-n-\\dád
come.PerfP-3MaPlS-**Centrip**
'They-Ma came.'
(variant os-æn-\\d (same speaker), cf. T-ka osæ-n-\\ád)
- b. ne-ɣ-\\a-s
say.PerfP-1SgS-\\Dat-3Sg
[wær-\\dád hè Ø-as]
[Neg-**Centrip** Fut 3MaSgS-come.ShImpf]
'I told him not to come.'

The postvocalic variant -\\ddád is less common, but it occurs in T-md (657).

- (657) əndék á-šæl [w-a-\\ddəd Ø-malæ-d]
which? day [Ma-Sg.Dem-**Centrip** 2S-come.LoImpfP-2MaSgS]
'(On) which day are you-MaSg coming?' [T-md]

10.2.1.2 Meaning

The Centripetal specifies direction of movement (whether completed or not) toward the deictic center, usually the speaker's 'here' but sometimes another deictic center within a narrative. With a motion verb like (PerfP) -òsa- 'arrive' or (LoImpfP) -mól- 'be on the way', the clitic simply specifies the direction (or end point) using 'here' for reference. In the case of 'sit' (= 'stay'), the Centripetal denotes proximal location and denies motion away from it ('sit here' or 'stay here' rather than 'sit here and go'). With non-motion verbs, the clitic suggests that the action was directed toward 'here' in some way, or that it was accompanied by motion toward here.

- (658) a. mùss, ɔrtəs-\\ád i-sæ̀rər-æn
go.Imprt cut.Imprt-**Centrip** Pl-wood-MaPl
'Go, cut (and bring) the pieces of wood!'

10.2.2 Centrifugal -\ín (-\hín)

10.2.2.1 Forms

The **Centrifugal** clitic takes the form -\ín after a C (except that of Negative wær), and -\hín after Neg wær or any V except that of 1Sg object or dative clitic -\(\h)α-hi-, where we get contracted -\(\h)α-hi-\n. Cf. (653), above.

- (661) a. Ø-osa-\hín
3MaSgS-arrive.PerfP-\Centrif
'He came (there).'
- b. i-su-\hín
3MaSgS-cough.PerfP-\Centrif
'He coughed (in that direction).'
- c. α-\hín ðs-æx
Fut-\Centrif arrive.ShImpf-1SgS
'I will come (there).'
- d. wær-\hín mīl-æx
Neg-\Centrif be.on.way.LoImpfN-1SgS
'I am not coming (there).'
- e. ð-\tt-\in s-īs-æx
Fut-\3MaSgO-\Centrif Caus-arrive.ShImpf-1SgS
'I'll deliver it there.' (or 'I'll see that he/it gets there')
- f. ð-\hi-\n ð-s-is
Fut-\1SgO-\Centrif 3MaSgS-Caus-arrive.ShImpf
'He'll see that I get there.'
- g. i-kfa-\hín ázræf [è mæssi-s]
3MaSgS-give.PerfP-\Centrif money [Dat master-3SgPoss]
'He went and gave the money to his master.'
- h. i-kša-\hín
3MaSgS-eat.PerfP-\Centrif
'It (=brush fire) ate up (the vegetation) going away that way.'
- i. æqqim-æx-\in
sit.PerfP-1Sg-\Centrif
'I stayed there (i.e. didn't come).'

- j. àjəj-\\ín
 go.far.Imprt-\\Centrif
 ‘Go far away (from here)!’
- k. ækk-\\ín i-hǎn-an w-ín
 go.to.Imprt-\\Centrif Pl-camp-MaPl Ma-Dem
 ‘Go to those camps over there!’

Doubling of the Centrif clitic is fairly common, as in (662), where the second occurrence of the clitic is optional.

- (662) ad-\\hín itaw-\\ín
 Fut-/Centrif forget.ShImpf-Centrif
 ‘He will forget.’

10.2.2.2 Meaning

The Centrifugal indicates direction toward a nonproximate location with motion verbs (‘run away’), fixed nonproximate location with statives (‘sit way over there’), and motion away from the deictic center in combination with activity verbs (‘go away chewing’). The most useful all-purpose gloss would be ‘away’. This can be extended to suggest loss.

- (663) a. [æ-šæráju [w-ɑ-\\hín
 [Sg-green.burrgrass [Ma-Dem.Sg-\\Centrif
 Ø-æqqòr-æn-\\ín]]
 3MaSgS-dry.Reslt-Partpl.MaSg-\\Centrif]]
 Ø-æqqór èndərræ-n
 3MaSgS-dry.Reslt young-Partpl.MaSg
 ‘(once) green grass that has dried away, it has dried young
 (half-grown).’
- b. hɑ ɑ-wén-dær hæræt
 ah! Dem-Dist-Anaph thing
 ækkəs-\\t-\\ín
 take.away.Imprt-\\3MaSgO-\\Centrif
 ‘Ah, that (is) a thing (=custom), get rid of it!’ [K]

‘Dried away’ in the free translation of (663.a) suggests that the abundant fresh burrgrass (a major pasture grass, *Cenchrus biflorus*) has “withered away” as we say, becoming smaller and of little value to livestock.

The Centrifugal clitic is less common than the Centripetal in texts, since motion verbs without a Centripetal clitic are normally interpreted as involving non-centripetal direction anyway. It can sometimes be glossed ‘away’ (as in

- c. əkte-q-\q-\idd
remember.PerfP-1SgS-\3MaSgO-\Centrip
 ‘I remembered him.’ [R]

The verb *-mvndu-* means ‘**be completed**’. With the Centripetal, it can mean ‘come to completion’ in an accretive sense referring to the collection of a sum or money, or a trip that ends by returning ‘here’. With the Centrifugal it can mean, in a diminutional sense, ‘(e.g. sugar) be used up’.

10.3 Pronominal clitics

10.3.1 Object clitics

Pronominal object clitics can follow a simple transitive verb. If the verb is preceded by a preverbal particle (Neg, Fut, Past), a demonstrative head of a relative clause (e.g. *MaSg w-á*), or Focus morpheme *à*, the clitic follows the first such item.

The forms of pronominal clitics show some allomorphic variation, chiefly depending on postvocalic versus postconsonantal position. I will describe the T-ka forms, then (at the end of the section) I will detail dialectal variation.

The 1st person object clitics are identical to the corresponding dative clitics. The T-ka forms are in (667). For the syntactic and phonological distribution of the allomorphs, and for non-T-ka variants, see the discussion of dative clitics in §10.3.2, below.

(667) First Person Object clitics (T-ka)

person	preverbal after V or C	postverbal after {u i}	after C	after a
1Sg	-\hi	-\ha-hi	-\a-hi	-\Ø-hi
1Pl	-\hə-næɾ	-\ha-næɾ	-\a-næɾ	-\Ø-næɾ

The **full** forms are used after verbs ending in a high V. In the rightmost column, e.g. *-\hi* probably derives from contraction of *-\a-hi* with the stem-final *a*. However, the accent is on the word-antepenult, showing that Default Accentuation applies to the output of VV-Contraction here: *i-s-álha* ‘he makes weep’ (LoImpfP), with 1Sg object *i-s-álha-\hi* ‘he makes me weep’.

Further examples: *i-t-irdù-\ha-hi* and *...-\ha-næɾ* ‘he believes me/us’, *i-t-iwĩ-\ha-hi* ‘he is born for me’, *wæɾ-\hĩ i-ɾɾa* and *...-\hə-næɾ* ‘he didn’t kill me/us’, *i-wæt-\a-hi* and *...-\a-næɾ* ‘he hit me/us’, and *ĩ-ɾɾa-\Ø-hi* and *ĩ-ɾɾa-\Ø-næɾ* ‘he killed me/us’.

The 2nd and 3rd person object clitics for T-ka (confirmed for K-d), excluding 3MaSg (on which see below), are given in (668).

(668) Second and Third Person Object Clitics (T-ka, K-d)

person	postverbal after <i>ɑ</i> (occasionally after <i>i</i>)	elsewhere
2MaSg	(i)-\k	-\kæy
2FeSg	(i)-\m	-\kæm
2MaPl	(i)-\wæn	-\kæwæn
2FePl	(i)-\kmæt	-\kæmæt
3FeSg	-\et	-\tæt
3MaPl	-\en	-\tæn
3FePl	-\enæt	-\tænæt

We can see that the “elsewhere” column has the fullest forms, beginning with a *k* (2nd person) or *t* (third person) that is deleted in most post-*ɑ* variants. The full forms are quite similar to the corresponding independent pronouns, e.g. 2MaSg *kæyy*. The 3FeSg form *-\tæt* might be analysed as consisting of 3rd person *-t-* and FeSg *-æt* (the latter also appears as the end of the 2FePl and 3FePl clitics).

The 3FeSg, 3MaPl, and 3FePl allomorphs that follow stem-final *ɑ* are best taken as underlyingly V-initial, e.g. 3MaPl *-\æn/*. One could even argue that the underlying initial V is */æ/* rather than */e/*, since the sequence */ɑ + æ/* is realized as *e* in some verb-suffix combinations by VV-Contraction (§3.2.3.3). The clitic vowel is counted, as is the preceding V, in Default Accentuation. Example: *ĩ-rræbba* ‘he raised (a child)’, but *i-rræbbe-\n* ‘he raised them-Ma’, whose surface penultimate accent is regular if Default Accentuation applies to */i-ærræbba-\en/*. By contrast, in *ĩ-ŋxi-\kmæt* ‘he killed you-Fe’ the clitic does not seem to begin in a V, though it forces the preceding */ɑ/* to shift to *i*.

A few more examples follow. With the clitic on a preverbal particle: *ɑ-\kæy i-wæt* ‘he will hit you-MaSg’ (Future *ɑd* reduces to *ɑ-* before clitics). After a verb ending in *ɑ*, such as *ĩ-ŋxɑ* ‘he killed’ (PerfP), we get *ĩ-ŋxi-\m* ‘he killed you-FeSg’, and *ĩ-ŋxε-\n* ‘he killed them-Ma’. With a stem-final C, we have examples like *ĩ-nhæy-\tæn* ‘he saw them-MaPl’ (PerfP). With stem-final *u*, my data consistently show the longer forms from the right-hand column of (668), as in *i-t-irdù-\kæmæt* ‘he believes you-FePl’ (LoImpfP). When the stem-final is *i*, I recorded both contracted and long forms: *i-s-ĩmtælli-\kæy* = *i-s-ĩmtælli-\k* ‘he confuses you-MaSg’ (LoImpfP). In *i-s-ĩmtælli-\k* and other forms, note the default word accent (i.e. on the antepenult); while the stem-final *i* arguably represents a contraction, it does not count as two syllables for purposes of Default Accentuation.

The 3MaSg form is somewhat more complex (669).

(669) 3MaSg Object Clitics (T-ka)

allomorph distribution

-le	after stem-final <i>ɑ</i> of verb; after verb-stem-final C(C) due to Stem-Final I/A- Deletion (§3.1.2.4)
-\tt	intervocalic (including after Future <i>à-</i>); phrase-final after V
-\t	after Negative <i>wær</i> before V-initial verb; phrase-final after single C; after Future <i>à-</i> or Focus <i>à</i> before C-initial verb; after clitic-final single C (e.g. cliticized preposition)
-\øtt	after preverbal C-final focalized word, before V
-\øt	after preverbal C-final focalized word, before C

The major cut here is between *-le* and the consonantal forms. The latter have a basic form */-\tt/* (see below for a possible extra V). Schwa-Epenthesis accounts for the variants with *ə*. After Schwa-Epenthesis, the geminate is simplified to *t* if adjacent to a C on either side.

The consonantal allomorphs behave as though they had a vowel (see below for dialectal *-\ti*), for purposes of Default Accentuation. Thus *ənhæy-æq-\q* ‘I saw him’, accented on the word penult, as though from */ənhæy-æɾ-tV/*. For T-ka, however, the lost V does not appear overtly in any context. If necessary, Schwa-Epenthesis can insert schwa before the */t/* when the latter is sandwiched between other C’s, as in ... *s-\øt t-əqqæn-æd* ‘... by which you built it’.

The *e* of the first column is, one presumes, in some sense the “same” *e* as that resulting from contraction of stem-final *ɑ* with the */æ/* of the other 3rd person object clitics. Taking this (and the preceding observation about accent) to a logical conclusion, one could posit a representation */tæ/* for the 3MaSg object clitic. When the initial *t* of 3rd person object clitics is deleted after an *ɑ*-final verb, the remaining */æ/* contracts with the stem-final */ɑ/* in the same way seen above. However, as a practical matter I will hyphenate the 3MaSg object combinations as ...*-le*.

Examples of *-le* are PerfP *t-əŋɾ-le* ‘she killed him’ (<*t-əŋɾɑ*), LoImpfP *i-sálh-le* ‘he made him weep’ (<*sálhɑ-*), LoImpfP *i-tátt-le* ‘he eats it’ (<*tátt-* for */-táttA-/*), Imppt *s-əmm-əsw-le* ‘give him another drink!’ (<*s-əmm-əsów* for */s-əmm-əswi/*), Imppt *àr-le* ‘open-Sg it!’ (<*àr* for */arɪ/*). Examples of variants containing *t* are *Ø-ðjæy-\t* ‘he tied him’, *ɑ-\tt* *əwət-næt* ‘they-FePl will hit him’, *i-firru-\tt* ‘he inherits it’.

Initial */t/* or */k/* in a clitic is subject to assimilation to a preceding stop (or *ɾ*, which hardens to a stop). The conversions are shown in (670). The assimilations affecting */t/* in 3rd person clitics are identical to those affecting

the boundary between noun stem and FeSg suffix *-t*, see (30) and (31) in §3.2.1.1.

(670) Assimilations

affecting clitic-initial /t/		affecting clitic-initial /k/	
k-\t	→	k-\k	
j-\t	→	k-\k	j-\k → k-\k
ɾ-\t	→	q-\q	ɾ-\k → q-\q
ɖ-\t	→	t-\t	
d-\t	→	t-\t	

1Sg subject suffix *-æɾ* and 2Sg subject suffix *-æd* are commonly followed by object clitics. Note in particular that 3MaSg */-t/* undergoes these assimilations, so the alveolar articulation is not always expressed on the surface. For example, /ənhæy-æɾ-\t/ is realized as ənhæy-æq-\q ‘I saw him’, cf. ənhæy-æq-\qæn ‘I saw them-MaPl’ and ənhæy-æq-\qæy ‘I saw you-MaSg’.

Independent pronouns can be added at the end of the clause, in addition to an object clitic, but they generally function as clarifying or emphatic elements. I regard them as post-clausal. In the available examples, the post-clausal clarifying elements form a conjunction of the type ‘X and/with Y’ (including preposition əd ‘and/with’). The object clitic may subsume the two, as in ‘I saw you-Pl, you-Sg and him’, or it may coindex only the first conjunct, as in ‘I saw you-Sg, you-Sg with him’.

- (671) a. i-nhæy-\ɑ-næɾ nækk əd kæyy
 3MaSgS-see.PerfP-\O-1Pl 1Sg with 2MaSg
 ‘He saw us, me and you-MaSg’.
- b. i-nhæy-\ɑ-hi nækk
 3MaSgS-see.PerfP-\O-1Sg 1Sg
 d ’ə-m-idī-nin
 with Sg-Agent-be.with-1SgPoss
 ‘He saw me, me with my friend.’

The above data for T-ka and K-d require modification for some other dialects. For R, the differences are summarized in (672).

(672) R Dialectal Features

- 3MaSg clitic often $-\text{\textbackslash}ti$ after a C and $-\text{\textbackslash}tti$ after a V, either phrase-finally or before word beginning in a C.
- Stem-final α of verb contracts with V of both 2nd and 3rd person object clitics to give uniform i (not e).
- After high V, the 1Sg and 1Pl clitics (object = dative) require a homorganic semivowel rather than h (e.g. ... $uw-\text{\textbackslash}\alpha\text{-}hi$ versus T-ka ... $u-\text{\textbackslash}h\alpha\text{-}hi$).

Speakers of R dialect therefore often say $\text{\textbackslash}w\text{-}\text{\textbackslash}t\text{\textbackslash}ti$ 'he hit him' for T-ka $\text{\textbackslash}w\text{-}\text{\textbackslash}t$, (future) $\alpha\text{-}\text{\textbackslash}tti$ $t\text{-}\text{\textbackslash}t\text{\textbackslash}ti$ 'she will kill him' for T-ka $\text{\textbackslash}t\text{-}\text{\textbackslash}t$ $t\text{-}\text{\textbackslash}t\text{\textbackslash}ti$, $t\text{-}\text{\textbackslash}t\text{\textbackslash}ti$ 'she killed him' for T-ka $t\text{-}\text{\textbackslash}t\text{\textbackslash}ti$, and $\text{\textbackslash}t\text{\textbackslash}ti$ 'he killed them' for T-ka $\text{\textbackslash}t\text{\textbackslash}ti$.

My limited data on the Im dialect show the syllabic 3MaSg allomorph as in R, hence $\text{\textbackslash}j\text{\textbackslash}y\text{-}\text{\textbackslash}ti$ 'tie it-Ma!'. However, I also recorded e rather than i in $t\text{-}\text{\textbackslash}t\text{\textbackslash}ti$ 'she killed him'.

For K-d, as in R, we get a homorganic semivowel rather than h after a high V, e.g. $\text{\textbackslash}gl\text{\textbackslash}w\text{-}\text{\textbackslash}\alpha\text{-}hi$ 'go (away) for me!'.
 For A-grm, the 3MaSg object clitic is $-\text{\textbackslash}i$ rather than $-\text{\textbackslash}e$.

10.3.2 Dative clitics

Pronominal dative clitics are shown in (673). The clitics show no sign of the pronominal Dative preposition $\text{\textbackslash}e$ or $\text{\textbackslash}i$ (y -) (§6.3). Instead, the basic Dative morpheme in clitics is $-\text{\textbackslash}h\alpha\text{-}$, reduced in some contexts to $-\text{\textbackslash}\alpha\text{-}$, and for T-ka reduced in some other contexts to $-\text{\textbackslash}h\text{\textbackslash}$. The 1Sg and 1Pl dative clitics are identical to the corresponding object clitics, but the 2nd and 3rd persons distinguish dative from object clitics.

(673) Dative Pronominal Clitics (T-ka)

person	full	preverbal	after C	after α
1Sg	$-\text{\textbackslash}h\alpha\text{-}hi$	$-\text{\textbackslash}hi$	$-\text{\textbackslash}\alpha\text{-}hi$	$-\text{\textbackslash}\emptyset\text{-}hi$
1Pl	$-\text{\textbackslash}h\alpha\text{-}n\text{\textbackslash}r$	$-\text{\textbackslash}h\text{\textbackslash}\text{-}n\text{\textbackslash}r$	$-\text{\textbackslash}\alpha\text{-}n\text{\textbackslash}r$	$-\text{\textbackslash}\emptyset\text{-}n\text{\textbackslash}r$
2MaSg	$-\text{\textbackslash}h\alpha\text{-}k$	$-\text{\textbackslash}h\text{\textbackslash}\text{-}k$	$-\text{\textbackslash}\alpha\text{-}k$	$-\text{\textbackslash}\emptyset\text{-}k$
2FeSg	$-\text{\textbackslash}h\alpha\text{-}m$	$-\text{\textbackslash}h\text{\textbackslash}\text{-}m$	$-\text{\textbackslash}\alpha\text{-}m$	$-\text{\textbackslash}\emptyset\text{-}m$
2MaPl	$-\text{\textbackslash}h\alpha\text{-}w\text{\textbackslash}n$	$-\text{\textbackslash}h\text{\textbackslash}\text{-}w\text{\textbackslash}n$	$-\text{\textbackslash}\alpha\text{-}w\text{\textbackslash}n$	$-\text{\textbackslash}\emptyset\text{-}w\text{\textbackslash}n$
2FePl	$-\text{\textbackslash}h\alpha\text{-}k\text{\textbackslash}m\text{\textbackslash}t$	$-\text{\textbackslash}h\text{\textbackslash}\text{-}k\text{\textbackslash}m\text{\textbackslash}t$	$-\text{\textbackslash}\alpha\text{-}k\text{\textbackslash}m\text{\textbackslash}t$	$-\text{\textbackslash}\emptyset\text{-}k\text{\textbackslash}m\text{\textbackslash}t$
3Sg	$-\text{\textbackslash}h\alpha\text{-}s$	$-\text{\textbackslash}h\text{\textbackslash}\text{-}s$	$-\text{\textbackslash}\alpha\text{-}s$	$-\text{\textbackslash}\emptyset\text{-}s$
3MaPl	$-\text{\textbackslash}h\alpha\text{-}s\text{\textbackslash}n$	$-\text{\textbackslash}h\text{\textbackslash}\text{-}s\text{\textbackslash}n$	$-\text{\textbackslash}\alpha\text{-}s\text{\textbackslash}n$	$-\text{\textbackslash}\emptyset\text{-}s\text{\textbackslash}n$
3FePl	$-\text{\textbackslash}h\alpha\text{-}s\text{\textbackslash}n\text{\textbackslash}t$	$-\text{\textbackslash}h\text{\textbackslash}\text{-}s\text{\textbackslash}n\text{\textbackslash}t$	$-\text{\textbackslash}\alpha\text{-}s\text{\textbackslash}n\text{\textbackslash}t$	$-\text{\textbackslash}\emptyset\text{-}s\text{\textbackslash}n\text{\textbackslash}t$

I have also heard the 2MaSg preverbal form as $\text{-}\text{h}\text{ə}\text{-kk}$ with geminated kk.

The “full” forms are used in the following cases: a) when the dative immediately follows an object clitic (in preverbal or postverbal position); b) when the dative is postverbal and follows a high V {i u}. The “preverbal” column shows the form taken by the clitic when they immediately follow preverbal particles Negative $\text{w}\text{æ}\text{r}$ or Future $\text{ð}\text{d}$ (which is always reduced to ð before clitics), or a focalized constituent (e.g. mi ‘who?’ in questions). The $\text{-}\text{h}\text{a}\text{-}$ of the full form is deleted in the 1Sg form, and reduced to $\text{-}\text{h}\text{ə}\text{-}$ elsewhere. The remaining columns show the forms in postverbal position after a C (the h of the full form is dropped), and after a (the h is dropped and the two a vowels contract into one).

Instead of taking underlying $\text{/}\text{-h}\text{a}\text{/}$ as the lexical form of the Dative morpheme and having the /h/ deleted in some positions, one could alternatively take the morpheme as $\text{/}\text{-a}\text{/}$ and posit an **h-Insertion** rule (like that given for directional clitics in §10.2.1.1). However, the phonological distribution of the /h/ in the datives is extensive, including some post-consonantal positions where an h-Insertion rule would have little motivation. This is unlike the case with Centripetal $\text{-}\text{á}\text{ð}\text{ð}$, where a minor h-Insertion rule seems warranted.

Data from dialects other than T-ka (e.g. K-d R T-md) differ in the respects indicated in (674).

(674) Dialectal Variants (non-T-ka)

- a. no reduction of $\text{-}\text{h}\text{a}\text{-}$ to $\text{-}\text{h}\text{ə}\text{-}$ in preverbal forms
- b. homorganic semivowel rather than h in 1Sg/1Pl clitic after high vowel, hence ...w-a-... after u and ...y-a-... after i

Examples of (674.a) are below. For (674.b), compare R i-t-irdúw- $\text{-}\text{a}\text{-hi}$ ‘he believes me’ with T-ka i-t-irdù- $\text{-}\text{h}\text{a}\text{-hi}$, and R i-t-iwíy- $\text{-}\text{a}\text{-n}\text{æ}\text{r}$ ‘it is born for us’ with T-ka i-t-iwí- $\text{-}\text{h}\text{a}\text{-n}\text{æ}\text{r}$. In practice, given the paucity of verb forms ending in a high V, these combinations are infrequent.

The preverbal forms are used when the clitic is hosted by a preverbal particle, usually Negative $\text{w}\text{æ}\text{r}$ or a Future marker like $\text{ð}\text{d}$ (which reduces to ð before a clitic) Interrogatives like mi ‘who?’ and other fronted focalized constituents can also be followed by a clitic. In my T-ka data, the usual $\text{-}\text{h}\text{a}\text{-}$ formative is reduced to $\text{-}\text{h}\text{ə}\text{-}$ in this position. No reduction occurs in examples from other dialects. The 1Sg is $\text{-}\text{h}\text{i}$ in this position in all dialects.

(675)	a. (T-ka)	$\text{a}\text{-}\text{h}\text{ə}\text{-k}$	$\text{Ø}\text{-}\text{æ}\text{nn}$
	b. (T-md, R)	$\text{a}\text{-}\text{h}\text{u}\text{-k}$	$\text{Ø}\text{-}\text{æ}\text{nn}$
		Fut- VDat -2MaSg	3MaSgS-say.ShImpf
		‘He will say to you-Sg.’	

In postverbal position, the Dative formative lacks h after most C’s (676).

- (676) i-wæt-\ä-hi-\tt
 3MaSgS-hit.PerfP-\Dat-1Sg-\3MaSgO
 'He hit it for me.'

When the verb stem preceding the clitic ends in *ɑ*, the clitic again lacks /h/ and the two adjacent *ɑ* vowels contract into a single *ɑ*. This *ɑ* is treated as a single syllable for purposes of Default Accentuation. The location of the surface morpheme boundary is indeterminate, but I will transcribe with -\Ø- after the stem-final V (677).

- (677) ǐ-nnɑ-\Ø-sæn
 3MaSgS-say.PerfP-\Dat-3MaPl
 'He said to them.'
 [</i-ənnɑ-\hɑ-sæn/]

The verb preceding the clitic may end in a high V {i u}, and rarely a dative clitic may follow 3MaSg object clitic -\e. In these cases, T-ka uses the full form of the dative clitic beginning with h. My R data show linking semivowels, w after u and y after i.

- (678) a. (T-ka) i-t-iwǐ-\hɑ-hi
 b. (R) i-t-iwǐy-\ɑ-hi
 3MaSgS-LoImpf-be.born.LoImpfP-/Dat-1Sg
 'It is born for me.'

The full h-form is also used when the dative clitic follows an object clitic, regardless of what phonological segment the object clitic ends in. In (679.a), the object clitic (underlying /-t/ realized as -q- by assimilation) is C-final, but still requires the h-form of the following dative clitic. (679.b) has an object clitic ending in n. (679.c) shows the same construction with a V-final object clitic.

- (679) a. æss-ækf-æq-\q-\hɑ-sæn
 Caus-give.PerfP-1SgS-\3MaSgO-\Dat-3MaPl
 'I made him give (it) to them.'
- b. i-ŋɣè-\n-\hɑ-hi
 3MaSgS-kill.PerfP-\3MaPlO-\Dat-1Sg
 'He killed them for me.'
- c. i-wæt-\ä-hi-\hɑ-s
 3MaSgS-hit.PerfP-\O-1Sg-\Dat-3Sg
 'He hit me for him/her.'

clitic is 1PI Dative -\hə-næʀ (T-ka variant of -\hɑ-næʀ). This is the correct location for **pronominal** clitics (object, dative). In (681.b), we have an even more complex sequence with cliticized preposition, dative pronominal, object pronominal, and directional. For further detail on the relative ordering of object and dative clitics when more than one is present, see (684) below.

Directional clitics follow pronominals. The two directionals (Centripetal $\text{-\acute{a}dd}$ or $\text{-\acute{ı}dd}$, and Centrifugal $\text{-\acute{ı}n}$) are semantically incompatible and do not co-occur. Both directionals have marked accents, unlike other clitics (which have at most default accents). In (681.a), Centrip $\text{-\acute{a}dd}$ appears at the end of the second word, then again (redundantly) on the third word. A simpler example is (682).

- (682) $\text{osa-\text{Ø}-\acute{h}\acute{ı}-\acute{d}d}$
arrive.PerfP-\O-1Sg-\Centrip
'He came to me.'

In (683.a), we see that a **pronominal PP** (here 3Sg locative $\text{-\dər-\acute{e}s}$) is cliticized, but follows the directional, here Centrifugal $\text{-\acute{ı}n}$. (683.b) shows dative, then Centripetal, then pronominal PP. However, in (683.c), from a K speaker, the PP precedes 3MaSgO clitic $\text{-\text{t}}$, suggesting that the linear position of pronominal PP's is not completely rigid cross-dialectally.

- (683) a. $\text{t-\acute{a}f\acute{ı}r\acute{e}kk\acute{e}-\text{t}-\acute{ı}n-\dər-\acute{e}s}$ $\text{t-\acute{e}tt-\acute{e}n\acute{e}t}$
3FeSgS-fall.in.Reslt-Aug-\Centrif-\acute{ı}n-3Sg Fe-eye-3SgPoss
'Her eye fell into it.'
- b. $\text{\acute{a}-\text{t}\acute{a}n-\acute{ı}n}$ $\text{\acute{z}-\acute{e}n\acute{s}-\acute{e}ʀ}$
Fut-\3MaPIO-\Centrif Caus-be sold.ShImpf-1SgS
 $\text{\acute{e}j-\acute{e}ʀ-\acute{a}-s-\acute{a}dd-\d-\acute{e}s}$
do.ShImpf-1SgS-\Dat-3Sg-\Centrip-\Comit-3Sg
[$\text{s}\acute{a}n\acute{u}t$ $\text{\text{'}t-\acute{a}-m\acute{a}r\text{w}-en}$ n $\text{\acute{e}-\gamma\acute{ı}l}$]
[two.Fe Fe-Pl-ten-FePl Poss Sg-span]
'I will sell them, and do (=get) with it (=the proceeds) 20 spans (of fabric).' [K]
- b. $\text{i-ll-\acute{e}}$ $\text{\acute{u}di}$
3MaSgS-exist-\3MaSgO butter
 $\text{\acute{a}-\dər-\acute{e}s-\text{t}}$ $n-\acute{e}j$ $\text{\acute{r}\acute{a}s}$
Foc-\acute{ı}n-3Sg-\3MaSgO 1PlS-put.ShImpf only
'But there is some butter; that [focus] is what we'll just put in it (=food).' [K]

There is some flexibility in the relative ordering of **object** and **dative** clitics when both are present. The impossibility of assigning strict slots by function is shown by the fact that two dative clitics, or a sequence object-

dative-object, can occur in the same cluster. However, clusters with two datives are largely limited to such combinations as '[give X to Y] for Z', with a recipient dative (Y) and a benefactive dative (Z). Clusters with two object clitics are theoretically possible in causatives of transitives ('cause X to see Y', §9.1.7), but informants did not like any double-clitic sentences I proposed, and I could not get reliable data about relative ordering of two adjacent object clitics.

Most of the data can be accounted for by assuming the maximal schema in (684).

(684) Ordering of Object and Dative Clitics

a. if 1st person present

[host]	1st person	non-1st person
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b. if no 1st person

[host]	object-1	dative	object-2
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One generalization is the **first person first** tendency: 1Sg or 1Pl precedes a non-1st person clitic regardless of function. Note that 1Sg and 1Pl are the pronominals that make no distinction in form between object and dative clitics. This generalization clearly works in simple combinations with one object and one dative clitic (685).

(685) a. i-wæt-à-hi-àtt
3MaSgS-kill.PerfP-àDat-1Sg-3MaSgO
'He hit it for me.'

b. i-wæt-à-hi-àha-s
3MaSgS-hit.PerfP-àO-1Sg-àDat-3Sg
'He hit me for him/her.'

The sense is deciphered by noting which case (object or dative) the non-1st person clitic is in, then inferring the grammatical function of the ambiguous 1st person clitic. In (685.a), the final -àtt is a 3Sg object form, so the ambiguous 1Sg -à-hi- is interpreted as a dative. In (685.b), the final -àha-s is a 3Sg dative, so the ambiguous 1Sg -à-hi- is interpreted as an object pronominal. In both types, informants normally reject suggested alternatives with the 1Sg clitic following the non-1st person clitic. Thus #i-wæt-à-t-àha-hi for (685.a) and #i-wæt-à-s-àha-hi for (685.b) were usually expressly rejected, though very rarely such a combination did occur in paradigmatic elicitation.

However, in some combinations it is possible for a 1st person dative clitic to follow a 3rd person object clitic. Consider (686), attested in T-md and K-d.

- (686) *i-ŋʁe-\\n-\\ha-hi*
 3MaSgS-kill.PerfP-\\3MaPIO-\\Dat-1Sg
 ‘He killed them-Ma for me.’ (T-md)

Here the 3MaPl object has a reduced, arguably V-initial allomorph (/ə-æn-/) after the V-final verb (-əŋʁɑ-), and we get VV-Contraction with /ɑ-æ/ surfacing as e. It appears that this “fusion” of object clitic with stem-final V permits an exception to the first person first rule. However, even here, some speakers including my primary T-ka informant strongly prefer to allow the first person first rule to apply, so instead of (686) they have *i-ŋʁə-\\Ø-hi-\\tæn*, with 3MaPIO -\\tæn at the end.

In the combinations not involving a 1st person clitic, the common sequence is **dative-object**. In other words, the object-2 slot is favored for object clitics. One can account for the data by recognizing (684.b) as the basic order, while allowing for subsequent “fronting” of a 1Sg or 1Pl form to initial position within the clitic cluster. However, there are also some attestations of **object-dative** order even when a 1st person clitic is not involved, so the ordering is not rigid.

In the uncommon case where two objects and one dative co-occur, the two object clitics flank the dative clitic, so we get **object-dative-object** order.

Some further examples each involving one dative clitic and one object clitic are in (687). The verb glossed ‘kill’ can also mean ‘hit hard, whack’. (687.a-b) include a 1st person, while the others do not.

- (687) a. *wær-\\hĩ-\\tt* *i-ŋʁɑ*
 Neg-\\1Sg(Dat)-\\3MaSgO 3MaSgS-kill.PerfN
 ‘He did not kill it for me.’
- b. *i-wæt-\\à-hi-\\tt*
 3MaSgS-hit.PerfP-\\Dat-1Sg-\\3MaSgO
 ‘He hit it for me.’
 (#*i-wæt-\\t-\\ha-hi* usually rejected)
- c. *i-wæt-\\t-\\ha-s*
 3MaSgS-hit.PerfP-\\3MaSgO-\\Dat-3Sg
 ‘He hit it for him/her.’
- d. *i-wæt-\\ha-s-\\t*
 3MaSgS-hit.PerfP-\\Dat-3Sg-\\3MaSgO
 [=c]
- e. *i-wæt-\\à-hi-\\ha-s*
 3MaSgS-hit.PerfP-\\O-1Sg-\\Dat-3Sg
 ‘He hit me for him/her.’
 (#*i-wæt-\\à-s-\\ha-hi* usually rejected)

- f. wær-\hə-s-\t e æŋr-ær
 Neg-\Dat-3Sg-\3MaSgO Fut kill.ShImpf-1SgS
 'I will not kill it-Ma for him/her.' (R)
- g. u-mà-\hə-s-\t æŋr-ær
 Neg-Fut-\Dat-3Sg-\3MaSgO kill.ShImpf-1SgS
 [=f] (T-ka)
- h. a-\hə-k-\k æŋr-ær
 Fut-\Dat-2Sg-\3MaSgO kill.ShImpf-1SgS
 'I'll kill it-MaSg for you-MaSg.' (R)

When the verb is preceded by a particle such as Negative or Future, the usual pattern is that all the clitics are hosted by the particle. However, I have occasionally recorded examples where one pronominal clitic follows the particle and the other follows the verb. This is the case in (688.a), an optional alternative to (688.b).

- (688) a. wær-\t i-ŋrə-\hə-hi
 Neg-\3MaSgO 3MaSgS-kill.PerfN-\Dat-1Sg
 'He did not kill it for me.' (R)
- b. wær-\hĩ-t i-ŋrə
 Neg-\1Sg.Dat-\3MaSgO 3MaSgS-kill.PerfN
 [=a] (R)

- (691) a. æddóbè-ɣ mæjræd, mæššán
 be.able.Reslt-1SgS speak.VbIN, but
 t-è-ɣære, [wær-ʔtæt æddobe-ɣ]
 Fe-Sg-read.VbIN [Neg-ʔ3FeSgO be.able.PerfN-1SgS]
 ‘I can speak (e.g. French), but as for reading [topic], I can’t do
 it.’
- b. ázzal dár [wær-ʔt æddobe-ɣ]
 run.VbIN too [Neg-ʔ3MaSgO be.able.PerfN-1SgS]
 ‘Running too [topic], I can’t do it.’ [K]
 (i.e. ‘I can’t run either.’)

Another, more explicit topicalization construction, involving a topic switch, is exemplified by (692).

- (692) a-w-a i-qqáɛl-æn
 Dem-Ma-Dem.Sg 3MaSgS-go.back.Reslt-Partpl.MaSg
 ʔ-ráj-æn w-i n i-llá-ʔd
 Pl-valley-MaPl Ma-Dem.Pl Poss 3MaSgS-exist-ʔCentrip
 [y ʔn-an], ...
 [Dat well-MaPl], ...
 ‘With regard to the dune valleys that are on this side of the wells, ...’

Here -vqqvɛl- ‘go back to’ (also ‘become’) occurs in a participial phrase, literally “what goes back (to...),” free translation ‘with regard to’ or ‘as for’. For the ‘this side of X’ construction in (692) see §9.3.

11.2 Emphatics

Emphatic particles are not especially common in Tamashek discourse.

11.2.1 Clause- or phrase-final yá

A clause-final particle yá (cf. Koyra Chiini yaa) can be used to insist on the truth of a statement. It is sometimes heard as “accented” but this may be emphatic stress rather than grammatical accent.

- (693) ʔjle-ɣ yá
 go.PerfP-1SgS **Emph**
 ‘(Yes) I did go!’

This particle can also be used in yes-no questions, where it again focuses on the truth of the statement.

- b. hær w-á wær n-ənhey é-šəḍ
until **Ma-Dem.Sg** **Neg** 1PlS-see.PerfN Sg-donkey
 ‘We still haven’t seen the donkey.’
 (lit., “Until now, we haven’t seen the donkey.”)]
- c. wær-\\d Ø-osa səddér
Neg-\\Centrip 3MaSg-arrive.PerfP **yet**
 ‘He hasn’t come yet.’

The second construction involves a conjunction *əndí* ‘before’ (cf. §13.1.1.4), interpretable here literally as ‘(it is) before ...’. The verb is PerfP.

- (706) a. əndí-\\dd Ø-osa
before-\\Centrip 3MaSg-arrive.PerfP
 ‘He hasn’t come yet.’ (= ‘It is before he has come.’)
- b. əndí n-əkša
before 1PlS-eat.PerfP
 ‘We haven’t eaten yet.’

Both *əndí* and *səddér* occur in (707).

- (707) t-α-kəssi-t-t [əndí-\\sær-sæn-\\ád
 Fe-Sg-sprouting-Fe-FeSg [**before-\\Instr-3MaPl-\\Centrip**
 t-əmda səddér]
 3FeSg-PerfP **not.yet**]
 ‘before the growing (of fresh vegetation) had yet come to an end on them’

Chapter 12

Extraction processes

12.1 Relativization

There are two cross-cutting axes of differentiation within relative clauses. The first is that between definite and indefinite relative clause. This is a fundamental distinction and has an effect on the form of the verb inside the relative clause. The second distinction is between subject, object, and prepositional relative, based on the syntactic role of the NP in the embedded clause that is coindexed with the head. Subject relatives are expressed with participles. Non-subject relatives are expressed with ordinary verbs, subject to certain modifications in ablaut features and accent.

It is customary in cross-linguistic syntactic theory to speak of a **head noun** (or NP), e.g. 'dog' in 'the dog that I saw'. In Tamashek relatives, it is more useful to speak of the **clause-internal head** within the relative clause itself. In a **definite relative** clause, this internal head is a demonstrative, with definite reference, that is prosodically part of the relative clause rather than part of a NP with the preceding noun. The demonstrative is **appositional** to the head NP (if the latter is overt). In definite relative clauses, the **unmarked demonstrative is the Proximate** with stem -à.

In the case of an **indefinite relative** clause, the **internal head is the head noun itself**, or (in the absence of a head noun) an **indefinite demonstrative** with stem -ì. In indefinite relatives there is no apposition since the head is represented only in its relative-clause-internal manifestation.

Any clitics present within a relative clause proper are hosted by the internal head. In other words, in indefinite relatives the clitics attach to the head noun (or indefinite demonstrative if there is no head noun), while in definite relatives the clitics attach to the definite demonstrative. This justifies the view that this head is internal to the relative clause (whereas a head noun in a definite relative is external to the relative clause).

The two constructions are therefore those in (708). The ordering of clitics and preverbs will be discussed in more detail in later sections.

(708) Structure of Definite and Indefinite Relatives (with internal head bolded)

a. definite relative:

(head noun/NP) [**Dem**(definite) (clitics) (preverb) Verb ...]

or:

pronoun(1st/2nd) [**Dem**(definite) (clitics) (preverb) Verb ...]

b. indefinite relative

[noun (clitics) (preverb) Verb ...]

or:

[Dem(indefinite) (clitics) (preverb) Verb ...]

The normal demonstratives used as internal heads are shown in (709).

(709) **Demonstratives Used as Internal Heads**

	Definite	Indefinite
after NP or 3rd person pronoun		
MaSg	w-á	ĩ
MaPl	w-í	ĩ
FeSg	t-á	t-ĩ
FePl	t-í	t-ĩ
after 1st/2nd pronoun	ĩ	(not applicable)

The demonstratives in (709) are used in both subject (i.e. participial) and non-subject relatives. The indefinite forms shown are most common with adjectival subject relatives ('a good one', etc., §8.5.4).

The accents in the definite demonstratives are audible in isolation (as demonstrative 'this'), but in actual relative clauses they are overridden by phrasal accents. The indefinite forms shown do not occur in isolation so their intrinsic accent cannot be determined.

In a definite relative, unless there is a specific deictic sense ('this', 'that over there'), the demonstratives shown in (709) are usual. For an anaphoric sense 'that (same) one who/that ...', the Anaphoric suffix *-dæx* can be added to the demonstrative: *w-á-dæx*, etc. In (727.d), below, there is an example where the demonstrative combines with a word meaning '(the) other', and this combination as a unit functions as the internal head of a definite relative.

The form *ĩ* used after 1st/2nd person pronouns functions as definite, and does not have a feminine variant *t-ĩ*, so it should be distinguished from Indefinite *ĩ* (Feminine *t-ĩ*). Examples of 1st/2nd person *ĩ* are in (710).

- (710) a. *nækk-æn-æt-ed* [i ækšæ-nen]
 1FePl [Dem eat.Reslt-Partpl.Pl]
 'we-Fe who have (already) eaten'
- b. *nækk-æn-ed* [i tættæ-nen di-ha]
 1MaPl [Dem eat.LoImpfP-Partpl.Pl here]
 'we who (regularly) eat here' [K-d]

- c. næk [i t-əzzæy-æd]
 1Sg [Dem 2S-know.Reslt-2SgS]
 'I (Ma or Fe) whom you-Sg know' [K-d]

Definite relative clauses force modifications in local ablaut formatives of Reslt and LoImpfP stems (whether realized as participles or as ordinary inflected verbs). The fact that such modifications occur in (710.a-c) demonstrates that the construction with *ī* is a definite relative. In the Reslt, the only modification is **$\bar{\chi}$ -pc1 Erasure**, whereby ablaut-induced lengthening ($\bar{\chi}$ -pc1) of the first postconsonantal V is erased. This has affected the participle in (710.a) and the verb in (710.c); they appear in indefinite relatives in their full forms *əkšá-nen* and *t-əzzáy-æd* (note the medial full *a* vowels). In the LoImpfP, we again get $\bar{\chi}$ -pc1 Erasure in definite relative contexts, this time accompanied by modifications in ablaut-induced accent ($\acute{\chi}$ -pc1). In (710.b), the LoImpfP verb *tættæ-nen* has erased $\bar{\chi}$ -pc1, and has also shifted the accent ($\acute{\chi}$ -pc1) from the first to the second syllable by **Rightward Accent Shift**. Compare *tàttæ-nen* (underlying /táttA-nen/) in indefinite relatives. In some other morphological combinations, the ablaut accent in a definite relative is deleted entirely by **$\acute{\chi}$ -Erasure**. For these processes, see §3.5.3.

There are some cases of the minimal demonstrative *à* as clause-external "head noun" followed by e.g. MaSg *w-á* .., as in *à* [w-*a*-\hĩn Ø-oyya] 'what he left (there)'. Here the *à* functions syntactically as a head noun, and the relative clause proper begins with *w-á*.

I have a textual example where an interpolated topical phrase occurs between an indefinite noun and an apparent relative clause.

- (711) *wá-di* *hæræt* [əntà dæx] n-əssán-łt
 Dem.Ma-Anaph thing [3Sg too] 1PIS-know.Reslt-3MaSgO
 'that is something, it too, (that) we know it.'

However, in this example, '...(that) we know it' is not a true relative clause, since (unlike the case with normal object relatives) the object is represented as a 3MaSgO clitic on the verb.

As in other languages, constructions involving two relative clauses may either be **stacked** with the second relative modifying an NP inside the first relative ('the cat that ate the rat that lived...'), or **parallel**, both modifying the same head noun ('the man whom you saw who works in town'). Consider (712), from a K dialect text; for *ère* see §12.1.6.

- (712) *ækk* *ère*
 go.to.Imprt whoever
 [w-*a*-\dæx Ø-jær-æd ættæma] rás
 [Ma-Dem.Sg-ĩn 2S-throw.PerfP-2SgS hope] only
 wær-æn Ø-æmós-æn
 Neg-Partpl.MaSg 3MaSgS-be.Reslt-Partpl.MaSg

(714) Examples of Definite Subject Relative Clauses

- a. médd-æn
men-MaPl
[w-i ðræ-nen t-ð-shær-t
[Ma-**Dem.Pl** open.PerfP-**Partpl.Pl** Fe-Sg-door-FeSg]
'the men who opened the door'
- b. æ-hálæs
Sg-man
[w-a-\hĩ i-ss-ðbdæd-æn]
[Ma-**Dem.Sg**-\1SgO 3MaSg-Caus-stand.PerfP-**Partpl.MaSg**]
'the man who stopped (=arrested) me'
- c. æ-hálæs [w-a wær-æn Ø-æqqimɑ]
Sg-man [Ma-**Dem.Sg** Neg-**Partpl.MaSg** 3MaSgS-sit.PerfN]
'the man who did not sit' [R]
- d. t-a wær-t ækh^ʸa
Fe-**Dem.Sg** Neg-**Partpl.FeSg** eat.PerfN
'one-Fe who didn't eat' [K-f]
- e. t-a-mætt
Fe-Sg-woman
[t-a Ø-t-əhnéffi-t]
[Fe-**Dem.Sg** 3FeSgS-LoImpf-groan.LoImpfP-**Partpl.FeSg**]
'the woman who is groaning' [K-d]

Indefinite relatives are similar in structure except that a head noun is obligatory and the demonstrative is absent. The participle is therefore attached directly to the head noun. The participle has different forms in definite and indefinite constructions, since some reductions of ablaut-induced V-length (Reslt, LoImpfP) and the shift or erasure of the ablaut accent, characteristic of definite participles, do not apply to indefinite relative (whose verbs or participles are based on the same stem shapes as verbs in main clauses).

The majority of examples of the indefinite construction in texts involve intransitive verbs with adjectival meaning. Such stems have indefinite participial forms with high text frequency, often based on a Reslt stem and translatable as modifying adjectives in English; see §8.5.7. In the text (Chapter 16), (920) uses an indefinite relative like an English parenthetical (nonrestrictive) relative. A transitive example with object clitic following the head noun is (715).

- (715) a. i-sæ1-an-\hĩ əjráz-nen
 Pl-news-MaPl-\1SgO please.Reslt-**Partpl**.Pl
 ‘news-Pl that pleases me’
- b. t-e-ræfti-t-t-\ód
 Fe-Sg-fright-Fe-FeSg-\Centrip
 t-okay-æt-\ódd
 Fe-happen.Reslt-**Partpl**.FeSg-\Centrip
 ‘a frightening thing that happened (to me)’

12.1.2 Object relatives

Nonsubject relatives do not have participles. However, in definite nonsubject relatives, the inflected verb displays ablaut reductions like those for participles, erasing $\tilde{\chi}$ -pc1 (Reslt, LoImpf) and $\tilde{\chi}$ -pc1 (LoImpfP), and applying Rightward Accent-Shift (LoImpfP).

The basic structure of a definite object relative is (716), which follows the head NP if the latter is overtly expressed.

(716) **Definite Object Relative Clause**

[demonstrative (clitics) (preverb) verb ...]

As with subject relatives, the demonstrative form is \tilde{i} if the head is a 1st or 2nd person pronoun, otherwise it is usually from the demonstrative set {w-á w-í t-á t-í} with gender and number marked. The only difference between (716) and the subject relative type is that (716) has a regularly inflected verb, including a pronominal subject affix, not a Participial suffix. The subject may also be represented by a NP in immediate postverbal position. There is **no resumptive pronoun** representing the object.

$\tilde{\chi}$ -pc1 Erasure (130) is exemplified in the definite object relatives in (717). We additionally have **Rightward Accent Shift** (132) in the LoImpfP cases, audibly in (717.b) and virtually but not audibly in (717.c).

- (717) a. æ-húləs [w-a əzzæy-ær]
 Sg-man [Ma-**Dem**.Sg know.Reslt-1SgS]
 ‘the man whom I know’
- b. \tilde{i} -s-an [w- \tilde{i} tætt-ær]
 Pl-meat-MaPl [Ma-**Dem**.Pl eat.LoImpfP-1SgS]
 ‘the meat that I eat’ (lit. “the meats...”)

- c. æ-hálæs [w-a i-t-əmèttəsu-t]
 Sg-man [Ma-Dem.Sg 3MaSgS-LoImpf-fear.LoImpfP-Aug]
 'the man whom he fears'

Compare the regular Reslt stem -æzzý- 'know' and the regular LoImpfP stems -tátt- 'eat' and -t-ímèttəsu-t.

Further examples of definite object relatives with LoImpfP verbs are in (718), using LoImpfP -tátt- 'eat' (/-/táttA-/), -járræw- 'get', and -ríddu- 'expect', which are first reduced to -tætt- (/-/tættA-/), -jærræw-, and -ræddu- by $\bar{\chi}$ -pcl Erasure. Then, Rightward Accent Shift applies, accounting for all forms of -jærræw- and of -ræddu-. It accounts directly for all but the 3FeSg form of -tætt-, on which see below.

- (718) a. w-à tættæ-n
 Ma-Dem.Sg eat.LoImpfP-3MaPl
 'what they-Ma eat'
- b. w-à tættæ-d
 Ma-Dem.Sg eat.LoImpfP-2Sg
 'what you-Sg eat'
- c. w-à jærræw-ær
 Ma-Dem.Sg get.LoImpfP-1Sg
 'what I get'
- d. w-à jærræw-næt
 Ma-Dem.Sg get.LoImpfP-3FePl
 'what they-Fe get'
- e. w-à Ø-jærræw
 Ma-Dem.Sg 3FeSgS-get.LoImpfP
 'what she gets'
- f. w-à Ø-ræddú
 Ma-Dem.Sg 3FeSgS-expect.LoImpfP
 'what she expects'

The examples in (719) show that Rightward Accent Shift does not apply to the 3MaSg or 1Pl forms, which have a (potentially) syllabic subject prefix.

- (719) a. w-à i-jærræw
 Ma-Dem.Sg 3MaSgS-get.LoImpfP
 'what he gets'

- b. w-à nə-jǎrræw
 Ma-**Dem**.Sg 1PlS-get.LoImpfP
 ‘what we get’
- c. w-à i-tǎtt
 Ma-**Dem**.Sg 3MaSgS-eat.LoImpfP
 ‘what he eats’
- d. w-à nə-tǎtt
 Ma-**Dem**.Sg 1Pl-eat.LoImpfP
 ‘what we eat’
 [dialectally: w-à n-tǎtt]

It remains to account for the few forms that undergo χ -Erasure (i.e. loss of ablaut accent). χ -Erasure (136) applies to verbs when Rightward Accent Shift (132) has placed the accent on a stem-final deletable V, as this V is then deleted or contracted (by VV-Contraction). The examples involve -CáCC- and -t-íC(C)- (underlying /-CáCCA-/ and /-t-íC(C)t-/) LoImpfP stems, specifically in the 3FeSg subject form, as in (720). The 3FeSg prefix is segmentally unexpressed on the surface (Prefixal t-Deletion (35)), and the entire verb form ends up being totally unaccented, resulting in a phrasal accent on the demonstrative. Even with -tǎtt- ‘eat’, χ -Erasure does not apply to 3MaSg or 1Pl forms whose prefix is segmentally nonzero, because they are not subject to Rightward Accent Shift, as seen in (719.c-d) above.

- (720) w-à Ø-tǎtt
 Fe-**Dem**.Sg.Sg 3FeSgS-eat.LoImpfP
 ‘what she eats’

In the PerfP, PerfN, and ShImpf, there is no difference between the form of the inflected verb in ordinary clauses and in non-subject relatives. A PerfP example is (721).

- (721) kəyy [i əwæt-æɾ]
 2MaSg [**Dem** hit.PerfP-1SgS]
 ‘you-MaSg whom I hit’

Examples including preverbal particles are in (722). Future àd is replaced by its non-clause-initial variant m̀r (or dialectal variant) (722.b).

- (722) a. æ-húləs [w-ɑ ẁr i-nhey]
 Sg-man [Ma-**Dem**.Sg Neg 3MaSgS-see.PerfN]
 ‘the man whom he did not see’

- b. æ-hólæs [w-a mar ðnhøy-æʀ]
- [Ma-Dem.Sg Fut see.ShImpf-1SgS]
- ‘the man whom I will see’

Another context calling for \bar{x} -pc1 Erasure is after íket in the ‘have just VERB-ed’ construction (§13.6.6). This supports the view that this construction is treated as a definite relative clause, albeit reduced in form, with íket as the head (there is no following demonstrative). The form íket is also a noun ‘quantity’ or ‘good behavior’.

Indefinite object relatives, i.e. those with no demonstrative after the head noun, undergo no reduction in main-clause ablaut features. For example, (723.a-c) show unreduced Reslt stems with á in the second syllable. (723.c) also has unreduced a in war-æn, though a phrasal accent overrides the ablaut accent (/wár-/).

- (723) a. [hæraet əzzáy-æʀ]
- [thing know.Reslt-1SgS]
- ‘a thing that I know’
- b. mǽšán lé-ʀ [ékrær əjmár-æʀ]
- but have.Reslt-1SgS [ram raise.Reslt-1SgS]
- ‘But I have a ram that I have fattened.’ [K]
- c. æqqól-æʀ
- become.Reslt-1SgS
- [æ-wadəm war-æn ʔØ-s-an]
- [Sg-human be.on.Reslt-3MaPIS Pl-meat-MaPI]
- ‘I am a person whom flesh is on (=who is chubby).’ [K]

12.1.3 ‘something to eat’

Constructions of the type ‘something/nothing for (someone) to eat’ are definite relative clauses headed by a minimal demonstrative ð. With a preceding ‘have’ or ‘find’ (positive or negative), the verb in the ‘something to’ clause takes the **Reslt** stem (with \bar{x} -pc1 erased as usual in definite relatives), or sometimes the **PerfP** stem, and shows normal subject agreement.

- (724) a. wær ðle-n [ð əkšæ-n]
- Neg have.PerfN-3MaPIS [Dem eat.Reslt-3MaPIS]
- ‘They have nothing to eat.’ (lit. “... don’t have what they eat”)
- b. wær əle-ʀ [ð ənné-ʀ]
- Neg have.PerfN-1SgS [Dem say.Reslt-1SgS]
- ‘I have nothing to say.’ (lit. “... don’t have what I say”)

- c. *ad* *əjrəw-næt* [*à* *əkšǣ-næt*]
 Fut get.ShImpf-3FePlS [**Dem** eat.Reslt-3FePlS]
 ‘They-Fe will find something to eat.’ (lit. “... get what they eat”)
- d. ... *à-\dər-əs* *əkkəs-ær* *əttæræm*
 ... Dem-\in-3Sg remove.ShImpf-1SgS grain
 [*à* *əkšǣ-n* *àra-tæn*]
 [**Dem** eat.Reslt-3MaPlS child-MaPl]
 ‘(so that) I may take out of it some grains for them (=children) to eat.’ [K]
- e. *wær* *le-ɾ* [*à* *əlsé-ɾ*]
 Neg have.PerfN-1SgS [**Dem** wear.Reslt-1SgS]
 ‘I don’t have anything to wear.’
- f. *áywa* *əttər* [*à* *t-əxdæm-æd*]
 well look.for.Imprt [**Dem** 2SgS-work.PerfP-2SgS]
 ‘Well, look for something to work on.’ [K-d]
- g. *áywa* *t-áttær*
 well LoImpf-seek.LoImpfP
 [*à* *t-əkne-d* *ɾás*]
 [**Dem** 2S-do.Reslt-2SgS] only
 ‘Well, just keep looking for something to do.’ [K]

If there is no agent, the verb appears in a passive or other agentless form, in a subject relative with a participle (725).

- (725) *wær-t* *i-lla*
 Neg-\3MaSgO 3MaSgS-be.PerfN
 [*a* *i-t-æm-əkšé-n*]
 [**Dem** 3MaSgS-LoImpf-Mediop-eat.LoImpfP-Partpl.MaSg]
 ‘There is nothing to eat.’

The constructions given here with Demonstrative *à* can also be used with more specific nouns (726).

- (726) a. *awáy-\dd* [*mæŋgæro* *t-əkšé-d*]
 bring.Impf-\Centrip [mango 2S-eat.Reslt-2SgS]
 ‘Bring-Sg a mango to eat.’ [K-d]
- b. *awøy-mæt-\ódd* [*mæŋgæro* *t-əkšǣ-mæt*]
 bring-2FePl.Impf-\Centrip [mango 2S-eat.Reslt-2FePlS]
 ‘Bring-FePl a mango to eat.’ [K-d]

12.1.4 Relativization on prepositional complement NP

When an NP functioning as complement of a preposition is relativized on, the preposition is **cliticized** to the demonstrative at the beginning of a definite relative clause, or to the head noun in a noun-headed relative. In effect, the preposition becomes a postposition. Directional clitics occur after the cliticized preposition. There is no copy (or other audible trace) of the PP in its original postverbal position. The verb shows the same ablaut reductions and accent shifts as in object relatives.

The **Comit** preposition *d* or *əd* is replaced in this construction by *-\dər* when followed by another clitic (727.c). This is essentially an allomorphic substitution.

More importantly, the **Dative** preposition *è* (or variant) is **replaced by Instrumental** *-\s* (727.b). This is best considered as the use of *-\s* as a neutral default (cf. *à* *-\s* or *s* as ‘that’ complementizer, §13.7) due to an idiosyncratic constraint against cliticizing the (prenominal) dative preposition when the complement NP is extracted. Aside from this replacement, the dative relative construction is identical to that of other prepositional relatives; in particular, there is **no resumptive pronominal**. For the use of *-\s* in possessor and (other) long-distance relatives, where there is a resumptive pronominal, see §12.1.5, below.

Examples of **definite** prepositional relatives are in (727). In (727.d), there is a question whether to transcribe the demonstrative as *t-á-dær* with Anaphoric suffix (‘that one’), or as *t-á-\dær* with cliticized postposition *-\dær* (‘in which...’). I choose the former, since the following *iyæð-æt* ‘the other’ has a clear cliticized *-\dær* and a Centripetal clitic. If this is correct, here *t-á-dær iyæð-æt* ‘that other one’ functions as a unit as the clause-initial internal head. This is reasonable since ‘that’ and ‘(the) other’ are logically fused here.

- (727) a. *é-hæn*
 MaSg-house
 [*w-á-\dær* *t-əzəbbu-ɾ*]
 [M-Dem.Sg-*\in* LoImpf-go.down.LoImpfP-1SgS]
 ‘the house in which I go down (=spend the night)’.
- b. *t-a-mætt* [*t-a-\s* *əššəɾæ|-\ær*]
 Fe-Sg-woman [Fe-Dem.Sg-*\Instr* work.PerfP-1SgS]
 ‘the woman for whom I work’
- c. *æ-hóləs* [*w-à-\dər-\d* *əddew-\ær*]
 Sg-man [Ma-Dem.Sg-*\to*-*\Centrip* go.with.PerfP-1SgS]
 ‘the man with whom I came here’

- d. t-èje [t-á-dæɾ iyæð-æt-\vdæɾ-\ódd
 Fe-direction [Fe-Dem.Sg-Anaph other-FeSg-\in-\Centrip
 ənhæy-æɾ-\ódd t-e-ræfti-t-t...]
 see.PerfP-1SgS-\Centrip Fe-Sg-fright-Fe-FeSg...]
 ‘that other direction (=topic of discussion) in which I saw a
 frightening thing ...’
- e. ... [t-i-\fæɫ wəɾ əssen-æn
 ... [Fe-Dem.Sg-\on Neg know.PerfN-3MaPIS
 ʔ-m-ærəw-æn-nænæɾ]
 Pl-Ø-parent-MaPl-1PlPoss]
 ‘... that our parents didn’t know about.’ [Gao]

The K-d speaker gave (727.a) as ... w-ɑ-\vdæɾ t-zəbbu-ɾ. Here the first schwa in t-əzəbbu-ɾ is syncopated, with phrasal accent on the preceding syllable.

Definite LoImpfP examples are in (728), all showing $\bar{\chi}$ -pc1 Erasure (130). In addition, **Rightward Accent Shift** (132) is at work in (728.a,c), as is $\bar{\chi}$ -Erasure (136) in (728.d). Compare the regular LoImpfP stems -t-áttæs- ‘sleep’ ($\sqrt{\text{ds}}$) and /-táttA-/ ‘eat’. For a negative example with LoImpfN verb, see (840.b) in §13.5.5.

- (728) a. t-e-dæwæn-t
 Fe-Sg-mat-FeSg
 [t-ɑ-\fæɫ t-æt-tæ-s-æɾ]
 [Fe-Dem.Sg-\on LoImpf-sleep.LoImpfP-1SgS]
 ‘the mat on which I (regularly) sleep’
- b. æq̄im-æɾ dæɾ ʔæ-dægg
 sit.ShImpf-1SgS in Sg-place
 [w-ɑ-\vdæɾ n-tætt]
 [Ma-Dem.Sg-\in 1PIS-eat.LoImpfP]
 ‘I’m sitting in the place where we (regularly) eat.’ [K-d]
- c. ... [di-hɑ-\d tættæ-n]
 ... [here-\Comit eat.LoImpfP-3MaPIS]
 ‘(the place) where they (regularly) eat.’ [K-d]
- d. əmmək [w-ɑ-\s Ø-tætt]
 manner [Ma-Dem.Sg-\Instr 3FeSgS-eat.LoImpfP]
 ‘the way she (regularly) eats.’ [K-d]

Consistent with the general syntax of -vkfu- ‘give’, its relatives can treat the recipient as a second (direct) object (729.a), or as a dative (729.b). In the

latter case, as indicated above, the Instrumental preposition *ə̀s* is used after the demonstrative, substituting for the Dative preposition.

- (729) a. [wə-ðī t-əkfe-d á-zrəf]
 [Ma/Sg-**Dem** 2S-give.PerfP-2SgS Sg-money]
 ‘that one-MaSg to whom you gave (the/some) money.’
- b. æ-hóləs [w-a-ʌs ə̀kfe-ɾ á-zrəf]
 MaSg-man [Ma-**Dem**.Sg-**Instr** give.PerfP-1SgS Sg-money]
 ‘the man to whom I gave the money’

Indefinite prepositional relatives attach the preposition as a clitic to the head noun, as in (730).

- (730) a. [è-dægg-ʌdæɾ oðá-n ʔØ-šənnaw-æn]
 [Sg-place-**in** fall.Result-3MaPlS Pl-sky-MaPl]
 ‘a place in which the skies have fallen’
- b. [hæ̀ræt-ʌs xàddæm-æn æ̀ddinæt]
 [thing-**Instr** work.LoImpfP-3MaPlS people]
 ‘a thing with which people work’ [K]

Compare *é-dægg* ‘place’ in (730.a) with *èd* ‘whenever’ (§12.1.6) and *è* ‘where ...’ (§12.3.10).

When a preposition is cliticized to a relative head, the combination of head plus cliticized preposition precedes the usual second-position **clitics**, such as pronominal object clitics (731). In other words, the cliticized preposition must be adjacent to the head. See also the Centripetal examples in (727.c-d), above.

- (731) t-e-dæ̀wæn-t [t-a-ʌfæl-ʌtæn næqq-áɾ]
 Fe-Sg-mat-FeSg [Fe-**Dem**.Sg-**von**-**3MaPlO** kill.LoImpfP-1SgS]
 ‘the mat on which I (regularly) kill them’

12.1.5 Possessor and long-distance relatives with *-ʌs* and resumptive pronoun

There is no direct way to relativize on a **possessor**. However, a construction is available to express the intended sense. The demonstrative is followed by a cliticized Instr *-ʌs*. In §12.1.4, just above, I showed that *-ʌs* is used in dative as well as true instrumental function in prepositional relatives (727.b); cf. also *à-ʌs* as ‘that’ complementizer (§13.7). In possessor relatives, a **resumptive** pronominal possessor appears on the possessed noun after the verb. The construction is the same for inalienable (§5.2.3) and alienable possessors; (732.a) has inalienable ‘his son’ while (732.b) has alienable ‘his dog’.

- (732) a. æ-háləs
 MaSg-man
 [w-à-̀s Ø-æ̀bà rure-s]
 [Ma-Dem.Sg-̀Instr 3MaSgS-be.lost.PerfP son-3SgPoss]
 ‘the man whose son was lost (=died).’
- b. æ-háləs [w-à-̀s ə̀ɲrè-ɾ eɗi-nnet]
 Sg-man [Ma-Dem.Sg-̀Instr kill.PerfP-1SgS dog-3SgPoss]
 ‘The man whose dog I killed.’

The -̀s appears in this construction even when the **possessed NP is fronted** to preverbal position. This fronting is syntactically equivalent to topicalization (733).

- (733) á-lyad [w-à-̀s ə̀bbà-nnet
 Sg-child [Ma-Dem.Sg-̀Instr father-3SgPoss
 ̀i-kka bə̀mæko]
 3MaSgS-go.to.PerfP Bamako]
 ‘the boy whose father went to Bamako’

This can be literally glossed “the boy such that, as for his father, he (=father) went to Bamako.” I am not certain that such constructions are normal in idiomatic speech.

The -̀s construction is also used when the complement of *dæ̀dès-* ‘next to’ is relativized on. As noted in §6.6.1), *dæ̀dès-* is arguably still segmentable as a complex preposition *d ̀æ̀-̀des* ‘with (=by) the side (of ...)’; in other words a PP whose complement is a possessed NP, as in the bracketed representation [*with [side of X]*]. An example of a relativized complement is (734).

- (734) é-hæn [w-à-̀s ə̀llé-ɾ dæ̀dès-ə̀nnet
 Sg-house [Ma-Dem.Sg-̀Instr be.Result-1SgS next.to-3SgPoss]
 ‘The house next to which I am.’

If (734) is analysed as a possessor relative parallel to (732-3), it supports the segmentability of *dæ̀dès-* as composite *d ̀æ̀-̀dès* (‘by the side of’).

Given the resumptive pronominals in (732-4), it is necessary to distinguish these possessor relatives from simple prepositional relatives (§12.1.4, above). The possessor relatives are structurally related to **long-distance relatives** where the head of the relative is coreferential to a resumptive pronoun in a subordinated clause (735).

- (735) α -s-íkəl [wə-ndín-ʌs əsle-ɣ
 Sg-Instr-trip [Ma-RecAnaph-ʌnstr hear.PerfP-1SgS
 t-ə̀je-d-ʌt] ənta, ...
 2S-do.PerfP-2SgS-ʌ3MaSgO] 3Sg, ...
 ‘That trip that I heard you made (it), as for it, ...’

In (732-5), one can argue that -ʌs is related to the ‘that’ complementizer (s or à-ʌs, §13.7).

12.1.6 Generalized relatives (ère ‘whoever’, ì, à, èd)

Generalized relatives, denoting an entity that satisfies the truth conditions of the utterance, take one of the following as head, instead of a true head NP: ère, ì, à, èd.

12.1.6.1 Definite human (ère)

For **definite human** cases, the form is ère. Both subject (participial) and non-subject relatives are in (736).

- (736) a. [erè t-əkfé-d á-zrəf]
 [whoever 2S-give.Result-2SgS Sg-money]
 ‘whoever you-MaSg give (the) money to’ [T-md]
- b. [ere-ʌkəy i-wæt-æn]
 [whoever-ʌ2MaSgO 3MaSgS-hit.Result-Partpl.MaSg]
 ‘whoever has hit you’
- c. [erè i-tættə-n di-há-dæɣ],
 [whoever 3MaSgS-eat.LoImpfP-Partpl.MaSg here],
 i-s-üssm-et
 3MaSgS-[Caus-]be.quiet-Hort
 ‘Whoever eats here, let him be silent.’ [K-d]
- d. [ere-ʌhín i-šwær-æn]
 [whoever-ʌCentrif 3MaSgS-be.first.Result-Partpl.MaSg]
 ‘whoever comes first’ (= ‘the first one to come’) [Gao]
- e. [erè wær-æn i-là hæræt]
 [whoever Neg-Partpl.MaSg 3MaSgS-have.PerfN thing]
 ‘someone (anyone) who has nothing’

- (738) a. [i-\dád osæ-nen]
 {**Dem**-\Centrip go.Reslt-Partpl.Pl]
 ‘those-Ma who (=whoever) have come’ [T-md]
- b. [t-i-\dəd t-osæ-t]
 [F-**Dem**-\Centrip 3FeSgS-go.PerfP-Parpl.FeSg]
 ‘that one-Fe who (=whoever) comes’ [T-md]
- c. [i-\tt i-ssún-æn]
 {**Dem**-\3MaSgO 3MaSgS-know.Reslt-Partpl.MaSg]
 ‘whoever knows it’ [Gao]
 (also expressible as [ere-\tt i-ssún-æn])
- d. [i tättæ-nen di-ha]
 [**Dem** eat.LoImpfP-Partpl.Pl here]
 ‘whoever (= someone who) eats here’ [K-d]
- e. æ-haləs-\sər-əs i-tättæ-n,
 [Sg-man-\Instr-3Sg 3MaSgS-eat.LoImpfP-Partpl.MaSg],
 mɛɾ ɨ-\sər-əs i-sóssæ-n
 or **Dem**-\Instr-3Sg 3MaSgS-drink.LoImpfP-Partpl.MaSg
 ‘a man who eats with it, or one who drinks with it’ [Hm]

In (738.c), *i-ssún-æn* (with lengthened *ɑ* due to Reslt ablaut) shows no stem-ablaut modifications vis-à-vis main-clause verbs. The same is true of the LoImpfP stem in (738.d), which preserves the ablauted full vowel *ɑ* and fails to undergo Rightward Accent Shift. These facts show that a relative (otherwise headless) headed by *ɨ* is **treated as indefinite** rather than definite. This, plus the presence of a distinct feminine variant, distinguishes this indefinite *ɨ* from the invariant and syntactically definite *ɨ* used in relatives headed by a 1st/2nd person pronoun (§12.1, above). (738.e) shows that the *ɨ* relative can occur in parallel to a preceding indefinite, but noun-headed, relative. The *ɨ* in this case may be omitted, hence *mɛɾ-\sər-əs* ... in this example.

12.1.6.3 Nonhuman (*à*)

The common **nonhuman** equivalent begins with *à*. This can be analysed as a minimal demonstrative stripped of gender marking (cf. MaSg *w-á*, FeSg *t-á*). It is arguably identical to the *à* used as Focus particle.

- (739) a. [ð t-əjræw-æd]
 [Dem 2S-find.PerfP-2SgS]
 t-əkfə-d-\\ð-hi-\\tt
 2S-give.ShImpf-2MaSgS-/Obj-1SgS-3MaSgO
 ‘What(-ever) you-MaSg find (lit. “found”), you (will) give it to me.’ [T-md]
- b. [ð t-əjræw-æd]
 [Dem 2S-find.Reslt-2SgS]
 ‘what(-ever) you-MaSg find (lit. “have found”)’ [K-d]
- c. [ð Ø-tættæ-d], t-əz̥lə-d-\\t
 [Dem 2S-eat.LoImpfP-2SgS], 2S-pay.ShImpf-2SgS-\\3MaSgO
 ‘Whatever you-Sg eat, pay for it!’ [K-d]

In (739.c), the verb form t-əz̥lə-d (omitting the following clitic) corresponds to t-əz̥əl-æd in T-ka. In the same example, note that LoImpfP Ø-tættæ-d ‘you-Sg eat’ shows the ablaut modifications diagnostic of definite relatives, here both $\tilde{\chi}$ -pc1 Erasure (130) and Rightward Accent Shift (132), compare the usual main-clause form Ø-túttæ-d. The Reslt verb in (739.b) likewise shows $\tilde{\chi}$ -pc1 Erasure.

When the participle after ð is a high-frequency adjectival participle, it may retain its shape even when including an apparent $\tilde{\chi}$ -pc1 due to Reslt ablaut. In other words, the shortening of the accented V due to $\tilde{\chi}$ -pc1 Erasure seen in (739.b-c) above does not occur in these more or less **frozen adjectival participles**. In læbás-æn (740.a), $\tilde{\chi}$ -pc1 is moot since the PerfP is already læbas- with full a, so Reslt læbás- has not undergone secondary V-lengthening due to ablaut. However, Ø-olár-æn (740.b) with a does show $\tilde{\chi}$ -pc1, cf. PerfP -ðlær- ‘be good’, and if $\tilde{\chi}$ -pc1 Erasure applied to it we would expect #Ø-olár-æn.

- (740) a. [ð læbás-æn]
 [Dem be.bad.Reslt-Partpl.MaSg]
 ‘something bad’
- b. [ð Ø-olár-æn]
 [what 3MaSgS-be.good.Reslt-Partpl.MaSg]
 ‘something good (=the best thing to do)’

12.1.6.4 ‘whenever ...’ (èd)

There is another generalized relative èd glossed ‘**whenever ...**’ or more loosely ‘when ...’. It may be equated morphemically with èd ‘when/because’ (§13.1.1.1, §13.2.2), cf. è ‘where ...’ (§12.3.10) and noun é-dægg ‘place’. For

other ‘when ...’ constructions see §13.1.1.1, and for semantically overlapping conditionals see §13.9.

- (741) a. [ed n-tætt],
 [when 1PIS-eat.LoImpfP],
 əglü-n-et àra-tæn
 go.ShImpf-3MaPIS-Hort child-MaPl
 ‘When we eat, may the children go away!’ [K-d]
- b. [ed tættæ-næt dɛd-en], ...
 [when eat.LoImpfP-3FePIS woman-FePl], ...
 ‘When the women eat, ...’ [K-d]
- c. [ed i-kšá], àd Ø-æns
 [when 3MaSgS-eat.Reslt], Fut 3MaSgS-lie.down.ShImpf
 ‘When(-ever) he has eaten, he’ll lie down.’ [K-d]
- d. [ed-ʌtæn i-já æ-wélæn]
 [when-ʌ3MaPIO 3MaSgS-do.Reslt Sg-hot.season]
 ənt-æn-eɖ əlú-n é-bætt
 3MaPl have.Reslt-3MaPIS Sg-low.ground
 ‘When the hot season happens to them, as for them, they have a low flat area (that they use for pasture).’
- e. M [ed-ʌdər-əs əttær-ær] e-læŋkæw
 M [when-ʌin-3Sg seek.Reslt-1SgS] Sg-garment
 [ɑ-hĩ t-ænn ...]
 [Fut-ʌ1SgDat 3FeSgS-say.ShImpf ...]
 ‘M (woman’s name), when(-ever) I seek a garment from her, she will say to me: ...’ [K]

(741.a-b,e) show the operation of ablaut and accent modifications that are normal in definite relatives, cf. -tátt- ‘eat.LoImpfP’. The fact that the d of èd does not disappear when a clitic is added (741.d) indicates that d is not the Comitative clitic -ʌd, though this needs to be verified for each dialect. It seems likely that èd is contracted from e-dægg ‘place’. See end of §12.1.4 for a relative with e-dægg in unreduced form.

12.1.6.5 ‘until the time (when) ...’ (har íket í)

In (742), ablaut modifications (cf. regular LoImpfP -járræw- ‘obtain’) again show that a definite relative clause is at hand. Here the clause begins with hàr ‘until’, plus a noun íket that has various senses elsewhere but can be used in the sense ‘(have) just’ (§13.6.6) as a clause-initial particle on its own. Here I

gloss it (crudely) as ‘time’. The following *í* is the postnominal Proximate deictic particle (§4.3.3), not a demonstrative pronoun acting as the internal head of the relative.

- (742) har [iket *í*
 until [time **Prox**
 jærræw-æn t-æddðlæ-t-t]
 obtain.LoImpfP-3MaPlS Fe-greenness-Fe-FeSg]
 ‘until (such time as) they get some greenery (ground vegetation)’.

12.2 Focalization

Focalization involves highlighting (or interrogating) the choice of one element in a clause, the remainder being backgrounded (presupposed or at least not in play). Syntactic focalization in Tamashek is limited to NPs (including adverbials and VbIN’s).

The focalized constituent is **fronted** to sentence-initial position. It is normally followed by the morpheme *à*, interpretable as a **minimal demonstrative** form but here labeled “Foc[us].” Any clitics that may be present are hosted by the Foc morpheme, or if the latter is absent they are hosted by the focalized NP. The remainder of the clause follows. The ablaut reductions of Reslt and LoImpfP verbs seen in definite relative clauses do not apply to focalization, in spite of a certain syntactic similarity between the two. Therefore, if the verb is Reslt or LoImpfP, it occurs with its **full ablaut structure and normal accentuation**, as in simple main clauses.

The pragmatics of focalization are illustrated in (743). The first clause (negative) is unfocalized. The second clause, which specifies the real object of desire, is focalized.

- (743) wər ì-rha t-àfɾa-t-t,
 Neg 3MaSgS-want.PerfN Fe-rice-Fe-FeSg,
 ì-s-an [à i-rhá]
 Pl-meat-MaPl [Foc 3MaSgS-want.Reslt]
 ‘He doesn’t want rice, it’s meat [focus] that he wants.’

In (743), only the second clause has a focalized NP. However, one can also express the same type of sense with two parallel clauses, each having a focalized NP. In this event, the first clause usually begins with the external negation *wæddéɾ* or variant ‘it is not (that ...)’. This phrasing ensures that the entire first clause, including its focalized constituent, is clearly in the scope of the negation.

- (744) wæddér ðššæræl [à i-t-ájj],
 not work [Foc 3MaSgS-LoImpf-do.LoImpfP]
 éđæs [à i-t-ájj]
 sleep.VblN [Foc 3MaSgS-LoImpf-do.LoImpfP]
 ‘Work [focus] is not what he does, (rather) sleep [focus] is what he
 does.’ (lit. “It’s not [the case that] work [focus] is what he does, ...”)

Since Focus à precedes any preverbal particles, if the focalized clause contains a Future morpheme, the latter will be the **non-initial Future morpheme** (màr in T-ka, è in several other dialects) rather than àd.

- (745) a-šákka [a-àd màr Ø-æmmæt] [T-ka]
 a-šákka [a-àd è Ø-æmmæt] [R]
 tomorrow [Foc-àComit Fut 3MaSgS-die.ShImpf]
 ‘It’s tomorrow [focus] that he will die.’

There is normally only one focalized constituent. However, as in other local languages, it is possible to embed a focalized clause in a ‘why?’ interrogative. This is arguably a layered **double-focus** construction, but the only Focus morpheme is associated with the internal focus (746).

- (746) ma-ʋfæɪ [i-s-an [a i-rhá]]
 what?on [Pl-meat-MaPl [Foc 3MaSgS-want.Result]]
 ‘Why (is it) meat [focus] that he likes?’ [Gao]

The à Focus morpheme is regularly omitted in WH-interrogatives (§12.3). In my T-ka data, with this exception the morpheme is normally audible in focalized constructions. In my Kidal-area data, omission is fairly common in texts even in non-interrogative focalizations, though informants are always willing to repeat the examples more carefully with the à audibly present, so I am inclined to interpret omission as due to a low-level contraction. My K-d informant, in elicitation, allowed omission in subject but not other focalizations. However, in my K texts (from other speakers), I did observe omission of à in object focalization as well as subject focalization.

12.2.1 Subject focalization

In the case of subject focalization, the verb is expressed in indefinite participial form, but takes invariant 3MaSg subject prefix (i- or Ø- depending on the initial segment of the verb, and zero for those perfective verbs that cannot take subject prefixes). The participle likewise has MaSg suffix -æn, regardless of the actual pronominal category of the subject (747). Examples (747.h-i) do not differ in meaning (to my knowledge) and illustrate the optionality of à in K-d dialect.

(747) Subject Focalization

- a. ənta [à-\hi ĩ-nhæy-æn]
3Sg [**Foc**-\1SgO 3MaSgS-see.PerfP-Partpl.MaSg]
'It was he/she [focus] who saw me.'
- b. ənt-ə̀n-eḍ [à-\hi ĩ-nhæy-æn]
3MaPl
'It was they-MaPl [focus] who saw me.'
- c. kàyy [à-\hi ĩ-nhæy-æn]
2MaSg
'It was you-MaSg [focus] who saw me.'
- d. ənta [a-\kæy mar-ə̀n Ø-ə̃ɣɣ]
3Sg [Foc-\2MaSg Fut-Partpl.MaSg 3MaSgS-kill.ShImpf]
'It is he/she [focus] who will kill you-MaSg.'
- e. nàkk [à i-sássæ-n ætáy]
1Sg [Foc 3MaSgS-drink.LoImpfP-Partpl.MaSg tea]
'It is I [focus] who drinks tea.'
- f. nàkk [à i-ssún-æn]
1Sg [Foc 3MaSgS-know.Reslt-Partpl.MaSg]
'It is I (Ma or Fe) [focus] who knows.'
- g. kàmm [à i-ssún-æn]
1Sg [Foc 3MaSgS-know.Reslt-Partpl.MaSg]
'It is you-FeSg [focus] who knows.'
- h. nàkk [à-\tæt ĩ-ɣɣæ-n]
1Sg [Foc-\3FeSgO 3MaSgS-kill.ShImpf-Partpl.MaSg]
'It is I [focus] who killed it-Fe.' [K-d]
- i. [nàkk-\tæt ĩ-ɣɣæ-n]
[1Sg-\3FeSg 3MaSgS-kill.ShImpf-Partpl.MaSg]
[= h, with Foc à omitted] [K-d]
- j. nàkk-ə̀n-eḍ [à-\tæt ə̃ɣɣæ-nen]
1Pl [Foc-\3FeSgO kill.ShImpf-Partpl.Pl]
'It is we [focus] who killed it-Fe.' [K-d]

- d. næk [à i-wæt]
 1Sg [Foc 3MaSgS-hit.PerfP]
 ‘It is me [focus] that he hit.’ [K-d]
- e. a-wén-dæʀ [a-\hà-m ənne-ʀ]
 Dem-Dist-Anaph [Foc-\Dat-2FeSg say.PerfP-1SgS]
 ‘That [focus] is what I said to you-FeSg.’
- f. [a əndərræ-n] ʀás
 [Dem be.small-Partpl.MaSg] only
 [à-\dər-əs è t-əkšə-d]
 [Foc-\Instr-3Sg Fut 2S-eat.ShImpf-2SgS]
 ‘Just a little of it [focus] is what you-Sg will eat.’

12.2.3 Focalization of prepositional complement

Focalization of a prepositional complement NP follows the same linear-order pattern as with relativization, except that the verb has its full form (with all relevant ablaut features). The “preposition” has now cliticized to the à at the front of the clause (750.a). **Dative is merged with Instrumental** as -ʀs in this construction (750.b-c), as in relatives. Note the fortuitous similarity between the resulting à-ʀs (Foc + Preposition) and 3MaSg dative clitic -ʀa-s. For other uses of à-ʀs in focalization, see §12.2.6 below. (750.d) has fæl ‘on’.

- (750) a. i-bòrəy-æn [à-ʀs n-əššíræʀ]
 MaPl-stick-MaPl [Foc-\Instr 1PlIS-work.Reslt]
 ‘It’s sticks [focus] that we work with.’
- b. æbbà-n-in [à-ʀs-ʀt əkfe-ʀ]
 father-Poss-my [Foc-\Instr-\3MaSgO give.PerfP-1SgS]
 ‘It was my father [focus] to whom I gave it.’
- c. kəyy [a-ʀs-ʀtæn i-nna]
 2MaSg [Foc-\Instr-\MaPlO 3MaSgS-say.PerfP]
 ‘It’s you-MaSg [focus] that he told (lit. “said them”) to.’
- d. [hæʀæt ən ʀ-t-æ-s-əʀnəs-t ən bukár ʀás]
 [thing Poss Fe-Sg-Instr-veil-FeSg Poss cotton.cloth only]
 [a-\fæl-\hà-næʀ Ø-æffúlla]
 [Foc-\on-\Dat-1Pl 3MaSgS-rely.Reslt]
 ‘A mere veiled garment of black cotton cloth [focus] is what he (=a man) relies on (=is satisfied with) for us.’ [K]

12.2.4 Focalization of adverbial NP

Focalization of a spatial adverbial is illustrated in (751). Adverbials are treated like (covert) comitative phrases, so cliticized Comitative preposition $\text{-}\dot{\text{a}}$ appears after Foc $\dot{\text{a}}$. As in other spatiotemporals, $\text{-}\dot{\text{a}}$ is omitted in the presence of any other clitic (751.c).

- (751) a. $\text{d-i-h}\acute{\text{a}}\text{-d}\acute{\text{æ}}\text{ɾ}$ $[\text{a-}\dot{\text{a}}$ $\text{n-}\acute{\text{ə}}\acute{\text{s}}\acute{\text{s}}\acute{\text{ə}}\text{ɾ}\acute{\text{æ}}\text{ɪ}]$
 here $[\text{Foc-}\dot{\text{a}}\text{Comit}$ $\text{1PlS-work.PerfP}]$
 ‘It was here [focus] that we worked.’
- b. $\text{ə}\text{n}\text{d-}\acute{\text{ə}}\acute{\text{s}}\text{el}$ $[\dot{\text{a-}}\dot{\text{a}}$ $\text{Ø-}\acute{\text{æ}}\text{mmu-t}]$
 yesterday $[\text{Foc-}\dot{\text{a}}\text{Comit}$ $\text{3MaSgS-die.PerfP-Aug}]$
 ‘It was yesterday [focus] that he died.’ [R]
- c. $\text{ə}\text{n}\text{d-}\acute{\text{ə}}\acute{\text{s}}\text{el}$ $[\dot{\text{a-}}\text{tt}$ $\text{ə}\text{nh}\acute{\text{æ}}\text{y-}\acute{\text{æ}}\text{ɾ}]$
 yesterday $[\text{Foc-}\text{3MaSgO}$ $\text{see.PerfP-1SgS}]$
 ‘It was yesterday [focus] that I saw it.’

It is important to **distinguish** $\dot{\text{a-}}\dot{\text{a}}$ (Focus morpheme $\dot{\text{a}}$ plus cliticized Comitative d) from **clause-initial Future particle** $\dot{\text{a}}\text{d}$. This can be tricky, except in negatives, since Future $\dot{\text{a}}\text{d}$ reduces to $\dot{\text{a-}}$ before a clitic. In other words, both $\dot{\text{a-}}\dot{\text{a}}$ (Focus and cliticized Comit) and $\dot{\text{a}}\text{d}$ (Future) appear as $[\text{ad}]$ without a further clitic, and as $[\text{a}]$ in the presence of a further clitic. If the following verb phrase contains a preverbal particle, or an inflected verb in a stem other than ShImpf or LoImpfP , the initial element must be interpreted as $\dot{\text{a-}}\dot{\text{a}}$ rather than as Future $\dot{\text{a}}\text{d}$. If the following verb phrase lacks preverbal particles and has a ShImpf or LoImpfP verb, the initial element is ambiguous and must be interpreted in context.

12.2.5 Focalization of verb or VP

Verb (or VP) focalization occurs, for example, in response to questions of the ‘what are you doing?’ type. This corresponds to “**verb clefting**” in the syntax literature. The verb (or VP) is converted into a VblN , is treated as the object of -vju- ‘do, make’, and is then fronted like an ordinary focalized direct object. In effect, -vju- takes the place of the verb in the original location. Focus morpheme $\dot{\text{a}}$ is usually present, but it is omitted in (752). Note that here the complement (‘suffering’) remains in its original position, rather than following the lexical verb into clause-initial focalized position. The complement cannot be fronted along with the VblN unless it is expressed as a possessor NP, and while this is grammatical, the construction in (752) with the complement following -vju- is far more idiomatic and is common in texts. However, the entire core VP, here ‘see suffering’, is logically focalized.

- (752) a-hænaȳ [ən-já æ-ȳæna]
 Sg-see.VbIN [1PlS-do.Reslt Sg-suffering]
 ‘See suffering [focus] is what we have done.’

Further examples are (744) in §12.2.1, and (785.b) in §12.3.10. The latter example (‘I don’t know whether he simply hasn’t gotten up yet’, where the extracted VbIN ‘get up’ is focalized) shows that even when the logical focus is the combination of negation plus a verb (‘not get up’), only the (un-negated) verb is extracted, as a VbIN.

12.2.6 Focalization of other constituents

Consider (753).

- (753) a. w-á-dæȳ [â-\s w-á n-in]
 Ma-Dem.Sg-Anaph [Foc-\Inst Ma-Dem.Sg Poss-1Sg]
 ‘That [focus] is what is mine.’
- b. nækk [â-\s æn-hæraȳ]
 1Sg [Foc-\Inst neighbor]
 ‘I [focus] am the neighbor.’
- c. ənt-æȳ-eȳ [â-\s æn-hæraȳ-æn]
 they [Foc-\Instr Ø-neighbor-MaPl]
 ‘They-Ma [focus] are the neighbors.’ [K-d]

Here it is difficult to tell whether â-\s is the complementizer ‘that ...’ (§13.7) or an instrumental form of Foc â. In any event, the construction functions as the focalized version of both the **predicate genitive** of the type ‘is mine’ (753.a), cf. §9.4, and **copular constructions** of the type ‘X is Y’ (753.b-c), cf. §9.2.

â-\s is also used in constructions like (754).

- (754) æmæra a-wén [â-\s ərhé-ȳ a-\hĩ-\ldəȳ-əs
 now Dem-Dist [Foc-\Instr want.Reslt-1SgS Dem-1SgO-\in-3Sg
 Ø-s-ənnəfɪʃəl-æd â-bænnan]
 2S-Caus-distinguish.ShImpf-2SgS Sg-a.little]
 ‘Now that [focus] is what I want you to distinguish (=describe) for me a little.’

â-\s can be described as a “wastebasket” focalization phrase, for use when the extracted NP does not fit into any simple structural position (subject, object, prepositional complement) for which a simple focalization structure is

available. In (754), the extracted NP is from a complement clause rather than from the ‘want’ clause (long-distance extraction).

12.3 Interrogatives

Yes-no (i.e. polar) interrogatives are simple sentences with an optional question particle, or just with interrogative intonation.

WH-interrogatives are closely related to the focalization construction, but usually omit the demonstrative following the focalized constituent.

12.3.1 Yes-no (=polar) interrogatives

Clause-initial particles for polar (i.e. ‘yes-no’) interrogatives are *ák* and *ajém*, and for eastern dialects *egæn* (A-grm, Gao) or *ajæn* (Im K). As in most languages, ordinary declaratives with rising intonation can function as polar interrogatives even without an explicit interrogative particle.

- (755) a. *ák* *əššəvəl-æn-næk* *já-n*
yes/no? work-MaPl-2SgPoss be.done.Reslt-3MaPlS
 [t-eklə t-oláɣ-æt]
 [Fe-go.VbIN Fe-be.good.Reslt-Partpl.FeSg]
 ‘Are your-Sg business affairs going well?’
- b. *ajém* *ət̪t̪iʒəl* *ən* *ʔali wær* *Ø-æwweð*
yes/no? due.date Poss Ali Neg 3MaSgS-arrive.PerfN
 ‘Has Ali’s due date not arrived?’

I have also observed *ák* in clause-initial position before a topicalized NP, followed by a WH-interrogative.

- (756) *ək* *un-an* *w-ĩ-n* *əd w-i,* *əndék*
yes/no? well-MaPl Ma-Dem.Pl-Dist and Ma-Dem.Pl, where?
a-w-a *i-llæ-n* *jeré-ssæn*
 Dem-Ma-Dem.Sg 3MaSgS-exist.Reslt-Partpl.MaSg between-MaPl
 ‘Those wells and these (wells), what (difference) is there among them?’

Here *ək* is an “appetizer” that marks the larger construction as an interrogative, but we don’t find out what kind of interrogative until the WH-word *əndék*.

ək is also attested in (757), where it can be glossed contextually as ‘or rather’, introducing a self-correction.

- (757) æ-wádə̃m n ʻé-ʁrəm—, n æ-rojj də̃ʁ ák
 Sg-human Poss Sg-town—, Poss Sg-bush too yes/no?
 ad Ø-æj ʁás
 Fut 3MaSgS-do.ShImpf only
 ‘Somebody of the town—of the bush (=desert) rather, he will do ...’
 [K]

12.3.2 ‘who?’ (mí)

In addition to meaning ‘who?’, mí can also mean ‘(to) where?’ with certain verbs; see §12.3.4, below.

Simple examples with ‘who?’ in subject function are (758.a-b). The interrogative word is fronted (=focalized), and is followed by any clitics. The verb appears as an invariant 3MaSg participle, with no relative-like ablaut reductions.

- (758) a. mĩ-\\də̃ʁ-sæn i-ɟlú-n
 who?-\\in-3MaPl 3MaSgS-go.Reslt-Partpl.MaSg
 ‘Who among them is going?’ (= ‘Which of them is/are going?’)
- b. mí-\\dd Ø-ösæ-n
 who?-\\Centrip 3MaSgS-arrive.PerfP-Partpl.MaSg
 ‘Who came?’
- c. mí i-tóttæ-n
 who? 3MaSgS-eat.LoImpfP-Partpl.MaSg
 ‘Who is eating?’

A direct-object interrogative is (759).

- (759) mí t-ə̃wæt-æ̃d
 who? 2S-hit.PerfP-2SgS
 ‘Whom did you-Sg hit?’

As in other focus constructions there is no resumptive object clitic. An example involving extraction from a PP is (760).

- (760) mĩ-\\dər-\\əd t-ose-d
 who?-\\Comit-\\Centrip 2S-arrive.PerfP-2SgS
 ‘Who(m) did you-Sg come (here) with?’

As with prepositional-complement focalization, the preposition is cliticized to the focalized constituent and is followed by other clitics, here the Centrip. The Comit preposition is pronounced -\dər- here before another clitic.

When ‘who?’ functions as possessor of another NP, it can remain in situ (761.a). Alternatively, it can be “extracted” in instrumental form, with a resumptive pronominal in the original site (761.b).

- (761) a. rùre-s ən mí-\dd òsæ-n
 son-3SgPoss of **who?**-\Centrip arrive.PerfP-Partpl.MaSg
 ‘The son of who(m) came?’
- b. mí-\s-\d̀d Ø-osà rure-s
 who?-\Instr-\Centrip 3MaSgS-arrive.PerfP son-3SgPoss
 ‘Whose son came (here)?’

One could also interpret cliticized Instr -\s in (761.b) as s ‘that’ (§13.7) at the beginning of a subordinated clause. In any event, mí-\s can be separated from the possessed noun by an intervening verb (762).

- (762) mi-s-\kæy i-d̀d̀d edī-nnet
 who?-Instr-\2SgO 3MaSgS-bite.PerfP dog-3SgPoss
 ‘Whose dog bit you-Sg?’ [K-d]

mí appears to have an intrinsic accent, as best seen in elicited combinations like dæɾ mí ‘in who(m)?’.

12.3.3 ‘what?’ (má)

The syntax is the same as with mí ‘who?’. Object function is illustrated in (763.a-c), subject function in (763.d).

- (763) a. má t-ər̀hé-d
 what? 2S-want.Reslt-2SgS
 ‘What do you-Sg want?’
- b. má mər t-ə̀jrəw-æ̀d d-i-hén
 what? Fut 2S-find.ShImpf-2SgS there
 ‘What will you-Sg find there?’
- c. mɑ túttæ-m
 what? eat.LoImpfP-2MaPl
 ‘What are you-MaPl eating?’

- d. *má-ʌkæy* *i-šlá-n*
what?-ʌ2MaSgO 3MaSgS-occupy.Reslt-Partpl.MaSg
 ‘What is occupying you-MaSg?’ (= ‘What are you doing?’)

Prepositional examples are in (764).

- (764) a. *má-ʌs* *t-ərtæs-æd* *i-sæʀer-æn*
what?-ʌInstr 2S-cut.PerfP-2SgS Pl-wood-MaPl
 ‘With what did you cut the pieces of wood?’
- b. *má-ʌd* *∅-olæh*
what?ʌComit 3MaSgS-resemble.Reslt
 ‘What is it like?’ [K-d]

For *má-ʌfæl* ‘on what’ (hence ‘why?’), see below, §12.3.7.

Two pragmatically interesting phrases, both with *-vju-* ‘do; happen’, are in (765).

- (765) a. *má* *i-já-n*
what? 3MaSgS-happen.Reslt-Partpl.MaSg
 ‘What has happened?’
- b. *mà* *i-ja*
what? 3MaSgS-do.Reslt
 ‘What did he do?’ or ‘Where is he?’

(765.a) is a standard greeting, cf. English ‘what’s up?’. In structure it is a subject focalization. (765.b) is a simple ‘what did he do?’ question, but can also be used to mean ‘where is he?’.

In the ‘what is X?’ construction, *má* functions as (preposed) object, to judge by the fact that the copular verb (Reslt) *-æmós-* ‘be’ has subject agreement with the postverbal X nominal (766).

- (766) a. *má* *∅-æmós* *á-w-a*
what? 3MaSgS-be.Reslt Dem-Ma-Dem.Sg
 ‘What is this?’
- b. *má* *æmós-æn* [*hæʀæt-æn* *w-í*]
what? be.Reslt-3MaPlS [thing-MaPl Ma-Dem.Pl]
 ‘What are these things?’

- c. **má** **t-æmós** **t-ùla-t-t**
what? 3FeSgS-be.Reslt Fe-kind-Fe-FeSg
t-a **t-állæ-t** **di-hén**
Fe-Dem.Sg 3FeSgS-be.Reslt-Partpl.FeSg there
‘What is the kind that is there?’ (= ‘What kind is...?’) [K-d]

12.3.4 ‘to where?, whence?’ (mí)

This form for ‘where?’ is used only with transitive motion verbs that take a complement denoting either the terminus or the point of origin. My data show this *mí* with *vkku-* ‘go to’ (but not with *-vjlv-* ‘go’, directionally unspecified), and with *-vflv-* ‘leave, go from’. With *-vflv-*, *mí* (or any other object) specifies the point of origin. Because of the very narrow syntactic circumscription of this *mí*, there is little danger of confusion with *mí* ‘who?’.

- (767) a. **mí** **t-ækké-d**
where? 2S-go.to.Reslt-2SgS
‘Where are you-Sg going?’
- b. **mí-\dd** **i-ffól**
where?-\Centrip 3MaSgS-leave.Reslt
‘Where does he come from?’ (= ‘Where is he from?’)

In (767.a-b), *mí* is in object (rather than “adverbial”) function, since the verb is transitive.

12.3.5 ‘where?’ (ændék, ændæké, ændé)

Adverbial ‘where?’ is expressed by *ændék* (most dialects), *ændæké* (optional variant in T-ka), or *ændé* (both K-area dialects checked). In some dialects, *ændék* is also the ‘which?’ interrogative; see below, §12.3.8. An informant suggested that the variant *ændæké* ends with an *é* truncated from the noun *é-dægg* ‘place?’. The *ən-* is also arguably segmentable since this phoneme sequence appears in a few other interrogatives. However, *ændék* and *ændæké* are sufficiently frozen that I do not usually hyphenate them.

For the R informant, *ændék* was the isolation form (‘where?’), while *ændæké* occurred in fuller expressions as in (768).

- (768) **ændeké-\tæt** **t-ənháy-æd**
where?-\3FeSgO 2S-see.Reslt-2SgS
‘Where did you see her?’ (lit. “...have you seen her?”) [R]

The Im speaker used *əndék w-a* ‘which (one)?’ in isolation, adding a demonstrative to *əndék*. He kept the demonstrative even with a following noun: *əndék w-a é-hæn* ‘which house?’. For this speaker, it may be that *əndékwa* should be treated as a fused unit.

For my primary T-ka informant, *əndék* occurs in the predicative ‘where is X?’ construction (769.a), and in extended adverbial phrases like that in (769.b), where we may really be dealing with a ‘which?’ construction. ‘Where is X?’ can also be used in context to mean ‘What about X?’ (pragmatically, ‘Tell me about X!’). The fuller form *əndəké* (with medial schwa) is used in isolation and in simple adverbial ‘where’ sentences like (769.d-e).

- (769) a. *əndék* X
 where? X
 ‘Where is X?’
- b. *əndək* s-i-ha
 where? Adv-Dem-Dem
 ‘around where?’ (‘toward where?’, ‘whereabouts?’)
- c. *əndék t-əššiw-en t-i əffuqqæ-t-nen di-hén*
 where? Fe-grass-FePl Fe-Dem.Sg sprout-Aug-Partpl.Pl there
 ‘Where (=what about) the grasses (=pastures) that have
 sprouted there?’
- d. *əndəké-ʔ t-ənháy-æd*
 where?-3MaSgO 2S-see.Result-2SgS
 ‘Where did you-Sg see him?’
- e. *kəyy əndəké t-əwwæd-æd*
 2MaSg **where?** 2S-arrive.PerfP-2SgS
 ‘(As for) you-MaSg, where (=how far away) did you get to?’

əndəké is often followed by cliticized Comitative *-d*, as usual with focalized spatiotemporal adverbials. The *-d* is omitted in cases like (769.d) where another clitic occurs after the interrogative, but the *-d* is regularly present in the absence of another clitic, as in (770.a-b).

- (770) a. *əndəké-d i-qqima*
 where?-\Comit 3MaSgS-sit.Result
 ‘Where is he sitting?’
- b. *əndəké-d wær t-əddobe-d újəš*
 where?-\Comit Neg 2S-be.able.PerfP-2SgS enter.VbIN
 ‘Where is it that you can’t go in?’

For *mà i-ja* meaning ‘where is he?’, see §12.3.3, above.

12.3.6 ‘when?’ (*məndəjú*, *hərəmmén*, *əmméd*)

‘When?’ is *məndəjú* for T-ka. A variant *mənjdú* occurs in some Imeddedeghan dialects. Perhaps the source is interrogative **mən-* (cf. §12.3.9) plus a form of *é-jud* ‘time, moment’ (cf. conjunction *əjúd* ‘if/when...’).

As with other focalized spatiotemporal adverbials, the ‘when?’ interrogative requires cliticized Comit *-\d*, except that the preposition is usually omitted when a clitic occurs after the interrogative.

- | | | | | |
|-------|----|-----------------------------|------------------|--------|
| (771) | a. | <i>məndəjú-\d</i> | <i>i-mmu-t</i> | [T-ka] |
| | | <i>mənjdú-\d</i> | <i>Ø-əmmu-t</i> | [R] |
| | | when? <i>-\Comit</i> | 3MaSgS-die-Aug | |
| | | ‘When did he die?’ | | |
| | b. | <i>məndəjú-\hĩ</i> | <i>i-nhæy</i> | |
| | | when? <i>-\1SgO</i> | 3MaSgS-see.PerfP | |
| | | ‘When did he see me?’ | | |

An alternative ‘when?’ word was recorded variously as *hər əmmén* (T-md), *hər əmmé* (A-grm), *hərəmmé* (K), or *ər əmmé* (R). It contains *hər* (variant *ər*) ‘until’ (§13.1.1.5), at least in frozen form. For Im dialect I recorded just *əmméd*. In all dialects it functions as a unit for purposes of hosting clitics.

- | | | | |
|-------|---------------------------|---------------------------------|----------------------|
| (772) | [<i>hər</i> | <i>əmmén</i>]- <i>\əd</i> | <i>Ø-mólæ-d</i> |
| | [until | when?]- <i>\Centrip</i> | 2S-come.LoImpfP-2SgS |
| | ‘When are you-Sg coming?’ | [T-md] | |

12.3.7 ‘why?’ (*mə-\fæ̀l*, *má-\s*)

mə-\fæ̀l is the most common expression for ‘why?’. It is simply a special case of *má* ‘what?’ along with the cliticized ‘on’ preposition *fæ̀l*, in other words ‘on what?’ (for ‘because’ forms including *fæ̀l*, see §13.2.2, below). In isolation it is accented as *mə-\fæ̀l*. Another such combination, *má-\s*, has a cliticized Instrumental preposition *-\s*. This *má-\s* is most often used in its natural sense ‘with (=by means of) what?’. However, *má-\s* is sometimes used as an alternative to *mə-\fæ̀l* in the sense ‘why?’ in contexts where an instrumental reading is unlikely. With a verb like ‘kill’ or ‘cut’ that favors instrumental readings, informants used *má-\s* in the instrumental sense and rejected (on grounds of ambiguity) the causal reading.

- (773) a. *má-\fæl-\ód* *t-əqqúl-æd*
what?-\Loc-\Centrip 2S-return.Reslt-2MaSgS
 ‘Why did you-Sg come back here?’
- b. *má-\s-\ód* *t-əqqúl-æd*
what?-\Instr-\Centrip 2S-return.Reslt-2MaSgS
 ‘Why did you come back here?’ (preferred over ‘with what?’
 reading)
- c. *má-fæl-\òtt* *i-ŋʀa*
what?-\Loc-\3MaSgO 3MaSgS-kill.PerfP
 ‘Why did he kill him?’
- d. *mà-\s-\t* *i-ŋʀa*
what?-Instr-\3MaSgO 3MaSgS-kill.PerfP
 ‘With what did he kill him?’ (strongly preferred over ‘why?’
 reading)

The forms of the 3MaSg object clitic in (773.c-d) suggest that *má-fæl* is now a frozen unit, while *mà-\s* is still interpreted as *má* plus cliticized preposition.

12.3.8 ‘which?’ (*énnær*, *əndék*)

There are two basic forms meaning ‘which?’.

For T-ka and R, a form *énnær* is the primary ‘which?’ interrogative. It may occur alone as a self-standing NP (774.a), or with a noun; in the latter case, Prefix Reduction is observed (774.b). A PP like *dær énnær* ‘in which (one)?’ brings out the marked accent.

- (774) a. *énnær* [w-ɑ t-æssóf-æd]
which? [Ma-Dem.Sg 2S-prefer.Reslt-2SgS]
 ‘Which one do you you-Sg prefer?’
- b. *ənnær* ʼæ-šæl
which? Sg-day
 [w-ɑ-\d t-ose-d-\ódð]
 [Ma-Dem.Sg-\Centrip 2S-arrive.PerfP-2SgS-\Centrip]
 ‘Which day did you arrive (here)?’

With or without an associated noun, the ‘which?’ phrase is followed here by a definite relative clause. Literal translations would be of the type “which [is] the one that ...”

For T-md, K-d, and A-grm, the usual ‘which?’ interrogative is *əndék*, which is identical or very similar to the ‘when?’ (i.e. ‘which time?’) interrogative. There is a natural connection between ‘where?’ and ‘which?’, since ‘which?’ involves selecting among entities, which are in most cases spatially localized. I have recorded both reduced and unreduced nominal prefixes on the following noun: *əndék* ʼæ-šæl (A-grm, Gao) and *əndék* á-šæl (T-md) ‘which day?’.

- (775) a. *əndék* á-šæl
which? day
 [w-a-\ddéd Ø-malæ-d]
 [Ma-Dem.Sg-\Centrip 2S-come.LoImpfP-2MaSgS]
 ‘(On) which day are you-MaSg coming?’ [T-md]
- b. *əndék* [w-a t-æssóf-æd]
which? [Ma-Dem.Sg 2S-prefer.Reslt-2SgS]
 ‘Which one do you-Sg prefer?’ [A-grm]
- c. *əndék* t-ùla-t-t [t-à t-ənháý-æd]
which? Fe-kind-Fe-FeSg [Fe-Dem.Sg 2S-see.Reslt-2SgS]
 ‘What kind did you-Sg see?’ [K-d]
- d. *əndék* [dæɾ ʼØ-kall-æn í-dæɾ]
which? [in Pl-land-MaPl Prox-Anaph]
 [w-à-\s Ø-øjær]
 [Ma-Dem.Sg-\Instr 3MaSgS-be.bigger.PerfP]
 ‘Which of (=among) those lands is bigger/biggest?’

In (775.d), *əndék* is perhaps syntactically ‘where?’, to judge by the form of the relative clause (with -\s).

Even for T-ka I recorded *əndák* émmæk ‘which manner?’ (i.e., ‘how?’). It occurs with Instr -\s.

- (776) *əndék* émmæk
which? manner
 [w-à-\s-\ət t-əqqæn-æd]
 [Ma-Dem.Sg-\Instr-\3MaSgO 2S-build.PerfP-2SgS]
 ‘How did you-Sg build it?’

At least in the Gao area and perhaps more widely, both *ənnær* and *əndék* are used as ‘which?’ interrogatives, but differ semantically in subtle ways. In this pattern, *ənnær* is more abstract, often without modified noun, as in *ənnær* isə̀m-ənnæk ‘which (i.e. what) is your name?’. On the other hand, *əndék* is used in the classic ‘which?’ sense, with an overt or implied modified noun, in contexts calling for selection from a given set.

The explicit ‘which?’ pronominals compete with **partitive phrases** of the type ‘who (or what) among them’ using a ‘who?’ or ‘what?’ pronominal (777). The partitive is expressed with Locative preposition *dæx*. However, *ændék* ‘which?’ itself can also occur with a *dæx* phrase, as in (775.d), above.

- (777) *mi-\\dæx-sæn* *i-ssán-æn*
who?-\\in-3MaPl 3MaSgS-know.Result-Partpl.MaSg
 ‘Who among them (=which of them) knows?’

12.3.9 ‘how much/many?’ (*man-íket*) and ‘how?’ (*man-émmək*)

man-íket ‘how much?’ or ‘how many?’ can be used as a NP by itself, as in (778). The form is rather fused, but could perhaps still be segmented as *ma n íket* ‘what of quantity?’.

- (778) *man-íket-\\kæy* *i-kfa*
how.much?-\\2SgO 3MaSgS-give.PerfP
 ‘How much did he give you?’

When combined with a noun, we get any of the constructions in (779).

- (779) a. *man-íkèt* *ɖɛɖ-en*
how.many? woman-FePl
 ‘how many women?’
- b. [*man-íket* *əl̀kəttab-æn*] *t-əžž-ənšæ-d*
 [**how.many?** book-MaPl] 2S-Caus-be.sold.PerfP-2SgS
 ‘How many books did you-Sg buy?’ [K-d]
- c. *man-íket* *n* *áɖrəf*
how.much? Poss money
 ‘how much money?’
- d. *man-íket* [*dæx* *áɖrəf*]
how.much? [in money]
 ‘how much (of) money?’ (partitive)

- e. [mən-ikèt 'Ø-šil-an] t-æjjǎ-n
 [how.many? Pl-day-MaPl] LoImpf-do.LoImpfP-3MaPl
 [dæɾ 'ə-s-əsù
 [in Sg-Caus-drink.VbIN
 [n ['Ø-w-an [i-náqq fad]]]]
 [Poss [Pl-cow-MaPl [3MaSgS-kill.LoImpfP thirst]]]]
 'How many days do they spend having [the cattle who are
 thirsty] drink'. [Gao]

(779.a-b) show a compound structure (note the phrasal accent and the Prefix Reduction from T-ka t-ĩ-ded-en), (779.c) is a possessive, and (779.d) used locative preposition dæɾ in partitive sense. Prefix Reduction is more transparently present in (779.e). This example also shows ablaut modifications on the verb t-æjjǎ-n like those typical of definite relative clauses, compare the regular form t-újjǎ-n 'they-Ma make' (LoImpfP). This suggests that (779.e) behaves as though 'how many days?' is a definite head noun.

When associated with commodities, mən-íkət tends to mean specifically 'how much?', referring to the price rather than to the number of objects. The latter can be expressed by má 'what?' plus verb -ugdvh- 'equal'.

- (780) mɑ-\d t-ogdǎh t-áfæɾ-æt
 what?^Comit 3FeSgS-equal.Reslt Fe-rice-Fe
 [t-à tættǎ-d [hək á-šǎl]]
 [Fe-Dem.Sg eat.LoImpfP-2SgS [each Sg-day]]
 'How much rice do you-Sg eat every day?' [K-d]

The same formative mən- occurs in mən-émmək, another way to ask 'how?'. Perhaps one can identify the same initial element in mändǎjú 'when?'.

12.3.10 Embedded WH-interrogatives

My data of the type 'I don't know ...' followed by '... what he ate', '... who went', and the like, show a mix of basic constructions.

One pattern sticks very closely to the original utterance, including the regular WH-interrogative word.

- (781) a. wəɾ əssen-æɾ [mən-íkèt i-lá]
 Neg know.PerfN-1SgS [how.much? 3MaSgS-have.Reslt]
 'I don't know how much he has.'
- b. wəɾ əssen-æɾ [mà i-kša]
 Neg know.PerfN-1SgS [what? 3MaSgS-eat.PerfP]
 'I don't know what he ate.'

- c. ... [aniket ĭ-šš-ənša]
 ... [amount 3MaSgS-Caus-be.sold.PerfP]
 ‘... the amount he paid.’
- d. ... [è t-əkka]
 ... [where 3FeSgS-go.to.PerfP]
 ‘... where she went.’
- e. əttər-mæt [əmmək jæ-mæt]
 look.for.Imprt.-2FePIS [manner do.PerfP-2FePIS]
 ya rás
 Emph only
 ‘Just you-FePl look for a method (for you) to use.’ [K]

(783.d) can also appear as ... [è-ʌs t-əkka] with cliticized Instr s.

There are also textual examples where the unchanged WH-interrogative word is used (784).

- (784) wər əssen-ær [ma he æls-ær]
 Neg know.PerfN-1SgS [what? Fut wear.ShImpf-1SgS]
 ‘I don’t know what (clothing) I will wear.’

Embedded ‘**whether (or not) ...**’ is expressed by a simple indicative clause followed by wælá ‘or’ (§14.1.2), as in (785.a). When a complex ‘whether ...’ complement contains a disjunction other than simple positive/negative alternatives, some constituent (often a verb) is focalized in each clause of the complement, and wælá ‘or’ occurs before the noninitial clause (785.b).

- (785) a. wər əssen-ær
 Neg know.PerfN-1SgS
 [Ø-osæ-ʌdd wælá]
 [3MaSgS-come.PerfP-ʌCentrip or]
 ‘I don’t know whether (or not) he came.’
- b. wər əssen-ær
 Neg know.PerfN-1SgS
 [[t-à-nækra [a wər i-ja]],
 [Fe-Sg-get.up.VblN [Foc Neg 3MaSgS-do.PerfN]
 wælá [t-ðrhænna [à i-ja]]]
 or [Fe-sickness [Foc 3MaSgS-do.PerfP]]
 ‘I don’t know whether he (simply) hasn’t gotten up [focus]
 yet, or (whether) he is sick [focus].’ [K-d]

(785.b) is literally: ‘I don’t know (if) [[[getting up] is what he didn’t do] or [[being sick] is what he did]]’. The focal contrast is, in logical terms, that

between “[Neg [get up]]” and “[be sick].” In the first of these, only the VbIN ‘getting up’ is extracted, leaving the negative marker in its original position. For this type of “verb clefting” cf. (752) in §12.2.5).

Chapter 13

Clausal subordination

13.1 Adverbial clauses

13.1.1 Temporal adverbial clauses

13.1.1.1 Finite ‘when ...’ clauses (*à-\s, d-i-há-\d, ajúd, èd*)

The simplest ‘**when ...**’ adverbial clauses are formed by the unmarked demonstrative *à* followed by the cliticized Instrumental preposition *-\s* (786). We have seen that cliticized *-\s* is characteristic of dative, possessive, and some adverbial relatives (§12.1.4-5).

- (786) a. *à-\s* *Ø-æmmu-t,* *n-ègla*
Dem-\Instr 3MaSgS-die.PerfP-Aug, 1SgS-go.away.PerfP
 ‘When he died, we went away.’ [T-md]
- b. *à-\s-\lèdd* *Ø-osa*
Dem-\Instr-\Centrip 3MaSgS-come.PerfP
Ø-ærhín
 3MaSgS-be.sick.Reslt
 ‘When he came here, he was sick.’ [K-d]
- c. *ajén* *wædden* *kàmm*
 yes/no? it.is.not 2FeSg
Ø-s-àfal-æd *i-læmaw-æn-næm*
 2S-Caus-tan.LoImpfP-2SgS Pl-skin-MaPl-2FeSgPoss
 [*à-\s-kàm* *oyye-ɾ*]
 [**Dem-\Instr-\2FeSgO** leave.PerfP-1SgS]
 ‘Is it not (the case) that you-FeSg were tanning your hides when I left you?’ [K]
- d. [*à-s* *òlæh-æn*
Dem-\Instr be.equal.PerfP-3MaPlS
t-i-lèqqew-en *d* *’ə-mænòkal-æn*],
 Fe-Sg-pauper-FePl with Pl-chief-MaPl
endék *à-w-a ?*
 where? Dem-Sg-Dem.Sg?
 ‘When (=given that) poor people and rich people (“chiefs”) are in the same situation, what then? [K]

More elaborate constructions with a “real” head noun like *ælwæqq* ‘(point in) time’ are also common. This requires a full-fledged definite relative clause, with Comit *-\d*, as usual in spatiotemporals.

- (787) a. *ælwæqq* [w-à-\d i-mmu-t],
time [Ma-Dem.Sg-\Comit 3MaSgS-die-Aug],
n-əjla
 1SgS-go.away.PerfP
 ‘When he died, we went away.’ [T-ka]
- b. *ælwæqq* [wa-\d-hĩ i-nhæy]
time [Ma-Dem.Sg-\Comit-\1SgO 3MaSgS-see.PerfP]
 ‘when he sees me, ...’ [K-d]

The properly spatial construction with *d-i-há-\d ...* ‘here where ...’ (the *-\d* is omitted in the presence of another clitic) is also used in temporal contexts ‘when ...’; see §13.1.2, below for examples. One can expand this by adding a head noun *ajúd* (cf. noun *é-jud* ‘point in time’) (788). *ajúd* usually means ‘if ...’ (§13.9), but ‘if ...’ and adverbial ‘when ...’ overlap pragmatically.

- (788) a. *ajúd* d-i-há-\d ...
time Dem-Dem-Prox-\Comit
 ‘when (=the time at which) ...’
- b. [d-i-hà-\hə-næʀ øtt-əməl-æn
Dem-Dem-Prox-\Dat-1Pl Pass-praise.PerfP-3MaPlS
 ʔ-s-údar [e Ø-rəzzej-æn] ʀás]
 Pl-Instr-staple [Dat Pl-animal-MaPl] only]
 à n-əkká
 Foc 1PlS-go.Reslt
 ‘(In the desert) where staple foods are praised (=excellent) for our livestock, there [focus] is where we go.’

Clause-initial *èd* is sometimes translated ‘because’ (see §13.2.2), but it can also occur in contexts where temporal association, rather than causality as such, is foregrounded. The temporal context is more general than with *à-\s* or *ælwæqq w-à-\d*, and ‘whenever ...’ is often the most revealing gloss. The ablaut behavior of the verb indicates that this is treated as a definite relative clause, and I described the construction above under the rubric of generalized relatives in §12.1.6.4. Example (741.c) is repeated here as (789).

- (789) [ed i-kšá], àd Ø-æns
 [when 3MaSgS-eat.Reslt], Fut 3MaSgS-lie.down.ShImpf
 ‘When(-ever) he has eaten, he’ll lie down (to rest or sleep).’ [K-d]

13.1.1.2 Locative preposition plus VblN for ‘when ...’

Since VblN’s are so productive in Tamashek, it is possible to replace many finite adverbial clauses with locative or instrumental PP’s including a VblN.

- (790) a. d̀ə̀r ʿə-s-ə̀ŋŋ
 in Sg-Caus-be.cooked.VblN
 ‘while cooking’
- b. æwwə̀y-æ̀r é-hæ̀d
 bring.PerfP-1SgS Sg-night
 [də̀r [ággay n æ-sáhæ̀r]]
 [**in** [bring.VblN Poss Sg-song]]
 ‘I spent (“brought”) the night singing (“bringing song”).’

13.1.1.3 ‘as long as ...’ (with -vkkvs-)

Another construction meaning ‘as long as [an activity lasts]’ begins with Dem à and a definite relative clause beginning with MaSg demonstrative w-à (791.a). Alternatively, we get just à with no further demonstrative (791.b). The verb is -vkkvs- ‘take out’ (in the sense ‘spend [time]’), PerfP (791.a) or Reslt (791.b-c). The ‘as long as’ clause may precede or follow the paired main clause.

- (791) a. i-wwihæ̀l-à-hi
 3MaSgS-pester,Reslt-à-O-1Sg
 [à w-à àkkæ̀s-æ̀r]
 [Dem Ma-Dem.Sg **take.out**.PerfP-1SgS]
 s-áŋŋe-̀r
 Caus-be.cooked.LoImpfP-1SgS
 ‘he pesters me as long as I am cooking.’
- b. u-mà̀r i-zzə̀y
 Neg-Fut 3MaSgS-recover.ShImpf
 [à i-kkæ̀s]
 [**Dem** 3MaSgS-**take.out**.Reslt]
 wà̀r i-ja ʿi-sə̀fr-an
 Neg 3MaSgS-do.PerfN 3MaSgS-medication-MaPl
 ‘He won’t recover, as long as he hasn’t taken his medicine.’

My T-ka informant added *har w-á* ‘until this’ = ‘still’ (i.e. ‘while still ...’) before the *ændí* clause. For *har w-á* see also §11.3.4-5.

- (795) *ðšæl-æʀ* *har w-á* [*ændí-\\hĩ* *i-kša*]
 run.PerfP-1SgS **until this** [**before-\\1SgO** 3MaSgS-eat.PerfP]
 ‘I ran away before it ate (=could eat) me.’

This speaker also provided an alternative construction with similar sense, but replacing the *ændí* phrase by a simple negative.

- (796) *ðšæl-æʀ* *har w-á* [*wær-\\hĩ* *i-kša*]
 run.PerfP-1SgS **until this** [**Neg-\\1SgO** 3MaSgS-eat.PerfN]
 ‘I ran away before it ate me.’ (lit. “[while] it hadn’t yet eaten me”)

Still another construction, attested in realis as well as irrealis contexts, involves the conjunction *t-æzzár* ‘(only) thereafter ...’, which is not quite identical to the fixed 3FeSg Reslt verb *t-æzzár* ‘it-Fe has preceded’. This conjunction is placed at the beginning of a ShImpf clause denoting the subsequent eventuality. Cf. verb *-vzzvr-* ‘precede’.

- (797) a. *n-æss-æmdù-het* *ðlkættab* *w-á,*
 1PIS-Caus-finish-Hort book Ma-Dem.Sg
 t-æzzár *n-æss-ænt*
 thereafter 1PIS-Caus-begin.ShImpf
 dæʀ *w-a* *yyæð-æn*
 in Ma-Dem.Sg other-MaSg
 ‘Let’s finish this book, then we begin on the other one.’
 [= ‘Let’s finish this book before we begin on the other.’]
- b. *ðktøb* *t-æzzár* *t-æʀtə-d*
 read.Imprt **thereafter** 2S-read.ShImpf-2SgS
 ‘Write, then (you may) read.’
 [= ‘Write before you-Sg read.’]
- c. *ðkše-ʀ* *t-æzzár* *ənsə-ʀ*
 eat.PerfP-1SgS **thereafter** go.to.bed.PerfP-1SgS
 ‘I ate, then I went to bed.’ [K-d]

In my K-d data, *æzzár* is equivalent to *t-æzzár*. In my limited data from Im dialect, *æzzár* is attested in *æzzár à-\\d Ø-æj ʔæ-kæsa* ‘it must (=will certainly) rain’.

One can also express ‘before’ as a simple preposition *dát* ‘in front of’ plus a VblN. Thus alongside *ændí i-wæt ʔó-jønna* ‘before the rain struck (=fell)’, one can say (798).

- e. i-twár-àt [e ʔ-ə-jrəs-t
 3MaSgS-store.Reslt-3MaSgO [Dat Fe-Sg-winter-Fe]
 [hàr àrəw-næt úlli]
 [until give.birth.ShImpf-3FePlS goats]
 'He has stored it (fonio grain) for the winter, until (=for the
 time when) the nanny-goats will give birth.' [K]

For dialects with àr, this 'until, all the way to' conjunction is homophonous with the 'except' particle (§11.3.1). However, T-ka distinguishes hàr 'until, all the way to' from àr 'except'.

13.1.1.6 'after ...' (šæmá-)

A form šæmá- is attested in adverbials, including one where it appears to be a preposition with dative pronominal (šæmá-às 'afterwards'). It also occurs with cliticized Comitative -àd as a clause-initial '(just) after ...' conjunction.

- (801) šæmá-àd n-əss-ímda a-káetab
 after-àComit 1PlS-Caus-finish.Reslt Sg-write.VbIN
 a-àd n-əktá-àd hæræt ÿy-æn
 Dem-àComit 1PlS-remember.PerfP-àCentrip thing one-MaSg
 wàr n-əkreb
 Neg 1PlS-write.PerfN
 'Just after we finished writing, that's when we remembered something
 that we had not written.';

šæmá is not common in my data. LTF2 375 has "zǎma" and gives an immediate Hausa source, but recognizes a possible ultimate source in (Maghrebi) Arabic zaʔma.

13.1.1.7 'happen later ...' (i-lkám ...)

From -vɪkvm- 'come after' we get a construction with fixed 3MaSg subject Reslt i-lkám followed by a clause. It is common in K dialect texts, and suggests that the eventuality in question will inevitably happen at a later time. Contextually it can be glossed 'eventually', 'inevitably', or just 'later on'.

- (802) ÿs-an yá, i-lkám
 Pl-meat-MaPl Emph, 3MaSgS-come.after.Reslt
 [a-ʋfællà-m Ø-iba t-è-nässe]
 [Dem-àon-2FeSg 3MaSgS-be.lost.ShImpf Fe-Sg-lie.down.VbIN
 'Flesh (=getting fat). The time will come when lying down (=sleeping
 in the daytime) will no longer be possible for you-FeSg.' [K]

13.1.2 Spatial adverbial clauses ('where ...')

Spatial adverbial clauses ('where ...') are definite relative clauses. They have a demonstrative adverb as the head, followed by cliticized Comit -\d. The construction can be glossed literally "here/there where ...". The unmarked adverbial in this construction is d-i-há 'here'.

- (803) a. s-æns t-æ-hon-t
 Caus-lie.down.Imprt Fe-Sg-stone-FeSg
 [d-i-há-\d-\hi è Ø-iba]
 [here-\Comit-\1SgO Fut 3MaSgS-be.lost.ShImpf]
 'Put a stone down (here) where I will die!' [T-md]
- b. d-i-ha-\d i-t-ættæs
 here-\Comit 3MaSgS-LoImpf-sleep(√ds).LoImpfP
 '(the place) where he sleeps.' [R]

In (803.b), the stem -t-ættæs- has undergone the morphophonological treatment typical of 3SgS LoImpfP verbs in definite relative clauses (compare -t-óttæs- in normal LoImpfP clauses). See $\bar{\chi}$ -pc1 Erasure (130).

There is frequent slippage of **spatial into temporal** contexts, or into more abstract spatiotemporal or situational 'in the event that ...'. These clauses can therefore abut on the domain of conditional antecedents.

- (804) a. àd Ø-æts X
 Fut 3MaSgS-laugh(√dz).ShImpf X
 d-i-ha-\d-\hi Ø-æba
 here-\Comit-\1SgO 3MaSgS-be.lost.PerfP
 'X [name] will laugh when I have died.' [T-md]
- b. d-i-hà-\d i-ggát `ó-jænna
 here-\Comit 3MaSgS-hit(√wt).LoImpfP Sg-rain
 næ-t-ájjæš
 1Pl-LoImpf-enter.LoImpfP
 'When(-ever) it rains, we (regularly) go inside.' [T-ka]

13.1.3 Manner adverbial clauses ('how ...')

A definite instrumental relative clause can be formed with the noun émmæk 'way, manner, method'.

- (805) émmæk [w-à-\s Ø-ošæł]
 manner [Ma-Dem.Sg-\Instr 3MaSgS-run.Reslt]
 'the way (in which) he runs'

13.2 Purposive and causal clauses

13.2.1 Purposives ('in order that ...') (y à-\d, à-\d, y)

The purposive clause is a simple relative clause under the scope of a Dative. Canonically, it begins with *y* (prevocalic **Dative** allomorph), followed by the unmarked **demonstrative** *à*, then any clitics. If there is no other clitic, *Comit -\d* is added, then the remainder of the clause, with a **ShImpf verb**. In other words, this is a PP with a clause headed by *Dem à* as the complement of the preposition.

Since the purposive clause is finite, its form does not depend on whether its subject is coindexed with the subject of the main clause. Thus (806.a-b) have the same purposive clause ('that he see me'), though only in (806.a) is the subject 'he' coindexed with the main-clause subject.

- (806) a. Ø-osa-\hí-\dd
3MaSgS-arrive.PerfP-\1SgO-\Centrip
[y a-\hĩ i-nhøy]
[Dat Dem-\1SgO 3MaSgS-see.ShImpf]
'He came to me, in order that he see me (=to see me).'
- b. ose-r-\idd
arrive.PerfP-1SgS-\Centrip
[y a-\hĩ i-nhøy]
[Dat Dem-\1SgO 3MaSgS-see.ShImpf]
'I came, in order that he see me.'
- c. ì-kkæl æ-bóri
3MaSgS-pick.up.PerfP Sg-stick
[y a-\hĩ i-wæt]
[Dat Dem-\1SgO 3MaSgS-hit.ShImpfP]
'He picked up the stick, in order that he hit me.'
- d. i-jræw-\ædd ázræf
3MaSgS-find.PerfP-\Centrip money
[y a-\d èqqən-ær]
[Dat Dem-\Comit build.ShImpf-1SgS]
'He got (and brought) money, in order that I build.'
- e. t-æqqál [y a-\hɑ-s
3FeSg-wait.Reslt [Dat Dem-\Dat-3Sg
ì-s-æññ æ-hálæs]
3MaSgS-Caus-be.cooked.ShImpf] Sg-man]
'She (just) sits (waiting) for the man to cook for her.' [K]

13.2.2 Causal ('because') clauses (fæl, à-\s, èd)

A number of variants involving cliticised preposition fæl 'on' (§6.5.5) can be used as 'because' conjunctions at the beginning of a clause (which takes regular indicative form). The forms attested are those in (810).

- (810) a. α-\fæl ... (for the sense 'if ...' in K-d see §13.9)
 b. α-w-á\fæl ...
 c. fæl á-\s ... (as in Niger and Algeria)
 d. fæl ...
 e. à-\s ...

The first two are variants of each other, with a simple (810.a) or full (810.b) demonstrative followed by the cliticized preposition. α-\fæl ... (810.a) is structurally parallel to the interrogative μα-\fæl 'why?' (§12.3.7). In (810.c-d), fæl is now clause-initial (this is not a normal syntactic position for a preposition, so here fæl may represent a reduction of e.g. à-\fæl ...). In (810.c), fæl is followed by the minimal demonstrative à plus the cliticized Instrumental preposition -\s, compare à-\s ... 'when ...' (§13.1.1.1) or 'that ...' (§13.7). I show à-\s in (810.e) since it is sometimes glossable as 'because' in context, presumably as a reduction of fæl á-\s.

An example is (811.a). Note that the Centripetal clitic associated with the verb 'come' appears at the end of fæl à-\s. In (811.b-b'), we see that clitics have a choice: follow fæl à-\s or follow the verb.

- (811) a. fæl à-\s-\d Ø-osa
 on **Dem-\Instr-\Centrip** 3MaSgS-come.PerfP
 'because he came'
- b. fæl α-\s-\α-hĩ i-wæt
 on **Dem-Instr-\O-1Sg** 3SgS-hit.PerfP
- b'. fæl α-\s i-wæt-\α-hi
 on **Dem-Instr** 3SgS-hit.PerfP-\O-1Sg
 'because he hit me'

α-w-á\fæl ... (800.b) can also mean 'the reason why ...' (literally 'that on which ...'). When fæl occurs without the extension à-\s, it does not host clitics, to judge by (812).

- (812) ... fæl [wær-\d Ø-osa]
 ... **because** [Neg-\Centrip 3MaSgS-arrive.PerfP]
 '... because he didn't come'. [K-d]

An alternative clause-initial 'because' form is èd. In dialects where both èd and forms like fæl á-\s are common, èd tends to be used in 'because' clauses

- c. ənne-ɾ-\a-s [à-\d i-búddæd]
say.PerfP-1SgS-\Dat-3Sg [Dem-\Comit 3MaSgS-go.LoImpfP]
 ‘I told him to get up (regularly).’
- d. jánne-ɾ
say.LoImpfP-1SgS
 [a-\d t-ækk am-an]
 [Dem-\Comit 3FeSgS-go.to.ShImpf water-MaPl]
 ‘I keep telling her to go to the water.’ [K]

Occasionally the à-\d is omitted (816).

- (816) ï-nna-\Ø-næɾ n-ənzər
 3MaSgS-**say.PerfP-\Dat-1Pl** 1PlS-sing.ShImpf
 ‘He told us to sing.’

When the jussive clause is **negated**, it switches to hortative form, with no complementizer. The clause begins with Neg wær followed by a verb in the Prohibitive stem with suffix -et. This was checked for T-ka and R (817.a-b). I did, however, record one instance of a regular (unsubordinated) future negative complement in my brief study of Im dialect (817.c).

- (817) a. ənne-ɾ-\a-s [wær i-næzzæɾ-et]
say.PerfP-1SgS-\Dat-3Sg [Neg 3MaSgS-sing.Prohib-Hort]
 ‘I told him not to sing.’ [R]
- b. ənne-ɾ-\a-s [wær i-jæll-et]
say.PerfP-1SgS-\Dat-3Sg [Neg 3MaSgS-go.Prohib-Hort]
 ‘I told him not to go.’ [T-ka]
- c. ne-ɾ-\a-s
say.PerfP-1SgS-\Dat-3Sg
 [wær-\dəd hè Ø-as]
 [Neg-\Centrip Fut 3MaSgS-come.ShImpf]
 ‘I told him not to come.’ [Im]

For the K-d speaker, negative jussives use direct quotation. Therefore the negative jussive clause is identical in form to a (second-person subject) negative imperative. My K-d examples show the negative imperative type that uses a PerfN verb (818).

- (818) ənne-ɾ-\a-s [wær t-ət̪teʃ-æd]
say.PerfP-1SgS-\Dat-3Sg [Neg 2S-sleep(√dʃ).PerfN-2SgS]
 ‘I told him not to go to sleep.’ [K-d]
 [lit. “I told him, don’t you-Sg sleep!”]

13.3.1 'want' (-vrhv-)

à-\d is also found with -vrhv- 'want'. Below are examples with positive (819.a) and negative (819.b-c) complements. The alternative is a VbIN complement. This is the case in (819.d), which negates the higher 'want' verb.

- (819) a. i-rhá [à-\d n-ənzər]
 3MaSgS-**want**.Reslt [Dem-\Comit 1PIS-sing.ShImpf]
 'He wants us to sing.'
- b. i-rhá [a-\d wær n-ənzər]
 3MaSgS-**want**.Reslt [Dem-\Comit Neg 1PIS-sing.PerfN]
 'He wants us not to sing (now).'
- c. i-rhá [a-\d wær nə-næzzær]
 3MaSgS-**want**.Reslt [Dem-\Comit Neg 1PIS-sing.Prohib]
 'He wants us not to sing (any more)'
 or: '... not to keep singing.'
- d. wær ærhe-ɣ a-hændÿ-ənnes
 Neg **want**.PerfN-1SgS Sg-see.VbIN-3SgPoss
 'I don't want to see it.'

13.3.2 'be able' (-dubv- + -t) and 'prefer' (-suf-)

-dubv- (+ -t) 'be able' (820.a-e) takes ShImpf verbs in the complement, while -suf- 'prefer' (820.f) can take e.g. LoImpfP and Reslt verbs. (820.a) shows the usual dropping of the cliticized preposition -\d when another clitic is present. (820.e) has a negation in each of the main and subordinated clauses. (820.f) shows the use of a LoImpfP complement to specify an extended time span.

- (820) a. wær æddobe-ɣ
 Neg **be.able**.PerfP-1SgS
 [a-\tt əwət-æɣ]
 [Dem-\3MaSgO hit.ShImpf-1SgS]
 'I can't hit him.'
- b. wær æddobe-ɣ
 Neg **be.able**.PerfP-1SgS
 [à-\d wær jəll-æɣ]
 [Dem-\Comit Neg go.LoImpfN-1SgS]
 'I can't not go.'

- c. [ægg ʼæ-jæma] wær Ø-æddobæ-t [à-\d
[son Sg-bush] Neg 3MaSgS-**be.able**.PerfN [Dem-Comit
i-krəš æ-kall fæll æ-kall]
3MaSgS-**be.long.time**.ShImpf Sg-land on Sg-land]
'A nomad (“son of the bush”) cannot spend too long in one
place.'
- d. wær æddobe-ɾ
Neg **be.able**.PerfP-1SgS
[a-\ha-m-\t ækf-æɾ]
[Dem-\Dat-2FeSg-\3MaSgO give.ShImpf-1SgS]
'I can't give it-Ma to you-FeSg.' [K]
- e. wær æddobe-ɾ
Neg **be.able**.PerfP-1SgS
[a-\d wær ənse-ɾ],
[Dem-\Comit Neg go.to.bed.PerfN]
jàrræw-æn-\a-hi ùlhaw-æn
get.LoImpfP-3MaPIS-\O-1Sg heart-MaPl
'I can't do without lying down (in bed), I have heart trouble.'
[lit., “hearts got (=are afflicting) me”] [K]
- f. æssóf-æɾ
prefer.Reslt-1SgS
[a-\d tát-tæɾ d-i-há-dæɾ]
[Dem-\Comit eat.LoImpfP-1SgS here]
'I prefer to eat here (regularly).'
- g. æssóf-æɾ
prefer.Reslt-1SgS
[a-\hi əɾláy-æn di-há-dæɾ]
[Dem-1SgO surround.Reslt-3MaPIS here]
'I prefer that they-Ma surround (=stay close to) me.' [K]

In the somewhat awkward double negative example (820.b), the T-ka informant also allowed à-\s with cliticized Instrumental preposition as an alternative to à-\d. He did not accept this substitution in the positive complement in (820.a).

These verbs ('can', 'prefer') may also take VblN complements (§13.6.8).

13.3.3 Obligationals ('must', 'should', 'may not')

Strong obligationals ('must') can be expressed with -kvrvd- 'obligate' in the main clause (with impersonal 3MaSg subject as default, cf. French *il faut*). The

entity obligated is the direct object of this verb, and reappears in the complement clause. An alternative is -vfrvð- ‘be required of, be a duty for’, whose complement is a PP with preposition fæl ‘on’ (821.c). The subordinated clause begins with à-\\d (821.a-b), optionally reduced in some dialects to d (821.c). An alternative construction is with -huššv|- ‘be obligatory (on)’ with direct object (821.d).

- (821) a. i-kkīræð-\\tæn
 3MaSgS-**obligate**.Reslt-\\3MaPIO
 [a-\\d əj]ə-n]
 [**Dem**-\\Comit go.ShImpf-3MaPIS]
 ‘They must (=are obligated to) go.’
 [lit. “it obligates them [that they go]”]
- b. i-kkīræð-\\tæn
 3MaSgS-**obligate**.Reslt-\\3MaPIO
 [a-\\d wær jəllə-n]
 [**Dem**-\\Comit Neg go.LoImpfN-3MaPIS]
 ‘They must not go.’
- c. i-frùð-\\fæll-i [d əglu-γ]
 3MaSgS-**obligate**-\\on-1Sg [Comit go.ShImpf-1SgS]
 ‘I’m obligated (lit. “it is obligatory on me”) to go.’ [Hm]
- d. Ø-æhüşšæ|-\\t
 3MaSgS-**be.obligatory.on**-\\3MaSgO
 [a-\\d Ø-æqqəym]
 [**Dem**-\\Comit 3MaSgS-sit.ShImpf]
 ‘He must stay (here).’ [K-d]

Another obligational construction uses -vlu- ‘have’, in its usual Reslt stem shape -əlá- (or -lá-), in the main clause, followed by s ‘that’ and à-\\d.

- (822) a. lé-γ [s a-\\d æqqəym-æγ]
have.Reslt-1SgS [**that** Dem-\\Comit sit.ShImpf-1SgS]
 ‘I must stay (here).’ [K-d]
- b. lá-n
have.Reslt-3MaPI
 [s a-\\d əxdəm-æn]
 [**that** Dem-\\Comit work.ShImpf-3MaPIS]
 ‘They-Ma must work.’ [K-d]

A common, slightly weaker obligational construction (‘should’, ‘ought to’) involves the verb -vwvr- ‘be on’ (often in the Reslt stem) in the abstract sense

‘be incumbent on’. The person is direct object, while the action (often a VbIN) is subject (823).

- (823) i-wár-\\t
 3MaSgS-**be.on**.Reslt-\\3MaSgO
 [ʔæ-ræras ən t-erse]
 [Sg-slaughter.VbIN Poss Fe-sheep]
 ‘He should (=ought to) slaughter a sheep.’

I have also recorded a negative ‘**should not**’ or ‘may not’ (‘not be allowed to’) construction with the existential verb -vllv- (§7.3.2.11) plus dative (824). The verb agrees with the VbIN subject, so a syntactically more revealing gloss is ‘(action) be inadvisable or disallowed for (sb)’. Any clitics, including pronominal PPs, that are logically associated with the VbIN remain cliticized to it.

- (824) a. wær-\\ha-s t-əllà t-ekle
 Neg-\\Dat-3Sg 3FeSgS-**exist**.PerfN Fe-go.VbIN
 ‘He (or she) should not go.’ [Hm]
- b. wær-\\ha-k i-llá [æ-safû-\\ha-s]
 Neg-\\Dat-2MaSg 3MaSgS-**exist** [Sg-greeting-\\Dat-3Sg]
 ‘You-MaSg may not greet him (or her).’ [K-d]

When the sense is ‘X obligate Y (to do something)’ with an explicit agent of causation, a verb like -š-vhvššvl- ‘obligate, oblige, compel’ is used; see (450) in §8.1.1.

13.3.4 ‘warn’ (-vŋgvh-) and ‘advise’ (-s-vmvtvr-)

The verbs -vŋgvh- ‘warn’ and -s-vmvtvr- ‘advise’ (the latter is causative in form) take ð-\\d complements under the scope of an outer preposition. For ‘**warn**’ the preposition is Dative, so the complement clause is formally identical to a purposive clause (825).

- (825) i-ŋgæh-\\a-hi
 Caus-**warn**.PerfP-\\O-1Sg
 [y a-\\d wær səss-ær]
 [Dat **Dem**-\\Comit Neg drink.LoImpfN-1SgS]
 ‘He warned me not (ever) to drink.’

For ‘**advise**’ the preposition is Comitative (826).

- (826) a. Ø-æs-mætær-\a-hi
 3MaSgS-Caus-advise.PerfP-\O-1Sg
 [d a-\d ækk-ær bàmako]
 [Comit Dem-\Comit go.to.ShImpfP-1SgS Bamako]
 'He advised me to go to Bamako.'
- b. Ø-æs-mætær-\a-hi [d a-\d
 3MaSgS-Caus-advise.PerfP-\O-1Sg [Comit Dem-\Comit
 wær t-ækk-ær bàmæko]
 Neg LoImpf-go.to.LoImpfN Bamako]
 'He advised me not to go to Bamako.'

In (826.a-b) the first Comit d is followed by an à-\d... complement, which itself contains a cliticized Comit -\d. (826.b) is parallel but has a negative complement. The person advised or admonished (here 'me') is direct object (not dative) in the main clause, as comparable examples with e.g. 3MaSg (rather than 1Sg) object show.

13.3.5 'try' (-vttvr-, -urvm-)

(827) illustrates -vttvr- 'seek, try'. See (952) in the text (Chapter 16) for a parallel construction with verb -urvm- 'test, try'.

- (827) i-ttær [a-\tæn ækəl]
 3MaSgS-seek.PerfP [Dem-\3MaPIO take.ShImpf]
 'He tried to carry them (logs)'. [K]

13.4 Add-on small clauses

A positive clause with a ShImpf or Imprt verb can be added to another positive clause in the future construction, without repeating Future àd. In (828.a-b), àd occurs once at the beginning followed by the usual ShImpf, but a **second ShImpf clause** is conjoined (without another Fut particle or other overt connective). If a direct object or dative NP occurs in both clauses, it appears in pronominal form (object or dative clitic) in the second (828.c). Any **clitics** in the add-on clause are hosted by the verb. More than one add-on clause may occur (828.d). The sequence **long imperative plus LoImpfP** is illustrated in (828.e). In all cases, the two clauses have **separate accentuation**.

- (828) a. àd n-ækš [n-əsów]
 Fut 1PIS-eat.ShImpf [1PIS-drink.ShImpf]
 'We will eat and drink.'

- b. a-\dd àsə-næt
 Fut-\Centrip arrive.ShImpf-3FePlS
 [əjə-næt æ-sáfu]
 [do.ShImpf-3FePl Sg-greeting]
 ‘They-FePl will come and greet (“do greeting”).’
- c. ad əwət-ær t-è-hæle
 Fut hit.ShImpf-1SgS Fe-Sg-sheep
 [əŋr-æq-\qæt]
 [kill.ShImpf-1SgS-\3FeSgO]
 ‘I will hit and kill the sheep.’ (lit. “I will hit the sheep (and) I will kill it”)
- d. àd n-əddəh rás [n-ərməs
 Fut 1PlS-pound.ShImpf only [1PlS-take.ShImpf
 a-læbæjja rás] [n-əj-\e]
 Sg-alabajja only] [1PlS-do.ShImpf-3SgO]
 ‘We’ll pound (grain), and get alabajja (a dish), and make it.’
 [K]
- e. ráddær e-zækæn-næm
 patch.LoImpfP Sg-cloth.tent-2FeSgPoss
 Ø-s-àfal-æd i-læmaw-æn-næm
 2S-Caus.LoImpfP-tan-2SgS Pl-skin-MaPl-2FeSgPoss
 ‘Patch together your cloth tent and tan your hides.’ [K]

In a **conditional** antecedent, it is possible to add a second verb in PerfP form to a first verb in PerfP or Reslt form, without repeating *qjúd* ‘if’. In (829.a), the first verb *eat* is Reslt, and the “conjoined” verb *drink* is PerfP, showing **neutralization of PerfP and Reslt** in favor of the PerfP in the add-on clause. (829.b), however, shows that an add-on can have a Reslt verb if required by the semantics of the verb. (829.c) combines a positive main antecedent clause with a negated add-on clause.

- (829) a. qjúd t-əkšé-d t-əswe-d,
 if 2S-eat.Reslt-2SgS 2S-drink.PerfP-2SgS,
 àd t-əhləyləy-æd
 Fut 2S-be.happy.ShImpf-2SgS
 ‘If (=when) you have eaten and drunk, you will be happy.’

- b. *ajúd* *t-æhònæ-d* *t-ərhé-d*
if 2S-move.out.**Reslt-2SgS** 2S-want.**Reslt-2SgS**
ɑ-\d *t-əkkə-d* *æ-salwa*
Dem-\Comit 2S-go.to.ShImpf-2SgS Sg-southern.Gourma
‘If (=when) you-Sg move out and you want to go to the southern Gourma’
- c. *fáel* *t-ənhàey* [*à* *t-ərhá*]
if 3FeSgS-see.**PerfP** [Dem 3FeSgs-want.**Reslt**]
[*wær* *t-əjrew*],
[**Neg** 3FeSgs-get.**PerfN**],
ÿba *ras* [*à* *t-əkka*]
loss only [Foc 3FeSgS-go.to.**PerfP**]
‘If she sees something she wants and doesn’t get it, (her) death [focus] is what she goes to.’

It is not possible to add a second verb under the scope of a Negative particle in the first clause. In such contexts, the second verb has its own Negative particle (830.a). This is true even in (830.b) where the second verb is in PerfN form, i.e. is indexed as negated. However, if the second clause is positive and already effectively subordinated to a preceding clause, so that the two form a single proposition, it may remain attached without change when the first clause is negated; in (830.c), the final LoImpfP clause is a kind of serial adjunct to the ‘go to’ clause and is therefore included in the scope of the higher negation.

- (830) a. [*wær* *n-əkša*] [*wær* *n-əswa*]
[**Neg** 1PIS-eat.**PerfP**] [**Neg** 1PIS-drink.**PerfP**]
‘We didn’t eat or drink.’ (lit. “we didn’t eat we didn’t drink”)
- b. [*wær-\d* *i-jješ*]
[**Neg**-\Centrip 3MaSgS-enter.**PerfN**]
[*wær* *i-zjer*]
[**Neg** 3MaSgS-go.out.**PerfN**]
‘He didn’t come in or go out.’ (lit. “he didn’t enter he didn’t exit”)
- c. *nəkk* [*wær* *əkke-r* *əddinæt*]
1Sg [**Neg** go.to.**PerfN**-1SgS people
[*t-əddəl-æq-ɔqæn*]]
[LoImpf-beg.LoImpfP-1SgS-3MaPIO]]
‘Me, I didn’t (ever) go to people and be begging from them.’
[K]

A juxtaposed (“conjoined”) imperative likewise may take imperative form (831). For the option of switching to ShImpf, see ‘leave and pick up’ in (932) in the text (Chapter 16).

- (831) a. ÿyæw [æ̀j æ-sáfu]
 come.Imprt [do.Imprt Sg-greeting]
 ‘Come and greet!’ (lit. “come! do! greeting”)
- b. ÿyæw {æ̀kš̌]
 come.Imprt [eat.Imprt]
 ‘Come (and) eat!’
- c. múss [ə̀rtəs e-sáéver]
 go.Imprt [cut.Imprt Sg-wood]
 ‘Go (and) cut a piece of wood!’

A LoImpfP verb may likewise be juxtaposed to another in its normal main-clause form (832).

- (832) i-tátt i-sáss
 3MaSgS-eat.LoImpfP 3MaSgS-drink.LoImpfP
 ‘He eats and drinks.’

In cases like (831-2), it is not meaningful to speak of (morphosyntactic) conjunction. Extraction processes such as focalization do not treat such sequences as single clauses. In (833), note that the extracted (i.e. focalized) *má* ‘what?’ is repeated. In other words, there is an “**island**” constraint on simple extraction from a biclausal sequence.

- (833) [ma i-tátt] [ma i-sáss]
 [what? 3MaSgS-eat.LoImpfP] [what? 3MaSgS-drink.LoImpfP]
 ‘What does he eat, what does he drink?’ (= ‘What does he eat and drink?’)

13.5 Verbs with verbal noun complements

Verbs with VbIN complements require that the (logical) subject of the VbIN clause be coindexed with a NP in the higher clause (usually the subject, but the object for certain higher-clause verbs). The subject of the VbIN clause is therefore omitted. If the VbIN has a NP object, the latter usually appears as a genitive NP with Poss preposition *ən* (example below with ‘be ashamed’). However, some higher-clause verbs can alternatively take the logical lower-clause object as a direct complement (see ‘begin’, below).

The transitive verb **'begin'** is -s-vntv-, (Imprt s-ànt, PerfP -àss-əntə-). It can take a VblN or similar nominal as complement. In (837.b) we see that the logical object of the complement verb is expressed as (clitic) object of 'begin'.

- (837) a. à-jənnə i-ss-əntə é-wet
 Sg-rain 3MaSgS-Caus-**begin** Sg-hit.VblN
 'Rain began to strike (=fall).' (R)
- b. əss-ənt-æq-\qæt kəssən
 Caus-**begin**-1SgS-\3FeSgO dislike[noun]
 'I've begun to dislike her.'

13.5.3 'go (in order) to' (-vkkv-)

Since -vkkv- 'go to' is a transitive verb, it can take a simple VblN (without preposition) as its complement. Often the pragmatic sense is 'go in order to'.

- (838) ì-kkə t-è-tæte
 3MaSgS-go.to.PerfP Fe-Sg-eat.VblN
 'He went to eat.'

13.5.4 'be ashamed to' (-kvrukvd-)

-kvrukvd- **'be ashamed'** can take a VblN complement. In (839), the VblN à-ləxù has a NP object expressed as a genitive.

- (839) Ø-ækkræð à-ləxù n isəm-ənnət
 3MaSgS-be.ashamed.PerfP Sg-report.VblN Poss name-3SgPoss
 'He was (too) ashamed to report (=give) his name.'

13.5.5 'do a lot' (-vknu-)

-vknu- 'do (well)' can be used with a VblN complement in the sense **'(do) a lot'**.

- (840) a. i-kánn t-è-tæte
 3MaSgS-do.well.LoImpfP Fe-Sg-eat.VblN
 'He eats a lot.'

- b. æ-kall dár Ø-æmós [æ-kall-\\dær wær
 Sg-land also 3MaSgS-be.Reslt [Sg-land-\\in Neg
 kənnə-n əddinæt t-a-m-əzzuq-q]
do.much.LoImpfN-3MaPlS people Fe-Sg-Ø-live.VblN-FeSg]
 ‘The land too is a land in which people do not live very much.’

13.5.6 ‘do many times’ (-s-vjvt-)

A similar sense ‘**do many times**’ can be expressed with causative verb -s-vjvt- ‘make numerous; accumulate’ as main-clause verb.

- (841) æs-jæt-ær t-ekle
Caus-be.many.PerfP-1SgS Fe-go.VblN
 ‘I’ve gone many times.’ [K-d]

13.5.7 ‘do frequently’ (-vršvj-)

‘**Frequently**’ can be expressed by a matrix clause with verb -vršvj- ‘do frequently, be frequent’ in the Reslt with the appropriate subject pronominal, followed by a VblN complement (842). The Centripetal clitic here is associated with the complement ‘come’.

- (842) əršæj-æn-\\a-nær-\\ədd t-əssaw-t
be.frequent.Reslt-3MaPlS-\\O-1Pl-\\Centrip Fe-come.VblN-FeSg
 ‘They-Ma frequently come to us.’

‘Do frequently’ can also be expressed by a matrix clause with invariant 3MaSg Reslt *i-ršæj* ‘it is frequent’ and a complement clause beginning with *ə-\\s* ‘that’; for an example see (681.c) in §10.4.

13.5.8 ‘can’ (-dubv- + -t)

This verb often takes complements with *ə-\\d* (§13.3.2), but it can also take simple VblN complements (843).

- (843) wær əddobe-ɾ t-īdhaw-t
 Neg **be.able.PerfN-1SgS** Fe-pound.VblN-FeSg
 ‘I cannot pound (grain, in mortars).’ [K]

13.6 Verbs and particles with finite complements

In the cases documented in this section, the complement clause has the form of a normal main clause with regularly inflected verb.

13.6.1 ‘find, encounter’ (-ujvz-)

-ujvz- ‘**find, encounter**’ is used with a complement clause containing an inflected verb describing a concurrent situation.

- (844) α-\s-\hĩn ose-ʁ di-hén,
 Dem-\Instr-\Centrif arrive.PerfP-1SgS there,
 ojæz-æq-\q [i-jrəw-\t hæræt]
 find.PerfP-1SgS-\3MaSgO [3MaSgS-take.Reslt-\3MaSgO thing]
 ‘When I arrived there, I found him to be sick.’

Here ‘he was sick’ (lit. ‘something had taken him’) can be translated into English as a complement of ‘find’, but in Tamashek it has no overt complementizer and is in main-clause form. A more literal translation of (844) would be ‘...I found him (in a situation where) something had taken (=afflicted) him’.

13.6.2 ‘repeat’ (-vlvs-)

-vlvs- ‘**repeat**’ can combine with a following finite verb (845).

- (845) Ø-ðlæs i-ss-əstæn-\t
 3MaSgS-repeat.PerfP 3MaSgS-Caus-ask.PerfP-\3MaSgO
 ‘He asked him again’.

13.6.3 ‘end up (doing)’ (-jurhu-)

-jurhu- ‘**end up**’, attested with Centripetal clitic, can take a complement clause with an inflected LoImpfP verb denoting a situation (846).

- (846) i-jjurhæ-\dd i-jánna-\Ø-s
 3MaSgS-end.up.PerfP-\Centrip 3MaSgS-say.LoImpfP-\Dat-3Sg
 ‘He ended up telling it, ...’

The subject of -jurhu- need not be coindexed with the subject of the complement clause. See (952) in the text (Chapter 16) for a subject-to-object coindexation.

The particle *šærnáš* can be used clause- (or phrase-)initially in the sense ‘barely’:

- (850) *šærnáš*-\lódd Ø-osa d-i-há
barely-\Centrip 3MaSgS-come.PerfP here
 ‘He barely made it here.’

13.6.6 ‘(have) just’ (*íket*)

The English perfect of immediacy (‘he has just left’) can be expressed by the particle *íkèt* followed by a clause with Reslt verb (851). In (851.b), the verb has undergone $\bar{\chi}$ -pcl Erasure, showing that this construction is treated as a definite relative. In (851.c), *íket* is followed by a Centripetal clitic (which is doubled on the following verb).

- (851) a. *íkèt* i-mmút æ-waðəm
just 3MaSgS-die.Reslt Sg-person
 ‘Somebody has just died.’
- b. *íkèt* əzjær-æn
just exit.Reslt-3MaPl
 ‘They-Ma have just gone out.’ [R]
- c. æ-šæráju æ-rælas
 Sg-green.burrgrass Sg-burrgrass
 w-ɑ-\s *íkèt*-\d Ø-æmèwæð-\lódd
 Ma-Dem.Sg **just**-Centrip 3MaSgS-be.young.Reslt-\Centrip
 ‘æ-šæráju (is) burrgrass that has recently grown.’
- d. ənháy-æn t-æ-læyyeq-q, *íkèt*-\dæx-\lódd
 see.Reslt-3MaPl Fe-Sg-hardship-FeSg **just**-\in-\Centrip
 i-ŋkàr-\dæx-sæn ’ə-jómmer
 3MaSgS-arise.Reslt-\in-3MaPl Sg-initial.recovery
 ðaræt mænna-tæn
 after drought-MaPl
 ‘They have seen (=experienced) hardship. It’s just recently that a recovery (from hardship) has arisen (=began to happen) among them following the droughts.’

Noun *íket* (note accent) means ‘quantity’ or ‘good behavior’; see also *har íket í* ‘until...’ (§12.1.6.5) and *man-íket* ‘how much?’ §12.3.9-10). One can imagine an earlier prototype of the type in (851) with demonstrative *w-á* following *íket*, most likely with a cliticized preposition. If so, this construction was formerly just a special case of a (true) definite non-subject relative, and

has been trimmed slightly over time as *íket* comes to function as a kind of clause-initial particle. The accent *ikèt* in ‘have just’ function (851) appears to be a secondary phrasal accent.

13.6.7 ‘no longer’

In T-ka, clause-initial *bà-∅-s*, literally ‘(it) was lost to him’ (cf. *∅-æ̀ba* ‘it is/was lost’, §7.3.2.16) means ‘no longer’ (852.a). A variant *ubà-∅-s* is also in common use in T-ka (852.b); the *u* is reminiscent of *ù-mar* (Neg plus Fut) for expected *#àd mar* in this dialect, and suggests a (perhaps historically secondary) association with the Neg morpheme. In K-d, which has *∅-æ̀ba-∅-s* alongside truncated *bà-∅-s*, the sense appears to be slightly different (852.c). All of these combinations are rather frozen and might well be reinterpreted as units (*bás*, etc.). Since there is no actual Neg morpheme, the clause following *bà-∅-s* has **verbs in positive form**, either *LoImpfP* or *Reslt* depending on the semantics of the verb.

- (852) a. *bà-∅-s-∅d* i-mál
be.lost.PerfP-∅Dat-3Sg-∅Centrip 3MaSgS-come.LoImpfP
 ‘He will not come again.’ = ‘He no longer comes.’
- b. *ubà-∅-s* t-əksúð-æ̀d
be.lost.PerfP-∅Dat-3Sg 2S-fear.Reslt-2SgS
 [fæ̀l ʔ-ə-rázzɛj]
 [on Sg-livestock]
 ‘You-Sg are no longer afraid for the livestock.’
- c. *∅-æ̀bà-∅-s-∅d*
3MaSgS-be.lost.PerfP-∅Dat-3Sg-∅Centrip
 i-mál
3MaSgS-come.LoImpfP
 ‘He won’t be coming at this point’ (=I’ve given up on him coming) [K-d]
- d. *bà-∅-s* ə̀bdád-æn
be.lost.PerfP-∅Dat-3Sg stand.Reslt-3MaPl
 [fæ̀l t-æ̀-hà̀nin-t]
 [on Fe-Sg-pity-FeSg]
 ‘they-Ma no longer stand (=act) on the basis of mercy.’ [K]

A similar sense (e.g. ‘he ceased coming’) can be expressed using one of the ‘cease’ constructions in §13.5, above.

Yet another construction is that beginning with invariant negated *wər* *i-lkem*, literally ‘it did (=does) not follow’ (cf. §13.1.1.7), plus a comitative clause.

- (853) *wər* *i-lkem*
 Neg 3MaSgS-follow.PerfN
 [ǎ-\\d əswè-ʀ ætáy]
 [Dem^Comit drink.PerfN-1SgS tea]
 ‘I will never again drink tea.’

Another construction glossable ‘not again, not any more’ involves a negation of the verb *-ulvs-* ‘do again, repeat’ (§13.6.1) followed by a *VblN*.

- (854) *wær-\\d* *e* *Ø-ǎləs* *úræl*
 Neg-\\Centrip Fut 3MaSgS-repeat.ShImpf return.VblN
 ‘He won’t come back any more’. [K-d]

13.6.8 ‘maybe’, ‘it’s possible that ...’

The verb *-mukkv-* ‘be possible’, with nonreferential 3MaSg subject, can take a factive complement with *ǎ-\\d* or *ǎ-\\s*. The same is true of the verb *-dub-* (+*-t*) in the sense ‘be possible’, though its usual sense is ‘can, be able to’ (with referential subject). Thus *i-mmúkkæn ǎ-\\d ...* (or *ǎ-\\s ...*) and *Ø-æddóbæ-t ǎ-\\s ...* ‘it’s possible that ...’ plus any ordinary main clause.

The form *əmmúkkæn* was recorded as a ‘maybe’ adverb for K-d. This is identical in form to the *Reslt* stem *-əmmúkkæn-* of the verb *-mukkv-* just mentioned, but it lacks a subject affix.

i-hǎ minši (or ...*miši*) ‘risk/danger is in...’ can be preposed to an ordinary clause with no further complementizer.

- (855) *i-hǎ* *minši*
 3MaSgS-be.in.Reslt risk
 [u-mǎr-\\t ənhəy-æʀ]
 [Neg-Fut-\\3MaSgO see.ShImpf-1SgS]
 ‘There’s a chance (=risk) that I won’t see him.’

Another common ‘maybe’ construction involves *t-ərǎ*, which if so transcribed (*t-ærǎ* would also be phonetically accurate) could be taken as a specialized 3FeSg subject *Reslt* of ‘want’, plus a clause with *ǎ-\\d*. In (856.a) I give a negative complement to show that we have *ǎ-\\d* rather than Future *ǎd* (which becomes *ù-mǎr* in this dialect in the negative, as in (855) above. Another construction that can sometimes be glossed with ‘maybe’ or ‘possible’ is that illustrated in (856.b). The key phrase is *i-ll-ǎ*, which usually means ‘it

exists', but in this construction this phrase is followed by a 'that' clause (here with s 'that').

- (856) a. t-ərhá
maybe
 a-\d wər i-ggit ʔə-jənnə
 Dem-\Comit Neg 3SgS-hit(√wt).LoImpfN Sg-rain
 'Perhaps it will not rain.'
- b. i-ll-é s hak ánu
 3MaSgS-exist-\3MaSgO that each well
 əll-án-\t
 exist-3MaPIS-3MaSgO
 [jerè-\s d ʔə-m-idī-nnet] [a
 [between-3Sg with Sg-Agent-accompany-3SgPoss] [Dem
 e-wwæð-æn [səmmós ʔØ-šil-ən]]
 3MaSgS-reach.Reslt-Partpl.MaSg [five Pl-day-MaPl]]
 'It's possible that, each (=any) well, there is between it and its
 mate (=the nearest well) as much as five days (travel).' [Gao]

13.6.9 'soon' (i-šwár)

The verb -všwvr- means 'precede', 'do first', and so forth. In the 3MaSg Reslt form i-šwár, with nonreferential 3MaSg subject, it can be glossed 'soon' and can be combined (like an adverbial) with a finite complement.

- (857) i-šwár orúw-æn i-də̀wal-æn
 3MaSgS-**precede**.Reslt give.birth.Reslt-3MaPIS Pl-young.goat-MaPl
 'Soon they (goats) will have given birth to young goats.' [K]

13.7 Factive 'that' complements (s, à-\s)

13.7.1 Simple factive complements

The 'that' complementizer used with **factive verbs** like -vssvn- 'know' (also verbs meaning 'believe', 'notice', etc.) is à-\s (868), often reduced to s (or: əs) (859). The full form consists of Demonstrative à (as in the common complementizer à-\d illustrated in §13.3) plus cliticized Instrumental -\s.

(858) Factive à-\s

a. ordé-ɣ [a-\s
think.Reslt-1SgS [Dem-\Instr
wær mād-\d Ø-as]
Neg Fut-\Centrip 3MaSgS-come.ShImpf]
'I think he won't come.' [Gao]

b. əhɪrække-ɣ [a-\s-\dəd
notice.Reslt-1SgS [Dem-\Instr-\Centrip
i-t-ás di-ha]
3MaSgS-LoImpf-come.LoImpfP here]
'I have noticed that he (regularly) comes here.' [A-grm]

c. æmæru-dær [à-\d æmmùjræz-ær
now [Dem-\Comit **regret.Result-1SgS**
[a-\s wær əjješ-ær lækkol]]
[Dem-\Instr Neg enter.PerfN-1SgS school]]
'It is now [focus] that I regret that I didn't enter school.' [K]

(859) Factive s

a. əssán-ær
know.Reslt-1SgS
[əs-\əd wær ʔ-mil]
[**that**-\Centrip Neg 3MaSgS-be.on.way.LoImpfN]
'I know that he isn't coming.'

b. əhýúz-ær [s i-mmú-t]
believe.Reslt-1SgS [**that** 3MaSgS-die.Reslt-Aug]
'I believe that he has died.'

c. wær ordè-ɣ [s i-mmú-t]
Neg **think.PerfN-1SgS** [**that** 3MaSgS-die.Reslt-Aug]
'I don't think he has died.'

d. ordé-ɣ [s ad i-jəl]
think.Reslt-1SgS [**that** Fut 3MaSgS-go.ShImpf]
'I think that he will go.'

e. əssán-ær [əs-\ʔi t-əŋɣa]
know.Reslt-1SgS [**that**-\3MaSgO 3FeSgS-kill.PerfP]
'I know that she killed him.' (R)

In (860.a), the first *s* seems to function as an adverbial complementizer, which itself takes an *à-\s* complement. In (860.b), the first *s* has a more causal sense.

In (861), the *à-\s* clause is the complement of Comitative *d*, which with main-clause verb *-vbɖv-* ‘be separated’ means ‘cease; be dissuaded from (doing)’.

- (861) *mušám* *u-màr* *n-əbɖu*
 but Neg-Fut 1PlS-be.separated.ShImpf
d *à-\s-\fælla-sæn* *n-əjád*
 Comit Dem-Inst-3MaPl 1PlS-make.Reslt
y *à-\hə-næɾ-\ədd* *əqqəl-æn* *di-há-dæɾ*
 Dat Dem-Dat-1Pl-Centrip return.ShImpf-3MaPl here
 ‘But we won’t be dissuaded from having made (a place) for them, so that they may come back to us here.’

13.8 Reported speech and thought

There are no logophoric pronouns, or other morphosyntactic features unique to reported speech (and thought).

Propositional content under the scope of verb *-vnnv-* ‘say (thus)’, by extension ‘think (=say thus to oneself)’, is expressed as a (more or less) direct quotation, and therefore takes the same form as the original speech with no explicit complementizer. However, “indirect” deictics adjusted to the current speech event are possible, like ‘here’ in (862) when the quoted speech event took place in another location.

- (862) *ĩ-nna* *[i-tátt* *di-há]*
 3MaSgS-say.PerfP *[3MaSgS-eat.LoImpfP* *here]*
 ‘He_x says that he_x eats here.’

-vrvl- ‘believe’ is a similar case without overt complementizer (863).

- (863) *t-ærel* *t-α-mætt* *iy-æt*
 3FeSgS-believe.PerfP Fe-Sg-woman one-FeSg
[à *i-rhá]*
 [Foc 3MaSgS-desire.Reslt]
 ‘She believed that it’s a woman [focus] that he loves.’ [K]

The verb *-kuddv-* ‘deny’ takes ‘that’ complements with *à-\s*, as in (864), where the embedded clause happens to have a focalized pronoun in subject function.

- (864) ï-kkuddæ̀l [a-\s
 3MaSgS-deny.PerfP [Dem-\Instr
 ènta á Ø-okúr-æn]
 3Sg Foc 3MaSgS-steal.Reslt-Partpl.MaSg]
 'He denied that he [focus] was the one who had stolen.'

13.9 Conditionals

13.9.1 Hypothetical conditionals (ajúd, kúnta, kúd, wǽlá, a-\fǽl, fæ̀l)

The common **hypothetical** conditional particle ('if') is *ajúd*. It can also mean 'when ...' in the manner adverbial construction *ajúd di-há-\d...*

The unmarked aspectual combination for all-positive hypotheticals is **PerfP** in the antecedent clause, and **future** in the consequent (865).

- (865) *ajúd* ï-wæt 'è-jænna,
if 3MaSgS-hit.**PerfP** Sg-rain,
ad t-as-\ód t-æ̀-das-t
Fut 3FeSgS-arrive.ShImpf-\Centrip Fe-Sgmosquito-FeSg
 'If it rains, the mosquitoes will come (here).'

However, there is some flexibility depending on the nuance. In (866.a), the consequent denotes a state and is in **Reslt** form; the antecedent, which in this case follows, is negated. In (866.b), repeated from (829.a), the antecedent begins with a **Reslt** verb ('have eaten') and continues with a **PerfP add-on** clause.

- (866) a. *áeywa* *erè* Ø-ǽhúske-n
 well whoever 3MaSgS-be.pretty.Reslt-Partpl.MaSg
yá, Ø-ǽhúskæ-t *dáɾ*
 Emph, 3MaSgS-be.pretty.**Reslt-Aug** too
kud [wæ̀ɾ i-lsa]
if [Neg 3MaSgS-wear.**PerfN**]
wǽlá [a èntókkæ-n]
 or [Dem be.small-Partpl.MaSg]
 'Well, someone who is pretty, he is pretty even if he isn't dressed up, or (is dressed up) just a little.'
- b. *ajúd* t-ækšé-d t-èswe-d,
if 2S-eat.**Reslt-2SgS** 2S-drink.PerfP-2SgS,
àd t-èhlèyløy-æ̀d
Fut 2S-be.happy.ShImpf-2SgS
 'If you eat and drink, you'll be happy.'

- (870) a. α-\fǎɛl i-já ʔə-kæsa,
if 3MaSgS-be.done.**Reslt** Sg-wet.season,
αd-\əd t-as t-ə-das-t
Fut\Centrip 3FeSgS-come.ShImpf Fe-Sg-mosquito-FeSg
‘If a (good) rainy season happens, mosquitoes will come.’
- b. fǎɛl t-əkne-d t-è-tæte
if 2S-do.much.**Reslt**-2SgS Fe-Sg-eat.VbIN
[ən ʔØ-s-an] húllan,
[Poss Pl-meat-MaPl] indeed,
wær t-əkše-d—
Neg 2S-eat.**PerfN**-2SgS—
‘If you eat a lot of meat, you won’t eat—’ [K]
- c. α-fǎɛl n-əss-əñña—,
if 1PlS-Caus-be.cooked.**PerfP**—,
αd n-əkš i-s-an ɾás
Fut 1PlS-eat.ShImpf Pl-meat-MaPl only
‘If we cook—, we’ll just eat meat.’ [K]
- d. α-fǎɛl osé-ɾ bàmæko,
if/when arrive.**Reslt**-1SgS Bamako,
αd əkkn-ær t-è-tæte
Fut do.much.ShImpf-1SgS Fe-Sg-eat.VbIN
‘When I go (in the future) to Bamako, I’ll eat well.’ [K-d]

13.9.2 Counterfactual conditionals (əndǎɛr, enǎkk)

In **counterfactuals**, I found əndǎɛr interchangeably with enǎkk in T-ka (871). I recorded əndǎɛr for A-grm and ənnár for K-d. The verb in the antecedent is **PerfP** or **Reslt**. The consequent is **ShImpf** (positive) or **LoImpfN** (negative). Any clitics in the antecedent clause are hosted by the particle (871.d).

- (871) a. əndǎɛr i-wæt ʔə-jənnɑ ənd-əšɛl,
if 3MaSgS-hit.**PerfP** Sg-rain yesterday,
əzjər-ær
go.out.ShImpf-1SgS
‘If it had rained yesterday, I’d have gone out.’
- b. əndǎɛr i-wæt ʔə-jənnɑ ənd-əšɛl,
if 3MaSgS-hit.**PerfP** Sg-rain yesterday,
wær zəjjər-ær
Neg go.out.**LoImpfN**-1SgS
‘If it had rained yesterday, I would not have gone out.’

- c. enækk wər əswe-ɾ ʔ-səfr-an,
if Neg drink.PerfP-1SgS Pl-medication-MaPl,
 æmmæt-ær
 die.ShImpf-1SgS
 'If I hadn't drunk (=taken) the medicines, I'd have died.'
- d. enækk-\\əd wər i-qqel,
if-\\Centrip Neg 3MaSgS-return.PerfN
 æjl-ær əmməɾ-ær-\\a-s
 go.ShImpf-1SgS look.for.ShImpf-1SgS-\\Dat-3Sg
 'If he hadn't come back, I'd have gone and looked for him.'
- e.. ənnúr əssán-ær
if know.Result-1SgS
 [s a-\\d i-wət ʔə-jənnə],
 [that Dem-\\Comit 3MaSgS-hit.ShImpf Sg-rain]
 əwəy-ær-\\əd t-ele
 bring.ShImpf-1SgS-\\Centrip Fr-umbrella
 'If I had known that the rain would strike (=that it was going to rain), I would have brought an umbrella.' [K-d]
- f. enækk əlé-ɾ è-hære,
if have.Result-1SgS Sg-wealth,
 t-asə-d-\\a-hi
 2S-arrive.ShImpf-2SgS-\\O-1Sg
 wæddér əmmək-in d-á-dær
 Neg manner-my Dem-Dem-Emph
 'If I had wealth (=were wealthy), you'd have come to me (finding that) my manner (=behavior) was not like this.'

For A-grm, I recorded consequents with Future àd. The A-grm counterpart of the consequent in (871.a) was therefore ..., ad əzgər-ær.

In counterfactuals, the verb of the antecedent clause is again from the perfective system (**PerfP** or **Result**). The consequent verb (if positive) is generally **ShImpf**, but it can appear as **PerfP** (872.a) when it is bound to a past time interval.

When the counterfactual consequent is negative, it occurs in the **LoImpfN** or **Prohib** stem (my examples of this are from K and K-d).

- (872) a. ənnár əssán-ær
if know.**Reslt-1SgS**
 [s a-\\d i-wæt ʔə-jənnɑ],
 [that Dem-\\Comit 3MaSgS-hit.ShImpf Sg-rain]
 [wær zəjjær-ær]
 [Neg go.out.**LoImpfN**]
 ‘If I had known that the rain would strike (=that it was going to rain), I would not have gone out.’ [K-d]
- b. ənnár əssán-ær
if know.**Reslt-1SgS**
 [wær t-əðdære-γ]
 [Neg LoImpf-be.plump.**LoImpfN-1SgS**]
 ‘If I had known, I would not be getting fat.’ [K]
- c. ənnar-\\hī i-kfá átay,
if-\\1SgO 3MaSgS-give.**Reslt** tea,
 [wær-\\t sæss-ær]
 [Neg-\\3MaSgO drink(\\sw).**Prohib-1SgS**]
 ‘If he had given me some tea, I wouldn’t have drunk it.’ [K-d]

13.9.3 Antecedent reduced to NP

Proverbs (Sg 0z̄z̄) tend to be slightly elliptical for reasons of compactness. Consider the one in (873).

- (873) æ-kull-\\hə-k-\\d i-tt-əməl-æn
 Sg-**land-\\Dat-2Sg-\\Centrip** 3MaSgS-Pass-praise.PerfP-Partpl.MaSg
 t-əttəf-æd w-a n-næk
 2S-**hold(\\df).ShImpf-2SgS** Ma-Dem.Sg Poss-2Sg
 ‘a place that is praised (=excellent) for you, you hold (it as) your own.’

The NP is an indefinite relative, but pragmatically one can expand it as ‘if you find a place that is excellent for you’. The ShImpf phrase therefore functions pragmatically like a consequent clause.

13.10 Possessive ən plus ‘that’ complement

Consider (874), which is closely related to the ‘risk’ example given above (855).

Chapter 14

Coordination

14.1 NP coordination

14.1.1 'and'

NPs are conjoined by the Comitative preposition *d* (ə̀d) 'with'. As a true preposition, it induces Prefix Reduction on the following noun.

- (877)
- | | | | |
|-------------|--------------|------|---------------|
| ə̀n | ʔ-t-ə-húsay | ə̀n | ʔ-Ø-jərw-an |
| Poss | Fe-Sg-beauty | Poss | Pl-river-MaPl |
| ə̀d | ʔ-t-ə-húsay | ə̀n | ʔ-Ø-jef-æn |
| with | Fe-Sg-beauty | Poss | Pl-dune-MaPl |
- '(a habitat) of the beauty of rivers and (of) the beauty of dunes'

For further examples involving NPs, see §6.4.2.

When a pronominal is left coordinand, it takes independent pronominal form. A pronominal functioning as right coordinand can take independent form, or can combine with the preposition (§6.4.2) to form a clitic, e.g. 3Sg -\dər-əs 'with him/her/it'. A pronominal right conjunct, like -\dər-əs, cliticizes to the left coordinand (noun or independent pronoun): nə̀kk-\dər-əs 'I and he/she/it'.

Especially when a 1st or 2nd person pronominal is part of the conjunction, the conjunctive phrase often behaves syntactically as a parenthetical clarification or extension. Consider the examples in (878).

- (878)
- a.
- | | | |
|--------------------------------|-------------|---------------------------|
| i-nhə̀y-\a-hi | | |
| 3MaSgS-see.PerfP-\O-1Sg | | |
| [nə̀kk | d | ʔ-m-idi-nin] |
| [1Sg | with | Sg-Agent-be.with-1SgPoss] |
| 'He saw me, me and my friend.' | | |
- b.
- | | | | |
|--------------------------|--------|-------------|--------|
| i-nhə̀y-\a-nə̀x | [nə̀kk | ə̀d | kə̀yy] |
| 3MaSgS-see.PerfP-\O-1Pl | [1Sg | with | 2MaSg] |
| 'He saw us, me and you.' | | | |
- c.
- | | | |
|---|-------------|--------|
| Ø-ə̀wwə̀y-\a-k-\ádd | | |
| 3MaSgS-bring.PerfP-\Dat-2Sg-\Centrip | | |
| [kə̀yy | d | ə̀nta] |
| [2MaSg | with | 3Sg] |
| 'He brought it for you-Sg, (for) you-MaSg and him/her.' | | |

- d. i-ndæw-\a-hi-\n
 3MaSgS-reject.PerfP-\O-1Sg-\Centrif,
 [nækk d àra-tæn] [dæʀ 'æ-rojj]
 [1Sg with child-MaPl] [in Sg-bush]
 'He (=my husband) abandoned me, me and the children, in the
 bush.' [K]

Of course such contexts normally call for simple plural pronominals ('he saw us', 'he brought it for you-Pl'). These examples do not seem to be very idiomatic and most of them were obtained by elicitation. In (878.a) and (878.c), the pronominal clitic denotes only the first referent, while (878.b) already has an inclusory pronominal clitic.

14.1.2 'or' (mér) and 'nor' (wæló)

The 'or' particle (disjunctive coordinator) is mér. In careful speech it is heard as accented, while the following NP has its own independent accentuation (including Default Accentuation on the initial syllable of an unaccented bi- or mono-syllable), but in rapid speech the double accentuation is often simplified. It does not induce Prefix Reduction in a following noun. A pronominal coordinand (right as well as left) takes independent pronoun form.

- (879) a. æ-hólæs mér t-a-mætt
 Sg-man or Fe-Sg-woman
 'a man or a woman'
- b. nækk mèr kæyy
 1Sg or 2MaSg
 'me or you-MaSg'

When the disjunction focuses on a modifying participle ("adjective") with the noun held constant, the usual construction is to replace the noun with a demonstrative stand-in in the second disjunct.

- (880) t-érse mæll-æt mér [t-ĩ kæwá:l-æt]
 sheep white-Partpl.FeSg or [Fe-Dem.Sg black-Partpl.FeSg]
 'a white sheep or a black one' (= 'a white or a black sheep')

(738.e) in §12.1.6.2 expresses 'a man who eats with it, or (one) who drinks with it'. There we have two indefinite relatives with the same logical head noun. An indefinite demonstrative ÿ is optionally used as internal head of the second relative clause in this construction.

mér is often treated as external to a following clause for purposes of clitic positioning. Therefore the first following word functions as clause-initial, for

purposes of hosting clitics (881.a-b). However, on occasion *mér* does host a clitic, as in (881.c), where *mér* is followed by 3MaPIO clitic *-\tæn* (referring to 'water', which is grammatically plural).

- (881) a. *ak* *æ-kall* *w-a-dær-nǽnær* *í*
 interrog Sg-land Ma-Dem.Sg-Anaph-1PIPoss Prox
i-m-ǎ́n-net [*a-\dd* *əqqál-næt*
 Pl-soul-MaPI-3SgPoss [Foc-\Centrip go.back.Reslt-3FePIS
ʔ-t-ə-mrutar-næsæn]
 Fe-Pl-need-3MaPIPoss]
mér [*t-iwəḑ-æn-ín*
 or [LoImpf-arrive.LoImpfP-3MaPIS-\Centrif
w-á *n* *ə-júss-\ha-s]*
 Ma-Dem.Sg Poss Sg-south-\Dat-3Sg]
 'Is it the case that, our country here (in the desert north of the Niger R.) itself [focus] is where their (=your people's) needs (=provisions) come from? Or do they (=provisions) arrive in the south of it (=in Burkina Faso)?'
- b. *Ø-osæ-\dd*,
 3MaSgS-arrive.PerfP-\Centrip,
mér [*wær-\d* *Ø-osa]* ?
 or [Neg-\Centrip 3MaSgS-arrive.PerfP?]
 'He came, or he didn't he come?' [K-d]
- c. *wæ-\tæn* *sə́ssə-n* *àr*
 Neg-\3MaPIO drink.LoImpfN-3MaPIS except
s *a-\s-\tæn* *i-há* *ʔæ-xx*
 that Dem-\Instr-\3MaPIO 3MaSgS-be.in.Reslt Sg-milk
 [*meq-\qæn* *i-há* *állon]*
 [or-\3MaPIO 3MaSgS-be.in.Reslt grain]
 'They won't drink it (=water) except when milk is (mixed) in it, or (when) grains is (mixed) in it.'

Disjunctive '**nor**' in a parallel negated clause or phrase is *wǽlá*. In the following examples, the negative elements are Neg *wær* (882.a) and *bà-\Ø-s* 'no longer' (882.b, cf. §13.6.7). The first negative phrase has the same form as it would by itself; there is no anticipation of the paired following negative of the type seen with English *neither*.

- (882) a. *wær* *le-r* *átayy* [*wǽlá* *æ̀lqǽhwa]*
 Neg have.PerfN tea [**nor** coffee]
 'I have no tea or coffee.' [K-d]

In disjunctions ('or'), left and right agreement is confined to the nearest coordinand (884).

- (884) a. Ø-ðkæy ʔæ-wdes meʔ t-æss
 3MaSgS-pass.PerfP **Sg-bull** or Fe-cow
 'A bull or a cow passed by.'
- b. t-ðkæy t-æss meʔ á-wdes
 3FeSgS-pass.PerfP **Fe-cow** or Sg-bull
 'A cow or a bull passed by.'
- c. [á-wdes meʔ t-æss] máll-æt
 [Sg-bull or **Fe-cow**] white-Partpl.FeSg
 'a white [bull or cow]' (i.e. 'a white bull or a white cow')
 (indistinguishable from 'a bull or a white cow')

In (884.c), the relevant reading is one where 'white' takes scope over both nouns. However, the same sequence can also have the narrow-scope reading with 'white' confined to 'cow'. Of course the narrow-scope version could be unambiguously expressed by reversing the order of the two conjuncts, and having 'cow' bring its participle with it into left coordinand position ("[cow white] with bull").

14.2 Clausal coordination

14.2.1 Clausal 'and'

There is no clausal 'and' conjunction. Two parallel clauses are often uttered together without a break in a manner indicating that they function pragmatically as a higher unit, but in most cases both clauses have main-clause form and there is no explicit syntactic marker of conjunction.

In certain constructions, a second clause has slightly reduced or restricted MAN marking vis-à-vis the first clause. These "add-on" clauses are described in §13.4, where I also give examples of juxtaposed parallel clauses.

- (892) a. hək ʔy-æn ʔ-nhæy
 each one-MaSg 3MaSgS-see.PerfP
 t-æss n ʔ-m-idi-nnet
 Fe-cow Poss Sg-Agent-**accompany-3SgPoss**
 ‘Each one saw the other’s cow.’ [K-d]
- b. i-m-ædæl-æn
 Pl-Agent-beg-MaPl
 t-isə-n-ʔədd
 LoImpf-come.LoImpfP-3MaPlS-ʔCentrip
 æddéw-æn
 accompany.PerfP-3MaPl
 ‘The beggars (regularly) come together.’ [K-d]

It is also possible to use a phrase like w-ɑ yyæɖ-æn (dialectally w-ɑ hæɖ-æn) ‘the other one (Ma)’ in the non-subject position.

- (893) [hək ʔy-æn] i-t-áttæs
 [each one-MaSg] 3MaSgS-LoImpf-sleep(√ɖs).LoImpfP
 [ɣor w-ɑ hæɖ-æn]
 [chez Ma-Dem.Sg other-MaSg]
 ‘Each one (of them) sleeps at the other’s place.’ [K-d]

Chapter 16

Text

The following text was recorded from a T-ka speaker in 2002. It was transcribed from dictation, allowing the speaker to repeat the sentences. My other textual material is transcribed from recorded dialogues, and the reason for choosing monologue dictation in this case was to allow the speaker to smooth out the accentual phrasing (which can be ragged in spontaneous dialogue due to the fact that phrasal accents work from right to left. Where they are clear, I use **brackets** here to indicate the **accentual phrases** of more than one word, not (as in the grammar proper) to indicate syntactic bracketing.

- (894) [kæ̀lâ-\tt ə̀llæ-n] ə̀ssín médd-æn,
 [Past-\3MaSgO exist.PerfP-3MaPlS] two.Ma men-MaPl
 s ÿy-æn ÿy-riil ə̀ddúnya fúkk
 that one-MaSg 3MaSgS-believe.PerfP world all
 t-ídə̀tt [a-\fə̀l] t-ə̀jla],
 Fe-truth-FeSg [Foc-\on 3FeSg-go.PerfP]
 ‘There were two men, one of whom believed (that), the whole world, truth [focus] is what it (=world) went (=was based) on.’ (i.e., he was gullible)
[Past kæ̀lá §9.6.1, existential §7.3.2.11, numeral phrase §5.1.2.1, simple factive complement clause §13.7.1, focalized complement of preposition §12.2.3]
- (895) [w-a yyæ̀d-æn] ÿy-riil ə̀ddúnya fúkk
 [Ma-Dem.Sg other-MaSg] 3MaSgS-believe.PerfP world all
 bə̀hu [a-\fə̀l] t-ə̀jla]
 lying [Foc-\on 3FeSg-go.PerfP]
 ‘The other one believed that, the whole world, lying [focus] is what it went (=was based) on.’ (i.e., he was cynical of others, and untruthful)
[‘the other’ §5.1.2.3]
- (896) wə̀-nnín ÿy-riil-æn
 Ma-RecAnaph 3MaSgS-believe.PerfP-Partpl.MaSg
 [wə̀r-\tt i-lla] àr t-ídə̀tt,
 [Neg-\3MaSgO 3MaSgS-exist.PerfN] except Fe-truth
 i-là ə̀ssín ʾæ-læ̀rɔ̀rɔ̀
 3MaSgS-have.Reslt two.Ma Sg-children
 ə̀s [w-a n ʾæ-mæ̀qqar dæ̀r-sæn] a-máknud,
 that [Ma-Dem.Sg Poss Sg-elder.sib in-3MaPl] Sg-midget

d 'ə-m-idi-nnet
 Comit Sg-Agent-be.with-3SgPoss
 w-a ĭ-ri-l-æn
 Ma-Dem.Sg 3MaSgS-believe.PerfP-Partpl.MaSg
 wær-ʌt i-lla àr bàhu
 Neg-ʌ3MaSgO 3MaSgS-exist.PerfN except lying
 'The world (=situation) continued in that same manner, until the day
 when he encountered his counterpart, the one who believed that there
 was nothing but lying (in the world).'

[Instrumental *s* in adverbial phrase §6.4.1, comitative relative clause
 §12.1.4 abd §13.1.1.1, definite adverbial relative, negative existential]

- (900) i-jær-ʌfælla-s àessælam
 3MaSgS-throw.PerfP-ʌon-3Sg greeting
 'He greeted him (formally).'
- [cliticized pronominal PP §10.4]
- (901) i-kbæil-ʌ-s-ʌt,
 3MaSgS-catch.PerfP-ʌDat-3Sg-ʌ3MaSgO
 'He (=the other) caught (=returned) it (=greeting) to him.'
- [Dative clitic preceding 3rd person object clitic §10.4]
- (902) rás ĭ-nna-ʌØ-s ák t-əssún-æd
 only 3MaSgS-say.PerfP-ʌDat-3Ss yes/no? 2S-know.Result-2SgS
 s úlli t-í-dær t-əðæn-æd
 that goats Fe-Dem.Pl-Anaph 2S-tend.Result-2SgS
 t-ĭ-nin,
 Fe-Dem.Pl-1SgPoss
 'Well, he said (=asked), "do you-Sg know that these goats that you
 have been tending, they are mine?."'
- [polar interrogative §12.3.1, 'know' plus 'that' complement §13.7.1,
 definite object relative with Resultative verb losing its V-lengthening
 formative §3.5.3.1 and §12.1.2, possessive predication §9.4]
- (903) Ø-æžèwæb-ʌ-s kælá!
 3MaSgS-reply-ʌDat-3Sg no!
 'He answered him, "no!".'
- (904) [Ø-olæs-ʌ-š t-ənnə]
 [3MaSgS-repeat.PerfP-ʌDat-3Sg Fe-say.VbIN]
 à-læru [à-ʌhə-k t-ájj-ær]
 Sg-inform.VbIN [Foc-ʌDat-2MaSg LoImpf-do.LoImpfP-1SgS]
 əs t-ĭ-nin,
 that Fe-Dem.Pl-1SgPoss

'He repeated his saying (=words) to him: "What I'm doing is **informing** [focus] you that they (=goats) are mine.'"

[*'repeat' plus VblN §13.6.7, focalized VblN ('inform') as verb cleft resumed by 'do' inside clause proper §12.2.5*]

- (905) ì-ɾil [wə-nnín n ʾæ-mæ̀s-detti]
 3MaSgS-believe.PerfP [Dem-RecAnaph Poss Sg-Agent-truth]
 à-wen t-ídə̀tt,
 Dem-Dist Fe-truth
 'That other, truthful (=gullible) one believed that that (statement) was the truth.'
- (906) i-ttæ̀r-\\dər-əs
 3MaSgS-ask.PerfP-\\in-3Sg
 [ɑ-\\hə̀-s-\\tænə̀t Ø-æyy]
 [Dem-\\Dat-3Sg-\\3FePl 3MaSgS-leave.ShImpf]
 [har-\\tænə̀t ì-z-uzə̀j] é-hæ̀d dī
 [until-\\3FePIO 3MaSgS-Caus-milk.ShImpf] Sg-night NearDist
 [e mæ̀ddana-s], Ø-\\ifaw-\\t
 [Dat children-3SgPoss], 3MaSgS-dawn.ShImpf-\\3MaSgO
 ì-nšə̀y-\\tænə̀t-\\ín
 3MaSgS-go.in.morning.ShImpf-\\3FePIO-\\Centrif
 'He asked from him to leave them (=goats) with him until (=so) he (could) milk them that evening for his children, and to come back to take them away in the morning when day broke on him.'
[jussive-subjunctive complement clause §13.3.1, postnominal demonstrative dī §4.3.3, Centrifugal 'away' §10.2.2, 'until' clause §13.1.1.5, add-on ShImpf small clauses §13.4]
- (907) ì-qbæ̀l-\\ɑ-s
 3MaSgS-accept.PerfP-\\Dat-3Sg
 [w-à n ʾæ-næ̀s-bə̀hu]
 [Ma-Dem.Sg Poss Sg-Agent-lying]
 'The lying man accepted (the proposition) for him.'
- (908) [i-mmə̀ndər-\\ə̀dd æ-há̀ləs]
 [3MaSgS-come.at.dusk.PerfP-\\Centrif Sg-man]
 [w-à n ə̀bbá] n ʾæ-jæ̀dæ̀s é-hæ̀d dī,
 [Ma-Dem.Sg Poss father] Poss Sg-family Sg-night NearDist
 'The man, the father of the family, came at twilight that evening.'
[demonstrative heading appositional NP §5.1.1.1]
- (909) [ə̀ɾšá̀d-æn ʾØ-mə̀n-net]
 [be.sad.Reslt-3MaPIS Pl-soul-3SgPoss]

ed hæræt [ən 't-ə-dæwəl-en]
 because thing [Poss Fe-Pl-goat-FePl]
 t-i-ʌs i-ʈtæf e-jædæðs-ænnet
 Fe-Dem.Pl-ʌnstr 3MaSgS-hold.Reslt Sg-family-3SgPoss
 [osè-næt-ʌdd mæssì-snæt]
 [come.PerfP-3FePIS-ʌCentrip master-3FePIPoss]
 [y à-ʌdær-snæt i-jól], é-hæd dí
 [Dat Dem-ʌComit-3FePl 3SgS-go.ShImpf], Sg-night NearDist
 'He was sad, because the few young nanny-goats with which he
 supported his family, they came to their master (=himself) so that he
 would go (back home) with them, that night.'
 [*'himself' = 'his souls' §15.1, 'because' clause §13.2.2, 'a few'*
§5.1.2.8, definite instrumental relative with loss of V-lengthening
formative in Resultative verb §3.5.3.1 and §12.1.4, òse-næt- as
uncommon variant of 3FePl PerfP òsæ-næt, cf. (356.d) in §7.3.1.3,
purposive clause §13.2.1]

(910) [e-ʌdær i-bdǫ́] d 'ə-z-úzəj rás,
 [where-ʌin 3MaSgS-finish.Reslt] Comit Sg-Caus-milk.VblN only,
 osæ-ʌdd 'ĩ-nsa,
 come-PerfP-ʌCentrip 3MaSgS-go.to.sleep.PerfP
 'When he had finished the milking (in the morning), he came (inside)
 and got into bed to sleep.'
 [*è 'where ...' §12.3.10, 'cease' plus Comitative VblN complement*
§13.5.2]

(911) [ækkaè-n-ʌt-ʌð mæddana-s]
 [go.to.PerfP-3MaPIS-ʌ3MaSgO-ʌCentrip children-3SgPoss]
 əlmúd-nen
 know.Reslt-Partpl.Pl
 [à-ʌs-ʌhə-sæn i-t-ájj]
 [Dem-ʌInstr-ʌDat-3MaPl 3MaSgS-LoImpf-do.LoImpfP]
 t-ĩ-nfus-en hak é-hæd
 Fe-Pl-story-FePl each Sg-night
 'His children came to him, (children) who were accustomed to having
 him tell them stories every night.'
 [*transitive 'go to' §7.3.2.6, 'be accustomed to' plus 'that' complement*
§13.7.1, plural participle in subject relative §8.5.1, 'each X' §5.1.2.8]

(912) é-hæd dí a-ʌs-ʌt-ʌín
 Sg-night NearDist Dem-ʌInstr-ʌ3MaSgO-ʌCentrif
 òsæ-n
 come.PerfP-3MaPIS

- (917) æhðnæ-n [dæʀ ˈæ-hæd],
 move.out.PerfP-3MaPlS [in Sg-night]
 ‘They moved out at night.’
 [/æhonæ-æn/ with VV-Contraction §3.2.3.3, for penultimate accent cf. æmtællæ-n in (67) in §3.3.1.3]
- (918) [wær-\\ædd ðyye-n] ðr
 [Neg-\\Centrip leave.PerfN-3MaPlS] except
 ènta d ˈæ-mæðrù-y-ænnet
 3Sg with Sg-younger.sib-3SgPoss
 [dæʀ ˈæ-hæn], d ùlli-næsæn,
 [in Sg-house], with goats-3MaPlPoss
 ‘They left no-one, except him (=midget) and his younger brother, in the house, along with their goats.’
 [‘not any ... except X’ = ‘only X’ §11.3.1, PerfN ablaut vowel e in ðyye-n as suffix up to its first consonant is counted in ablaut domain §3.2.3.3 and §3.4.5.4]
- (919) ì-nsa ì-ttæs
 3MaSgS-go.to.bed.PerfP 3MaSgS-sleep(√ðs).PerfP
 ‘He (=midget) lay down and slept.’
- (920) [wær-\\t-\\ædd ì-ss-əŋkær] ðr
 [Neg-\\3MaSgO-Centrip 3MaSgS-Caus-wake.PerfN] except
 æssælám-æn n ˈæ-hálæs w-à
 greeting-MaPl Poss Sg-man Ma-Dem.Sg
 n ˈæ-næs-bahú-\\dd Ø-osá-n
 Poss Sg-Agent-lying-\\Centrip 3MaSgS-come.Result-Partpl.MaSg
 [y a-\\d ì-wæt úlli]
 [Dat Dem-\\Comit 3MaSgS-hit.ShImpf goats]
 ‘He was awakened by (lit. was not awakened except by) the greetings of the lying man, who had come in order to lead away the goats.’
 [syntactically, [ˈæ-hálæs w-à n ˈæ-næs-bahu], though denoting a well-established discourse reference, functions as the internal head of an indefinite relative, and is therefore followed by a clitic and an unreduced Resultative participle, §12.1; purposive clause §13.2.1]
- (921) ì-kbæl-\\a-s ˈə-máknud æssælám,
 3MaSgS-catch.PerfP-\\Dat-3Sg Sg-midget greeting
 ‘The midget returned his greeting.’
 [verb-subject-object constituent order §9.1.1, with Prefix Reduction on the subject §3.5.1]

LoImpfP variant -t-aggát-, see (334.h) in §7.2.5.1, also §7.3.1.1 and §7.4.1.2]

- (926) Ø-ðlæs i-ss-ðstæn-łt
 3MaSgS-repeat.PerfP 3MaSgS-Caus-ask.PerfP-ł3MaSgO
 [əd wælæt-ma-s]
 [with sister-Ø-3SgPoss]
 ‘He asked him again about his sister.’
- (927) Ø-æžèwæb-ła-s
 3MaSgS-reply.PerfP
 ĩ-nna-łØ-s wælæt-me-ɾ
 3MaSgS-say.PerfP-łDat-3Sg sister-Ø-1SgPoss
 t-əkkɑ [è-dægg-łdər əjú-næt æddæl
 3FeSgS-go.to.PerfP [Sg-place-łin do.Reslt-3FePIS game
 ænd-əhɑd] t-ətĩrækkæ-t-łin-łdər-əs
 last.night] 3FeSgS-fall.in.Reslt-Aug-łCentrif-łin-3Sg
 t-èt-ənnət Ø-t-əmmær-ła-s
 Fe-eye-3SgPoss 3FeSgS-LoImpf-look.for.LoImpfP-łDat-3Sg
 ‘He (=midget) replied to him, saying: “my sister, she went to a place
 where they (=girls) have made (=played) games last night, (and) her
 eye fell into it (=ground) (so that) she is looking for it.”’
*[‘last night’ §5.2.4.6, Centrifugal clitic precedes cliticized pronominal
 PP §10.4; ‘look for’ is intransitive with dative complement §9.1.5]*
- (928) [Ø-ðlæs-łà-s æ-næs-bahù t-ənnɑ]
 [3MaSgS-repeat.PerfP-łDat-3Sg Sg-Agent-lying Fe-say.VbIN]
 i-ffúd a-łtt-łədd
 3MaSgs-be.thirsty.Reslt Dem-ł3MaSgO-łCentrip
 ĩ-s-əsəw
 3MaSgS-Caus-drink.ShImpf
 ‘The lying man proceeded to say (that) he was thirsty, and he
 (=midget) should give him (something) to drink.’
*[‘say’ followed by factive ‘he was thirsty’ and then jussive ‘should
 give...’]*
- (929) [ĩ-kka ’ə-məknud dí àm-an],
 [3MaSgS-go.to.PerfP Sg-midget NearDist water-MaPl],
 [a-łtæn i-z-ĩm-z-əzzir] ɾas
 [Dem-ł3MaPl 3MaSgS-Caus-Recip-Caus-pour.Reslt] only
 [hàr i-łdæš]
 [until 3MaSgS-be.tired.PerfP]

[a-\s-\hĩ t-əqqər-æd am-an]
 [Dem-\Instr-\1Sg(Dat) 2S-mix.ShImpf-2SgS water-MaPl]
 ‘Well, he (=lying man) said to him: “leave the water, and pick up the
 hide cord (for tying a cow’s legs) and the wooden milk bucket, and go
 to that bull over that way, and milk something from him (=bull) what
 (=milk) you may cloud the water with for me.”’
*[imperative followed by ShImpf add-on clauses §13.4, indefinite
 instrumental relative §12.1.4 and §12.1.6.3]*

- (933) [i-tkæ̀l ʼə-máknud] t-e-rèwi-t-t
 [3MaSgS-pick.up.PerfP Sg-midget] Fe-Sg-cord
 d ʼæ-kæ̀bbar,
 Comit Sg-milk.bucket
 ‘The midget picked up the hide cord, and the wooden milk bucket.’
[VSO order §9.1.1, with Prefix Reduction on the subject §3.5.1]
- (934) ʼi-kka [dæ̀gg ʼæ-bæ̀ræw] ʼi-qqima,
 3MaSgS-go.to.PerfP [under Sg-bull] 3MaSgS-sit.PerfP
 ‘He (=midget) went under the bull and sat.’
*[‘under’ §6.5.3, allative sense expressed by verb not by preposition
 §6.1]*
- (935) [har àbæ̀nna] ʼi-ss-udmæ̀r,
 [until little.while] 3MaSgS-Caus-reply.PerfP
 ‘After a while, he responded (i.e. said ‘yes?’ as though to a
 summons).’
- (936) ʼi-nna-\Ø-s ʼə-m-idĩ-nnet
 3MaSgS-say.PerfP-\Dat-3Sg Sg-Agent-friend-3SgPoss
 [mi-\kæ̀y i-ɣárræ-n]
 [who?-\2MaSgO 3MaSgS-call.LoImpfP-Partpl.MaSg]
 ‘His counterpart (=the lying man) said to him, “who called to you?”’
[‘who?’ subject interrogative §12.3.2]
- (937) Ø-æ̀zèwæ̀b-\a-s ʼi-nna-\Ø-s
 3MaSgS-reply.PerfP-\Dat-3Sg 3MaSgS-say.PerfP-\Dat-3Sg
 Ø-æt-w-æ̀nna-\Ø-hi
 3MaSgS-Pass-say.PerfP-\Dat-1Sg
 [awə̀y-\d e-jæ̀beš] d ʼæ-s-áltæ̀f
 [bring.Imprt-\Centrip Sg-trash.bin] Comit Sg-Instr-sweep
 əbbà-nnæk Ø-òraw
 father-2MaSgPoss 3MaSgS-give.birth.PerfP
 ‘He (=midget) answered him, saying to him: “it was said to me, ‘bring
 a trash bin and a shovel (=dustpan), your father has given birth!’”’
[TW-passive §8.2, instrumental nominal with -s- §8.11]

- (942) ÿ-jla æ-hálæs dí n æ-næs-bahu
 3MaSgS-go.PerfP Sg-man NearDist Poss Sg-Agent-lying
 ‘That lying man left.’
- (943) ÿ-kk-\\e
 3MaSgS-go.to.PerfP-\\3MaSgO
 ‘He (=lying man) went to him (=Jackal).’
 [3MaSgO allomorph -\\e after V-final verb (here -\\akka-) §10.3]
- (944) i-ttår-\\sær-æs t-ð-dhəl-t s a-mákknud
 3MaSgS-seeK.Reslt-\\Instr-3Sg Fe-Sg-help-FeSg Instr Sg-midget
 ‘He sought help with (=from) him (=Jackal) in connection with the midget.’
- (945) ÿ-lwæy-\\t-\\ódd
 3MaSgS-lead.PerfP-\\3MaSgO-\\Centrip
 ‘He (=lying man) guided him (=Jackal) here (i.e. to where the midget was).’
- (946) ælwæqq [w-α-\\tæn i-nhæy ’ə-mákknud]
 time [Ma-Dem.Sg-\\3MaPIO 3MaSgS-see.PerfP Sg-midget]
 malæ-n-\\ódd rás
 come.LoImpfP-3MaPIS-\\Centrip only
 [Ø-ækræwwæ-t y æŋŋα-s]
 [3MaSgS-rap.PerfP Dat brother-3SgPoss]
 wə-nnín əndərræ-n à-\\d
 Dem-Anaph small-Partpl.MaSg Dem-\\Comit
 i-háll [w-à n æŋŋα-s]
 3MaSgS-weep.LoImpfP [Ma-Dem.Sg Poss brother-3SgPoss]
 ‘As soon as the midget saw them (=lying man and Jackal) (as) they were coming, he rapped that younger brother of his (with his knuckles), so that the brother was weeping.’
 [temporal adverbial clause headed by ‘time’ §13.1.1.1, ‘see X [X be coming]’ with both direct object and factive complement, rás ‘only’ indicating inter-clausal temporal proximity §13.1.1.4, loosely bound subjunctive clause ‘so that...’ §13.3]
- (947) ælwæqq [w-à-\\dd Ø-æwwæð] æ-mænókal
 time [Ma-Dem.Sg-\\Centrip 3MaSgS-arrive.PerfP] Sg-chief
 t-izár-æt [n à-\\dər ÿ-ss-əstæn]
 Fe-first.thing-FeSg [Poss Dem-\\Comit 3MaSgS-Caus-ask.PerfP]
 [α-w-à i-s-ællhe-n]
 [Dem-Ma-Dem.Sg 3MaSgS-Caus-weep.LoImpfP-Partpl.MaSg]

- (952) r̥as i-ttær ʿæ-bægg e-r̥æf-ənnet
 only 3MaSgS-*seek*.PerfP Sg-*jackal* Sg-*head*-3SgPoss
 s ázzal [har-ʌd ʿi-jjurha]
 Instr run.VblN {until-ʌCentrip 3MaSgS-*end.up*.PerfP}
 Ø-t-írəm ʿt-ə-dəmbù-t-t-ənnet
 3FeSgS-*LoImpf*-try Fe-Sg-*tail*-Fe-FeSg-3SgPoss
 [a-ʌhə-s t-izər]
 [Dem-ʌDat-3Sg 3FeSgS-*precede*.ShImpf]
 ‘Then the jackal sought (=tried to catch) his (own) head, while running, until he ended up with his (own) tail trying to go ahead of him.’ (i.e., he was running as fast as he good)
[Instrumental VblN in adverbial function §6.4.1, ‘end up’ plus adjoined clause §13.6.3, ‘try’ plus complement clause §13.3.5]
- (953) ʿi-jjurhæ-ʌdd i-jánna-ʌØ-s
 3MaSgS-*end.up*.PerfP-ʌCentrip 3MaSgS-*say*.LoImpfP-ʌDat-3Sg
 kunta t-øjær-æd-ʌa-hi
 if 2S-*surpass*.ShImpf-2SgS-ʌO-1Sg
 a-rúrød t-əkøy-æd-ʌa-hi,
 Sg-*hurry*.VblN 2S-*pass*.PerfP-2SgS-ʌO-1Sg
 ‘He (=Jackal) ended up telling it (=tail), “if you are in a bigger hurry than I (am), you may go past me!”’
[hypothetical conditional §13.9.1, comparative §5.1.1.2]
- (954) i-kkæs æ-húləs wə-nnín
 3MaSgS-*remove*.PerfP Sg-*man* Dem-Anaph
 n æ-næs-bahu æt̥tæma
 Poss Sg-*Agent*-lying hope
 ‘That lying man removed (=gave up) hope.’
- (955) ʿi-lmæd əs
 3MaSgS-*know*.PerfP that
 kúnta [i-jánna bahu] dæx
 even.if [3MaSgS-*say*.LoImpfP lying] also
 i-ll-é [ere-ʌhə-s-ʌt
 3MaSgS-*exist*.Reslt-ʌ3MaSgO [one.who-ʌDat-3Sg-ʌ3SgO
 Ø-øjær-æn]
 3MaSgS-*surpass*.Reslt-Partpl.MaSg]
 ‘He (=lying man) realized that even if he said lies too, there was (another) one who did it (=told lies) even more than he (did).’
[hypothetical conditional §13.9.1, comparative §5.1.1.2, existential §7.3.2.11, referentially indefinite but morphosyntactically “definite” subject relative with ère §12.1.6.1]

- (956) Ø-æsnðnæj-\ín
 3MaSgS-walk.away.PerfP-\Centrif
 'He (=lying man) walked slowly (=slunk) away.'
- (957) [i-qqïma ʼə-móknud] də-nnín-dæɾ
 [MaSgS-sit.PerfP Sg-midget] Dem-RecAnaph-Anaph
 har-ʼt-ʼóðð ï-qqæł əbbá-nnet
 until-\3SgO-\Centrip 3MaSgS-go.back.PerfP father-3SgPoss
 [d a-w-a-\dæɾ Ø-æddew]
 [and Dem-Ma-Dem.Sg-\Comit 3MaSgS-be.with.PerfP]
 [dæɾ əddinæt]
 [in people]
 'The midget sat (=lived) there, until his father and those in (=among) the people who he (=father) was with came back.'
[də-nnín-dæɾ §4.3.2, verb 'go/come back' agrees with left coordinand in following subject NP §14.1.3, definite comitative relative §§12.1.4, partitive 'in']
- (958) əzzæɾ-æn
 live.PerfP-3MaPlS
 'They lived (on).'
- (959) [t-əkkà-\Ø-hi ʼt-ə-nfus-t] s-i-há
 [3FeSgS-go.to.PerfP-\O-1Sg Fe-Sg-story-FeSg] Instr-Dem-Dem.
 əkke-ɾ-\a-s s-i-há
 go.to.PerfP-1SgS-\Dat-3Sg Approx-Dem-Prox.
 'The story went this way on me, I went this (=other) way on it.'
[standard formula for ending a story; s-i-há 'this way' §4.3.2]

Indices

(Note: the following indices cover, in this order: 1. local ablaut formatives; 2. ablaut melodies (p. 728); 3. affixes, clitics, and particles (p. 729); 4. stems (p. 734); and 5. grammatical terms and rules (p. 735).

1 Local ablaut formatives

α -f

- α (from ə) in final stem syllable, §3.4.4
- (dubiously) in ablaut plural, §4.1.2.15
- optional in heavy verbal noun, (551) in §8.6.1.4

ϵ -pc1f

- e (from æ) in first postconsonantal V if it is also the final-syllable V, §3.4.4, §3.4.5.4
- in Perfective Negative stem, §7.2.2.3

Γ -c2

- gemination of second C, §3.4.2.1
- in ablaut plural of noun, §4.1.2.24
- in some long imperfectives, §7.2.5

Γ -f

- gemination of final C, (207) in §3.4.2.1
- in some ablaut plurals, (206.a-d,h) in §4.1.2.24

Γ -m

- gemination of medial C
- perfective of adjectival verb, (384) in §7.3.1.10, (385.b-c) and (386.b,d,f) in §7.3.1.11

T

- t- prefix, §3.4.2.1
- in some long imperfectives, §7.2.5
- optional with -vCvC- stems, (334.h) in §7.2.5.1

χ -pc1

- accent on first postconsonantal V, §3.4.4, §3.4.5.2

in Resultative stem, §7.2.2.2

in long imperfectives, §7.2.5 and Presuffixal α -Shortening, §3.4.9.1

Rightward Accent Shift, (132) in §3.5.3.2

removed by χ -Erasure, (136.b) in §3.5.3.3

χ -pen

accent on penult, §3.4.4, §3.4.5.5

in heavy non-augment verbal noun, (551) in §8.6.1.4

in non-augment Agentive nominal, (570) in §8.8.1

removed by χ -Erasure, (136.a) in §3.5.3.3

χ -f

accent on final, §3.4.4, §3.4.5.3

in some ablaut plurals, §4.1.2.24 and Presuffixal α -Shortening, §3.4.9.1

$\bar{\chi}$ -pc1

lengthening of first postconsonantal V, §3.4.4, §3.4.5.2

in Resultative stem, §7.2.2.2

in long imperfectives, §7.2.5

$\bar{\chi}$ -pc1 Erasure, (130) in §3.5.3.1

$\bar{\chi}$ -f

lengthening of final-syllable vowel, §3.4.4, §3.4.5.3, (164-5) in §4.1.2.12

in long imperfectives, §7.2.5

in nominal plural, §4.1.2.14

in heavy verbal noun, (551) in §8.6.1.4
 in adjectival verb PerfP
 Cə(C)CəC-, (389.a) and (391)
 in §7.3.1.12, (393) in §7.3.1.113

in some “adjectival” plural
 participles, (534) in §8.5.6.3
 in some agent/instrument
 nominals, (591.b) in §8.12.1

2 Vocalic ablaut melodies

<H>

in a few plurals of nouns, §4.1.2.24
 (reflecting loss of original final
 vowel)
 in adjectivalv-verb perfective,
 (386) in §7.3.1.11
 in short imperfectives, (314.a-b) in
 §7.2.3.1
 in long imperfectives, (329.e-g)
 and (331.e-g) in §7.2.5
 in LoImpfN (all verbs), §7.2.5.2
 in heavy verbal noun, (551) in
 §8.6.1.4
 in some “adjectival” Sg participles,
 (534) in §8.5.6.3
 in abstractive nominal, (562-4) in
 §8.6.5
 in instrumental nominal, (581-2)
 and (587) in §8.11

<L>

in perfectives, (308.c-e), in
 §7.2.2.1, (375.a) in §§7.3.1.7,
 (385) in §7.3.1.11
 in short imperfectives, (314.c,k) in
 §7.2.3.1
 in long imperfectives, (329.a-d)
 and (331.c-d) in §7.2.5
 some <L> perfectives arguably
 from <HL>, §3.4.6
 in some “adjectival” Pl participles,
 (534) in §8.5.6.3
 in color-surface abstractive
 nominal, (565) in §8.6.5

in agentive nominals, (569.a,c-d)
 in §8.8.1
 in agent/instrument nominals,
 §8.12.1
 in instrumental nominals, (584) in
 §8.11
 other nominals, (602) in §8.12.2

<H L>

in plural of noun, §4.1.2.15-19
 in perfectives, (308.a-b) in §7.2.2.1
 in long imperfectives, (329.h-i) in
 §7.2.5
 in adjectival noun, (568.a-b) in
 §8.7
 in agentive nominals, (569.b,e,h) in
 §8.8.1

<L H>

in short imperfectives, (314.e,g-j)
 in §7.2.3.1
 (dialectal) in long imperfectives,
 (329.j) in §7.2.5, §7.3.1.3
 in agentive nominals, (569.f-g) in
 §8.8.1
 in instrumental nominals, (586) in
 §8.11

<L H L>

perhaps dialectally in heavy Reslt,
 §7.2.2.1
 (one) instrumental nominal,
 (589.a) in §8.11

<H L H>

in a few instrumental nominals,
 (589.a) in §8.11

3 Affixes, clitics, and particles

note: zero and vowel-only morphemes are listed at the beginning; as in the dictionary, other morphemes are alphabetized based on consonants, with geminates treated as single units and with vowels disregarded.

- ∅- (zero)
 - imperative singular, §7.2.3.2
 - reduced from Pl prefix -i-, (125) in §3.5.1
 - 1Sg possessor for inalienables, (251) in §5.2.3
 - 3MaSg prefix with V-initial verb §7.4.1.4
- ə- Sg prefix (nouns)
 - reduced from Pl -i-, (125) in §3.5.1
 - reduced from Sg -æ-, -e-, (125) in §3.5.1
- æ- Sg prefix (nouns)
 - reduced from Sg -a-, -e-, (125) in §3.5.1
- a-*(see Future àd)*
- a- Sg vocalic prefix (nouns), §4.1.2.1
- a- demonstrative morpheme(s)
 - à minimal demonstrative, §4.3.1
 - à nonhuman relative head, §12.1.6.3
 - à Focus morpheme, §12.2
- á- Sg unmarked or Proximal demonstrative, §4.3.1, (709) in §12.1
- a-w-á, á-di, a-w-én single-form (non-agreeing) demonstratives, §4.3.1
- \a- (*see Dative clitic -\ha-*)
- ...a ...a possible archaic Fe suffix at end of feminine VblN or abstractive nominal, (541.a-e) in §8.6.1.1, (545.n) (546.d) (547.a) and (550.a) in §8.6.1.2, (560.b) in §8.6.2, (562.a-c,g) in §8.6.5, (603.c-d) in §8.12.2
- è, hè Future particle (non-clause-initial), §9.6.3
 - in participles, §8.5.6.2
- è Dative preposition before C, §6.3
- e- Sg vocalic prefix (nouns), §4.1.2.1
- e- suffix before pronominal suffix pronominalized numeral, (236-7) in §5.1.2.5
- ...e at end of feminine VblN or abstractive nominal, (545.l-m) in §8.6.1.2, (566) in §8.6.5, (603.a-b) in §8.12.2
- le 3MaSg object clitic after stem-final a or deletable vowel, (669) in §10.3.1
- ì demonstrative as relative head
 - Ma í, Fe t-í indefinite human, §12.1.6.2
 - ì after 1st/2nd person pronoun, (709) in §12.1
- ì (dialectal) Dative preposition before C, §6.3
- í Proximate postnominal particle, §4.3.3
- i- 3MaSg prefix (verbs), §7.4.1.4
 - in MaSg-subject participles, (498) in §8.5.1
- i- Pl vocalic prefix (nouns), §4.1.2.1
- i- in Pl demonstrative pronouns, §4.3.1-2
- i 1Sg suffix
 - with prepositions, (272) in §6.2
 - (rare) possessor with inalienables, (251) in §5.2.3
- u 'son of ...' compounds, §5.2.4.2-3
- u suffix on singular personal pronoun, §4.2
- ebré 'toward' (preposition), §6.6.3
- bà-\∅-s 'no longer', §13/6/7
- àd, àr Future particle (clause-initial), §9.6.3
 - àd becomes à- before clitic, §9.6.3
 - àd versus à-\d, §12.2.4, §13.2.1
- à-\d subordinator

- jussive and subjunctive, §13.3
 purposive (for y à-d), (929) in
 text, Chapter 16
- èd, d Comitative preposition (except
 with pronominal), §6.4.2
- d-, dâ- (dialectal) Comitative
 preposition with pronominal,
 (278) in §6.4.2
- d- in counting form of numerals,
 §5.1.2.1
- æd 2Sg subject suffix (verbs), §7.4.1
- èdd pronominal Pl particle, §4.1.2.28
- èd complementizing particle
 ‘when’, (789) in §13.1.1.1
 ‘whenever’, §12.1.6.4
 ‘because’, (813) in §13.2.2
- eđ in Pl pronouns, §4.2
- dí Near-Distant demonstrative,
 §4.3.1-2
- \ádd, -\idd, -\d, -\ídd, \ddád, -\hádd
 Centripetal clitic, §10.2.1
- đí Near-Distant postnominal particle,
 §4.3.3
- \ddád (*see Centripetal -\ádd*)
- dædes ‘beside’ (preposition), §6.6.1
- dægg ‘under’ (preposition), §6.5.2
- dægman ‘beside’ (preposition), §6.6.1
- dæx Anaphoric suffix
 with demonstrative pronouns,
 §4.3.1
 with demonstrative adverbs, §4.3.2
- dæx, dæx (cf. “partitive”) ‘in, at’
 (preposition), §6.5.1
 in temporal adverbials, §13.1.1.2
 partitive function, (281.g-h) in
 §6.5.1, (777) in §12.3.8,
 (779.d) in §12.3.9
- dáx, dæx ‘also, too, again’ particle,
 §11.3.3
- d-i-há-\d spatiotemporal adverbials,
 §13.1.1.1, §13.1.2
- dær-, dær- Comitative preposition with
 pronominal, (277) in §6.4.2
 (dialectally) also for dæx- ‘in’,
 §6.5.1
- dærúx, dærór ‘nearly’, §13.6.5
- dåt, dåtâ- ‘in front of’ (preposition),
 §6.5.6
 adverbial clauses, (798) in
 §13.1.1.4
- dåw ‘under’ (preposition), §6.5.2
- dætén Comitative preposition (except
 with pronominal), §6.4.2
- dàræt, dàra- ‘behind’ (preposition),
 §6.5.7
- fæl, fælla- ‘on’ (preposition), §6.5.5
 in ‘because’ subordinators, §13.2.2
- a-\fæł, fæl ‘if’, (870) in §13.9.1
- fúkk ‘all’, §5.1.2.8
- ægg ‘son of ...’ compounds, §5.2.4.2
- æx 1Sg subject suffix (verbs), §7.4.1
- ex, -x 1Sg suffix (dialectal)
 with preposition, (272) in §6.2
 possessor on inalienables, (251) in
 §5.2.3
- xòr, xòrr ‘at the place of, chez’
 (preposition), §6.5.2, (283.b) in
 §6.5.2
- xòr X hár Y ‘from X to Y’, (300)
 in §6.7
- xærád ‘all’, §5.1.2.8
- xás ‘only’, §11.3.1
- hè (*see Future è*)
- ha, -há locative demonstrative
 adverb, §4.3.2
- \ha-, -\hæ-, -\a-, Dative (and Object)
 clitic
 in all Dative pronominal clitics
 §10.3.2
 in 1Sg and 1Pl Object clitics
 §10.3.1
- \ha- (*see Dative clitic -\a-*)
- \a-hi, -\hi, -\ha-hi 1Sg object or
 dative clitic, §10.3.1-2
- hi suffix on Proximal, Near-Distant,
 or Distant demonstrative,
 §4.3.1
- \hádd (*see Centripetal -\ádd*)
- \ha-hi (*see -\a-hi*)
- hækádd, hæk ád Comitative
 preposition (except with
 pronominal), §6.4.2

- hæn-, -hən- compound initial, §5.2.4.5
- hén Distant demonstrative adverbs, §4.3.2
- \hín (*see Centifugal -\ín*)
- \ha-næx (*see -\a-næx*)
- hâr, âr 'until, all the way to', §13.1.1.5
- hæræmmón 'when?', §12.3.6
- ehæydæx 'nearly', §13.6.5
- qjúd 'if/when ...', §13.9.1, (788) in §13.1.1.1
- jænnøj 'above, over' (preposition), §6.5.4
- jèr, jère- 'between, among' (preposition), §6.6.2
- àk in polar interrogatives, §12.3.1
- k, -æk 2MaSg suffix with preposition, §6.2
possessor suffix on inalienables, (251) in §5.2.3
- (i)-k 2MaSg object clitic after V, (668) in §10.3.1
- kú '(even) if', (868) in §13.9.1
- kúd 'even', §11.2.2; '(even) if', §13.9.1
- kúnta 'if; even if', §13.9.1
- kælá Past preverbal particle, §9.6.1
- kúl 'all', §5.1.2.8
- \kæm 2FeSg object clitic after C, (668) in §10.3.1
- (˘)-kmæt 2FePl suffix with preposition, §6.2
possessor suffix on inalienables, (251) in §5.2.3
- (i)-\kmæt 2FePl object clitic after V, (668) in §10.3.1
- \kæmæt 2FePl object clitic after C, (668) in §10.3.1
- kúnta 'if; even if', §13.9.1
- iket temporal particle 'have just', §13.6.6
- har iket í 'until...', §12.1.6.5
- man-iket 'how much?', §12.3.9-10
- aniket 'quantity', §12.3.9.10
- \kæwæn 2MaPl object clitic after C, (668) in §10.3.1
- \kæy 2MaSg object clitic after C, (668) in §10.3.1
phonology, §3.2.1.1
- láb confirmational particle, §11.2.3
- má 'what?', §12.3.1
- ma-\fæł, ma-\s 'why?', §12.3.7
- mí interrogative 'who?', §12.3.2
'where?' with transitive motion verb, §12.3.4
- m-, -n-, -nvy- Mediopassive or Reciprocal
Mediopassive, §8.3
Reciprocal, §8.4
-m- versus -n-, (482) in §8.3
phonology of stem onset, §3.4.8.2
- m-, -n- nominal derivational prefix
verbal nouns, §8.6.2
agentive nominals, §8.3
non-agentive nominals, §8.3
- m 2FeSg suffix with preposition, §6.2
possessor suffix on inalienables, (251) in §5.2.3
- æm 2MaPl subject suffix (verbs), §7.4.1
- (i)-\m 2FeSg object clitic after V, (668) in §10.3.1
- æmmád 'when?', §12.3.6
- màd (*see mâr*)
- mér 'or', §14.2.2
- émmæk 'way, manner', §12.3.10, §13.1.3
- ændék émmæk 'how?', (776) in §12.3.8
- man-émmæk 'how?', §12.3.9
- mændaju 'when?', §12.3.6
- man-iket 'how much?', §12.3.9-10
- mâr, mād Future particle (non-clause-initial), §9.6.3
in participles, §8.5.6.2
- mæs-, -næs- denominal agentives, §8.10

- mæt 2FePl subject suffix (verbs), §7.4.1
- ([◌])-mæt FePl subject imperative, §7.4.3
 - accentual effect, (63) in §3.3.1.1
- n, ən Possessive preposition, §5.2.1
 - after 'one-Ma' before vowel, (227) and (229.a) in §5.1.2.2
 - in analytic compounds, §5.2.4.1
- n-, nə-, ən- 1Pl subject (verbs), §7.4.1 phonology, §3.2.5
- n- (*see Mediopassive and Reciprocal -m-*)
- æn 3MaPl subject suffix (verbs), §7.4.1
- æn MaPl suffix (nouns), §4.1.2.2
 - modification of preceding stem, §4.1.2.6-12
- æn MaSg suffix
 - numeral 'one', §5.1.2.1-2
- æn- part of Pl pronouns, §4.2
- æn 3MaPl object clitic after V, (668) in §10.3.1
- an MaPl suffix (nouns), §4.1.2.13-14
 - from -æn by VV-Contraction, §4.1.2.13
 - from -æn by ablaut lengthening, §4.1.2.14
- en FePl suffix (nouns), §4.1.2.2
 - modification of preceding stem, §4.1.2.6-12
- én Distant demonstrative, §4.3.1-2
- én Distant postnominal particle, §4.3.3
- ín, -hín Centrifugal clitic, §10.2.2
- ([◌])-in 1Sg possessor suffix, (248) in §5.2.2
- un suffix on personal pronoun, §4.2
- ændí 'before' or 'not yet' particle, §13.1.1.4, §11.3.5
- ændék, ændáké, ændé 'where?', §12.3.5
 - ændék, 'which?', §12.3.8
- ndín Recent Anaphoric demonstrative, §4.3.1
- ændín Recent Anaphoric postnominal particle, §4.3.3
- endær 'if' (counterfactual), §13.9.2
- ənd-, ænd- compound initial, §5.2.4.6
- ([◌])-nær 1Pl suffix
 - with preposition, §6.2
 - possessor suffix on inalienables, (251) in §5.2.3
- lnær, -la-nær, -lha-nær 1Pl object or dative clitic, §10.3.1-2
- enækk 'if' (counterfactual), §13.9.2
- ([◌])-ənnæk, ([◌])-nnæk, ([◌])-næk
 - 2MaSg possessor suffix, (248) in §5.2.2
- nækmæt 2FePl possessor suffix, (248) in §5.2.2
- ([◌])-ənnæm, ([◌])-nnæm, ([◌])-næm
 - 2FeSg possessor suffix, (248) in §5.2.2
- nvm- Reciprocal
 - phonology of stem onset, §3.4.8.2
- nen Pl-subject participles, (499) in §8.5.1
- ([◌])-nin 1Sg possessor suffix, (248) in §5.2.2
- nnín Recent Anaphoric demonstrative, §4.3.1
- ənnín Recent Anaphoric postnominal particle, §4.3.3
- næénær 1Pl possessor suffix, (248) in §5.2.2
- énær 'which?', §12.3.8
- næs- (*see -mæs-*)
- ənnes, ([◌])-nnes, ([◌])-nes 3Sg possessor suffix, (248) in §5.2.2
- næsæn 3MaPl possessor suffix, (248) in §5.2.2
- næsnæt 3FePl possessor suffix, (248) in §5.2.2
- ənnet, ([◌])-nnet, ([◌])-net 3Sg possessor suffix, (248) in §5.2.2
- næt 3FePl subject suffix (verbs), §7.4.1
- ænæt 3FePl object clitic after V, (668) in §10.3.1
- nvy- (*see Mediopassive -m-*)
- àr 'except', §11.3.1

- 'not ..., except X' = 'only X', (699-700) in §11.3.1
- ðr (see hār)
- ðr (see *Future àð*)
- ère 'whoever', §12.1.6.1
- s- (and variants) derivational prefix
Causative prefix (verbs), §8.1
instrumental nominals, §8.3
- s- Approximative demonstrative adverbs, §4.3.2
- s, ðs Instrumental preposition (except with pronominal), §6.4.1
adverbial uses, §6.4.1
-ls in ordinals, (240) in §5.1.2.7
- s,, ðs (variant of ð-ls), factive complementizer, §13.7
- ð-ls subordinator
'when ...', (786) in §13.1.1.1
'because ...' (for fæl á-ls), §13.2.2
factive complementizer (also s), §13.7
- s 3Sg suffix (either gender)
with preposition, §6.2
in dative clitics, §10.3.2
possessor suffix on inalienables, (251) in §5.2.3
- sæddér, sæddén '(not) yet', §11.3.5
- sæll 'other than' particle, §11.3.2
- (^o)-ssæn, (^o)-sæn 3MaPl suffix
with preposition, §6.2
possessor suffix on inalienables, (251) in §5.2.3
- súnd 'like' (discourse particle), §6.7
- (^o)-snæt 3FePl suffix
with preposition, §6.2
possessor suffix on inalienables, (251) in §5.2.3
- sær-, sèr- Instrumental preposition
with pronominal, (274) in §6.4.1
- šæmá- 'after ...', §13.1.1.6
- šærnáš 'barely', §13.6.5
- i-šwár 'soon', §13.7.1
- t- Feminine prefix
nouns, §4.1.2.1
demonstrative pronouns, §4.3.1
- t- 3FeSg or 2nd subject (verbs), §7.4.1
phonology, §3.2.5, §7.4.1.2
in FeSg-subject participles, (498) in §8.5.1
- t-, -tt-, -tvw- Passive, §8.2
- t- inner Fe suffix (nouns), §4.1.2
- t outer FeSg suffix (nouns), §4.1.2.3
CC cluster assimilations, §3.2.1.1
accentual effect, (63) in §3.3.1.1
modification of preceding stem, §4.1.2.4
- (^o)-æt MaPl subject imperative, §7.4.3
accentual effect, (63) in §3.3.1.1
- æt Fe or FeSg suffix
nouns (Fe or FeSg), §4.1.2.5
in Fe-Sg subject participles, (499) in §8.5.1
numerals (Fe), §5.1.2.1-2
in derived nominals, (545.g-h) in §8.6.1.2
- æt- part of FePl pronouns, §4.2
- (^o)-et Hortative verb, §7.2.3.3
accentual effect, (63) in §3.3.1.1
- let 3FeSg object clitic after V, (668) in §10.3.1
- lt, -l̥t, -l̥ti, etc. 3MaSg object clitic
except after stem-final a or deletable vowel
phonology and allomorphs, §3.2.1.1(669) in §10.3.1
accentual effect, (63) in §3.3.1.1
- tæn MaPl suffix (nouns), §4.1.2.2
after stem-final V, §4.1.2.2
afterl C with final-syllable accent, §4.1.2.6
- l̥tæn 3MaPl object clitic after C, (668) in §10.3.1
- ten FePl suffix (nouns), §4.1.2.2
- l̥tænæt 3FePl object clitic after C, (668) in §10.3.1
- l̥tæt 3FeSg object clitic after C, (668) in §10.3.1
- tvw- Passive, §8.2
- t-əzzá 'thereafter ...', (797) in §13.1.1.4
- æw 'son of ...' compounds, §5.2.4.2-3

w- Masculine prefix in

demonstratives, §4.2.1

...w- stem extension before Pl suffix,

§4.1.2.6-7

...w- stem extension before FeSg

suffix, §4.1.2.4

...aw at end of feminine VblN or

abstractive nominal, (560.a) in

§8.6.2

wædden, wædder (etc.) external

negation or negative copula,

§9.5

wældá

‘without’, §6.7

‘even’, §11.2.2

‘even if’, (869) in §13.9.1

‘nor’, (882) in §14.1.2

(*˘*)-wwæn, (*˘*)-wæn 2MaPl suffix

with preposition, §6.2

possessor suffix on inalienables,

(251) in §5.2.3

(i)-\wæn 2MaPl object clitic after V,

(668) in §10.3.1

...awæn- stem-extension before Pl

suffix, (210.c) in §4.1.2.26

wær, wår Negative preverbal particle,

§9.6.2

wùr dialectal variant of *ròr*, (283.a) in

§6.5.2

y Dative preposition before V, §6.3

...y- stem extension before FeSg

suffix, §4.1.2.4

-y- epenthetic in feminine numeral,

(226) in §5.1.2.1

ya Emphatic particle, §11.2.1

ÿy- numeral ‘one’, (231) in §5.1.2.3,

(227) in §5.1.2.1-2

y à-\d purposive subordinator, §13.2

yyæð-, hæð- ‘other’, (233) in §5.1.2.3,

(893) in §15.2

ÿyæw ‘come!’ (suppletive imperative),

§7.2.3.8

æzzár (*see t-æzzár*)

4 Stems (verbs shown by “root” √...)

√b ‘be lost, die’, §7.3.2.16

shortening or loss of vowel,

§3.4.9.1

√bd̥ ‘be separated from’

in ‘stop (doing)’ construction,

§13.5.2, (861) in §13.7.2

√db ‘be able to, can’, §13.3.2, §13.5.8

√d̥kl (*see* √d̥kl)

√d̥kl, √d̥kl, √tkl, √kl ‘pick up’,

§7.3.2.19

√ds ‘touch’, §8.2, §8.4

√f (*see* √fw)

√fl ‘go from’, §9.1.4

√fr̥ð ‘be required’, §13.3.3

√fw, √f ‘(day) break’, §7.3.2.15

√x̥m, √x̥ym ‘sit’, §7.3.2.9

√h ‘be in’, §7.3.2.12, §9.1.4

hæræt ‘thing’

in ‘a few X’ or ‘a little of X’,

§5.1.2.8

√hj ‘spend the day doing’, §13.6.4

√hšl ‘be obligatory on’, §13.3.3

√j ‘do’, §7.3.2.14

with French borrowings, §9.7

√j, √jt ‘be many’, §7.3.2.2

√jdh (-vjdvh-) ‘be enough’, §7.3.2.20

√jdh (-vjdvh-) ‘be equal’, §7.3.2.20

√jh (*see* √jyh)

√jj ‘be/go far away’, (379) in §7.3.1.8

√jl ‘go’, §7.3.2.7

√jrh ‘end up’, §13.6.3

√jt (*see* √j)

√jyh, √jh ‘testify’, §7.3.2.10

√jz ‘find’, §13.6.1

√k ‘go to’, §7.3.2.6, §9.1.4, (792) in

§13.1.1.3

‘go in order to ...’ with VblN,

§13.5.3

√kf ‘give’, §9.1.6

double datives, §9.1.8

relative clause, (729) in §12.1.4
 √kl (*see* √dkl)
 √kn ‘do well’
 in ‘(do) a lot’ construction, §13.5.5
 √krđ ‘obligate’, §13.3.3
 √krkđ ‘be ashamed (to ...)’, §13.5.4
 √ks ‘take out’
 in ‘as long as ...’ construction,
 (791) in §13.1.1.3
 in ‘prevent’ construction, (834) in
 §13.5.1
 √l (-vlv-) ‘have’, §7.3.2.13
 in ‘a few X’ construction, §5.1.2.8
 in obligational construction, (822)
 in §13.3.3
 √l (-vllv-) ‘exist, be’, §7.3.2.11
 in ‘should not’ construction, (824)
 in §13.3.3
 √lkm ‘come after’
 in ‘happen later’ construction,
 §13.1.1.7
 in ‘never again’ construction, (853)
 in §13.6.7
 √ls ‘do again’, §13.6.1
 negated ‘not any more’, §13.6.7
 √m (*see* √mt)
 √ml ‘be on the way’, (420) in §7.3.2.8
 ĭ-m-an ‘soul, self’, §15.1
 √ms ‘go’, §7.3.2.7

√mt, √m, √mtn ‘die’, §7.3.2.1
 √mtn (*see* √mt)
 √n, √jn ‘say’, §7.3.2.5, §13.8
 √ngh ‘warn’, §13.3.4
 √njy ‘refuse’, (379) in §7.3.1.8
 √rx (*see* √wrx)
 √rh (-vrh-) ‘be unripe’, §7.3.2.18
 √rh (-vrhu-) ‘want’, §13.3.1
 √rm ‘test, try’, §13.3.5
 √ršj ‘do frequently’, §13.5.7
 √sf ‘prefer’, §13.3.2
 √s-jt ‘make numerous’
 in ‘(do) many times’ construction
 §13.5.6
 √s-mtr- ‘advise’, §13.3.4
 √sw ‘drink’, §3.2.4 (resyllabification)
 √škk ‘quick!’, §7.3.2.21
 √šjr, √šjrt ‘be long’, §7.3.2.2
 √tkl (*see* √dkl)
 √tr ‘seek, try’, §13.3.5
 √tw ‘forget’, §7.3.2.3
 √w ‘be born’, §7.3.2.17
 √wr ‘be on’, §9.1.4
 in obligational construction, (823)
 in §13.3.3
 √wrx, √rx ‘be yellow’, §7.3.2.4
 √y ‘leave, abandon’
 in ‘stop (doing)’ construction,
 §13.5.2

5 Grammatical terms and rules

ablative, §9.1.4
 ablaut (cf. “melody”), §3.4
 componentiality, §3.4.1.5
 rebracketing of ablaut domain,
 §3.2.3.3, (357.b) and (359) in
 §7.3.1.3, (401) in §7.3.1.16
 local ablaut formatives, §3.4.1.5,
 §3.4.4
 templatic ablaut, §3.4.1.5, §3.4.2.2,
 §4.1.2.8, §4.1.2.14, §4.1.2.24,
 (363) in §7.3.1.3
 pre-ablaut reconfiguration, (81) in
 §3.4.1.5, §3.4.7, (332) in
 §7.2.5, (355.c) in §7.3.1.3,
 §8.1.4, (459-60) in §8.1.5
 abstractive (noun), §8.6.5
 accent, §3.3
 default, §3.3.1
 due to suffix or clitic, (63) in
 §3.3.1.1
 and Stem-Final *ɪ*/A-Deletion,
 §3.3.1.2
 and VV-Contraction, §3.3.1.3
 of epenthetic vowel, §3.3.2
 phrasal, §3.3.3

- erasure of ablaut or lexical accent, §3.5.3.3
- reattachment after Syncope, §4.1.2.22, §4.1.2.14
- accent shift in ablauted FePl, §4.1.2.22, (187.c) (189.e-g) and (191) in §4.1.2.16.
- with contracted MaPl -an, (173) in §4.1.2.13
- numerals, §5.1.2.1-2
- add-on clause, §13.4
- Accent Reattachment, (204.b) in §4.1.2.22
- “adjective” (cf. “adjectival verb,” “participle”, §5.1.1.1
- adjectival noun, §8.7
- frozen adjectival participle, (740.b) in §12.1.6.3
- adjectival verb, §7.3.1.10-13
- final V before Augment -t, §3.4.9.2
- no subject prefix, (446) in §7.4.2
- no $\bar{\chi}$ -pc1 in Resultative, §7.2.2.2, (386) in §7.3.1.11, (392) in §7.3.1.12
- agent/instrument (nominal), §8.12.1
- agentive (nominal), §8.3
- agreement
 - with coordinated NP’s, §14.1.3
- Anaphoric suffix, §4.3.1
- Approximative (demonstrative adverb), §217.b) in §4.3.2
- Arabic
 - consonants, §3.1.1.1
 - loans with Definite al-, §3.2.6.1
 - plural nouns, §4.1.2.27
 - partial source of Fe suffix -æt, §4.1.2.5
- aspect, §7.2.1
- assimilation
 - CC clusters at suffix boundary, §3.2.1.1, (670) in §10.3.1
 - nasals, §3.2.1.2
 - Sibilant Harmony, §3.2.2.2
- augment verbs (V-final with -t), §7.1.1
- stem-final shortened before -t, §3.4.9.2
- participles, §8.5.5
- verbal nouns, §8.6.1.5
- backing and lowering consonant (BLC), §3.1.2.2
- basic lexical representation, §3.4.1.2
- BLC (*see* “backing and lowering”)
- C₁-Gemination (verbs), (103) in §3.4.8.1
- not with -CuCvC- verb stem, (375-6) in §7.3.1.7
- not with -CuCu- verb stem, (395-6) in §7.3.1.14
- causal clause (‘because ...’), §13.2.2
- Causative (verb), §8.1
- double causative prefix, §8.1.3
- <H> short imperfective melody, §8.1.4
- no -t- in long imperfectives, §8.1.4
- onset of causative verb stem, §3.4.8.2-3, §8.1.4
- special V-shortening rules, §3.4.9.4
- characteristic LoImpf melody, (331) in §7.2.5
- alternative two-clause construction, §8.1.1
- valency types, §9.1.7
- Causative Final-Syllable V-Shortening, (123) in §3.4.9.4, (459) in §8.1.5
- Causative Initial V-Shortening, (124) in §3.4.9.4, (460) in §8.1.5
- Causative Medial V-Shortening, (122) in §3.4.9.4
- Centrifugal clitic, §10.2
- Centripetal clitic, §10.2
- and Presuffixal A-Shortening, §3.4.9.1
- clash avoidance (no $\bar{\chi}$ -pc1 and $\bar{\chi}$ -f in adjacent syllables)
 - non-causative long imperfectives, §3.4.5.3, §3.5.3.2
 - not applicable to causatives, §8.1.4

- clitics (cf. “Centripetal,” “Centrifugal”), §10
 relative order, §10.4
- color
 derived from biological species, §8.7
- Comitative (‘with, and’), §6.4.2
 in numerals, §5.1.2.1, §5.1.2.4
- conditional construction
 add-on clause in the antecedent, (829) in §13.4
- conjunction (see “coordination” and “Comitative”)
- comparatives, §5.1.1.2
- compounds
 analytic (X ən Y), §5.1.4.1
 kinship, §5.2.4.2
 ‘bad X’ with *èrk*, §5.2.4.4
 with *-hæn-* ‘house’, §5.2.4.5
 phrasal, (265) in §5.2.4.8
- consonants, §3.1.1
- conditional constructions, §13.9
- coordination, Chapter 14
 ‘and’, §14.1.1, §14.2.1
 ‘or’ and ‘whether’, §14.1.2, §14.2.2
 Comitative ‘with/and’, §6.4.2
- copulas and copular constructions, §9.2
 focalized equivalent, (753.b-c) in §12.2.6
- Dative, §6.3
 double datives, §9.1.8
 replaced by Instrumental, §12.1.4 (relatives)
 pronominal dative clitics, §10.3.2
 purposive, with *VblN*, (809) in §13.2.1
- default (expletive) consonant, §4.1.2.14
- Default Accentuation, (61) in §3.3.1
 and Stem-Final *ɪ/A*-Deletion, §3.3.1.2
 and *VV*-Contraction, §3.3.1.3, (172) in §4.1.2.13
 with 3rd person object clitics, §3.2.3.3
- Degemination, §3.4.2.2, §4.1.2.8
 with *Pl -an* or *-en*, (174.e-f) in §4.1.2.13, (181.a) and (184.d-e) in §4.1.2.14
- demonstrative (cf. “Anaphoric”)
 demonstrative pronoun, (214) in §4.3.1
 internal head of relative clause, (709) in §12.1
- dependent state (cf. “Prefix Reduction”), §3.5.1
- desyllabification (vowel to semivowel), (174.a) in §4.1.2.13
- diminutive (feminine), §4.1.1.1
- directional clitics (see “Centripetal,” “Centrifugal”)
- dissimilation
 vowel-semivowel, §3.4.10, §4.1.2.17, (457.a) in §8.1.5
-m- versus *-n-* verb prefix, (482) in §8.3, §3.2.1.2
- distributive
 reduplicated numeral, §5.1.2.6
hók ‘each, every’, §5.1.2.8
 causative of Reciprocal, (474) in §8.1.9
- emphatic particles, §11.2
- Epenthetic-Vowel Accentuation (cf. “resyllabification”), (70) in §3.3.2
- existential predicate, §9.3
- feminine (nouns)
 diminutive sense, §4.1.1.1
 prefix and suffix(es), §4.1.2.1-5
- Final-CC Schwa-Insertion, (44) in §3.2.4
 (cf. “resyllabification”)
- Final-Syllable Accent, (228) in §5.1.2.2
- Future, §9.6.3, §3.5.2.1
 in conditional antecedent, §13.9.1

- participles, §18.5.6.2
- negative, §9.6.4
- focalization, §12.2
- gemination and geminate CC clusters
 - due to CC-cluster assimilation, §3.2.1.1
 - đ, đđ, and ʈʈ, §3.1.1.8
 - qq, §3.1.1.3
 - š and zz, §3.1.1.5
 - w and gg, §3.1.1.7, (181.a) in §4.1.2.14, (385.b) in §7.3.1.11
 - zz from *zd, §3.2.1.4
 - zʒ from *zđ, §3.2.1.4
 - before FePI -en, (152) in §4.1.2.8
 - before MaPI -æn, (153-4) in §4.1.2.8
 - in Sg but not suffixal Pl of noun, (155) in §4.1.2.8
 - tt before Pl suffix, (210.b) in §4.1.2.26
 - in ablaut Pl of noun, §4.1.2.23-24
 - in derivatives of ‘touch’, §8.2, §8.4
- gender (nouns), §4.1.2.1-2
- ‘have’
 - in ‘a few X’ construction, §5.1.2.8
- heavy stem, (79) in §3.4.1.4
- h-Insertion, §3.2.3.5 (end)
 - with Centripetal and Centrifugal clitics, (653) in §10.2.1.1
- homorganic semivowel, §4.1.2.6
- hortatives (‘let’s ...!’)
 - with Hortative suffix, §7.2.3.3 (ShImpf stem)
 - hortative based on imperative, §7.2.4
 - long hortative (with LoImpfP), §7.2.5.5
 - negative, §7.2.5.6
 - in negative jussive complement, (817) in §13.3
- imperatives
 - Imperative (positive) stem, §7.2.3.2
 - in IPI hortative construction, §7.2.4
 - imperative pronominal suffixes, §7.4.3
 - imperative suffixes with PerfN, §7.2.5.3
 - Long imperative (with LoImpfP), §7.2.5.4
 - suppletive (‘come!’, ‘go!’), §7.2.3.7
 - ‘quick!’ (√škk), §7.3.2.21
 - “conjoined” imperatives, (831) in §13.4
 - long imperative plus “conjoined” LoImpfP, (828.e) in §13.4
 - imperfective (*see “short imperfective” and “long imperfective”*)
 - Instrumental
 - preposition, §6.4.1
 - with ‘toward’, (295.b) in §6.6.3
 - instrumental nominal derivation, §8.11
 - default preposition under extraction, §12.1.4 (replaces Dative in relatives)
 - interrogatives, §12.3
 - embedded (indefinite), §12.3.10
 - island constraints, (833) in §13.4
 - kinship terms
 - compounds, §5.2.4.2
 - inalienable possession, (251-2) in §5.2.3
 - Leftward L-Spreading, (60) in §3.2.7.2
 - and other verb-onset rules, §3.4.8.1
 - Lexical Accent Erasure, (139) in §3.5.3.3
 - and VV-Contraction, (138) in §3.5.3.3
 - light stem, (79) in §3.4.1.4
 - locational predicate, §9.3
 - long hortative (*see “hortative”*)
 - long imperative (*see “imperative”*)
 - Long Imperfective Positive stem, §7.2.5.1

- long imperfective system, §7.2.5
 characteristic melody, (329) in §7.2.5
- Long Imperfective Positive stem, §7.2.5.1
 occasional use with imperative, §7.2.5.4
- Long Imperfective Negative stem, §7.2.5.2
- MAN (mood-aspect-negation), §7.2.1
- Medial V-Shortening, (120) in §3.4.9.3
 in short imperfective, (318) in §7.2.3.1, (403) in §7.3.1.1.6
 in long imperfective, (334.f) in §7.2.5.1, (394.c) in §7.3.1.14, (402.c) in §7.3.1.16
 in verbal nouns, (556.1.c) in §8.6.1.5
- Mediopassive (verb), §8.3
- Melodic Association
 of composite melody, (82) and (86) in §3.4.3.2
 to epenthetic V, (45) in §3.2.4
- Melodic Dissimilation, §7.2.2.1
- melody (vocalic) (cf. "Melodic Association"), §3.4.3
 <H> and <L>, §3.4.3.1
 pure and composite melodies, §3.4.3.1
 surface <L> from <H L>, §3.4.6 (dialectal) <L H L> melody, §7.2.2.1
 imperfective i/u...a, §7.3.1.10-11
 u versus i as full H vowel, §4.1.2.15, §4.1.2.17, (554) in §8.6.1.4
 mid-height vowels, §3.4.3.1
 characteristic long imperfective (329) and (331) in §7.2.5
 ablaut plural melody, §4.1.2.15-19
- metathesis (of consonants), §3.2.2.1
- modal
 capacitative ('be able to ...'), §13.3.2
 desiderative 'want to ...', §13.3.1
 obligational ('must ...'), §13.3.3
 'nearly', 'barely', §13.6.5
 'maybe', §13.6.8
- middleweight stem, (79) in §3.4.1.4
- negation
 form of verb after Neg wær, (129) in §3.5.2.2, §7.2.2.3, §7.2.5.2
 negative participles, §8.5.6.1
 negative equivalent of VbIN, (539) in §8.6.1
 external negation, §9.5
 'no longer', §13.6.7
- noun
 stems without vocalic prefix, (148-9) in §4.1.2.6
- Noun Phrase
- numeral (cf. "ordinal numeral"), §5.1.2
 phrasal accent, §3.3.3
 complex numeral, §5.1.2.4
 with pronominal suffix, §5.1.2.5
 distributive reduplication, §5.1.2.6
 tent size expressions, §5.1.2.10
 sheep dentition, (580) in §8.10
- object, §9.1.1
 pronominal object clitics, §10.3.1
- obligational (*see* "modal")
- ordinal numeral, §5.1.2.7
- participles (subject relatives), §8.5
 definite, §8.5.2-3
 indefinite, §8.5.4
 negative, §8.5.6.1
 future, §8.5.6.2
 accent of Sg participle, after (66) in §3.3.1.3
 and Presuffixal α -Shortening, (107a) and (110) in §3.4.9.1
 of prefixally derived verbs, §8.5.8
 of augment verbs, §8.5.5
 not with Past kæld, §8.5.6.3
 adjectival, §8.5.7
 in subject focalization, §12.2.1

- partitive construction, (281.g-h) in
 §6.5.1, (777) in §12.3.8,
 (779.d) in §12.3.9
- Passive (verb), §8.2
- Past
 preverbal particle *kælá*, §9.6.4
 effect of *kælá* on verb ablaut
 §3.5.3.1
 no participle after *kælá* §8.5.6.3
- perfective system (verbs), §7.2.2
 vocalic melody, (82.b) and (84) in
 §3.4.3.2
 and Presuffixal α -Shortening
 (108-9) in §3.4.9.1
 no prefix with adjectival verb
 §7.3.1.11
- Perfective Negative, §7.2.2.3
 phonology of V-final verb (66) in
 §3.3.1.3
 in a prohibitive construction
 §7.2.5.3
- Perfective Positive (PerfP) §7.2.2.1
 phonology of V-final verb (65)
 and (67) in §3.3.1.3
 in conditional antecedent
 §13.9.1-2
- Plural (noun)
 ablaut plural melodies, (82.a) and
 (83) in §3.4.3.2
 VV-Contraction and accent (68) in
 §3.3.1.3
 prefixes, §4.1.2.1
 suffixes, §4.1.2.6
 ablaut plural without suffixes
 §4.1.2.15
 mixed suffixal-ablaut plural
 §4.1.2.14
 accent in ablaut plural §4.1.2.22,
 §4.1.2.24
 suppletive, §4.1.2.25
 with pronominal particle *ðdd*
 §4.1.2.28
- Plural Final-V Deletion, §4.1.2.24
- Plural Medial-V Shortening §4.1.2.24
- possession
 ordinary nominal possessors,
 §5.2.1
 inalienable nouns, §5.2.3
 $\sqrt{1}$ 'have', §7.3.2.12
 predicate genitive, §9.4
 n plus clause, §13.10
 pre-ablaut reconfiguration (*see*
 "ablaut")
- Pre-Augment V-Shortening, (115) in
 §3.4.9.2
- predicate genitive, §9.4
 focalized equivalent, (753.a) in
 §12.2.6
- Prefix Reduction (nouns), (127) in
 §3.5.1, §4.1.2.1
 and Short-V Harmony, §3.2.6.1
- Prefixal t-Deletion (35) in §3.2.1.5
 §7.4.1.2
 not with Fe prefix t-, §4.1.2.1
- prepositions, Chapter 6
 pronominal suffixes with, §6.2
 compound prepositions, §6.6
 cliticized prepositions, §12.1.4
 relativization of PP complement,
 §12.1.4
 focalization of PP complement,
 §12.2.3
- Presuffixal α -Shortening, (112) in
 §3.4.9.1
- prohibitives
 Prohibitive stem, §7.2.5.3
 PerfN prohibitive, §7.2.5.3
 LoImpf prohibitive, §7.2.5.3
- pronoun (cf. "demonstrative")
 independent personal pronouns,
 (213) in §4.2
- purposive clause, §13.2
 'go in order to ...', §13.5.3
- Recent Anaphoric (demonstrative)
- Reciprocal, §15.2
 onset of reciprocal verb, §3.4.8.2
- reflexive, §15.1
- relative clauses (cf. "participle"),
 §12.1

- verb ablaut in definite relative, §3.5.3
- possessor and long-distance relative, §12.1.5
- reported speech and thought, §13.8
- Resultative (verb stem), §7.2.2.2
- no $\tilde{\chi}$ -pc1 with adjectival verb, §7.2.2.2
- resyllabification, §3.2.4, §3.3.2
- in short imperfectives (e.g. Imprt), (316.a) in §7.2.3.1, (355.b) in §7.3.1.3, (361.b) in §7.3.1.3, (370) in §7.3.1.5, (399) in §7.3.1.15
- in causative ShImpf and VblN, (462.b,d) in §8.1.6
- in mediopassive ShImpf and VblN, (486.b,d) in §8.3
- in LoImpfP, (334.g) in §7.2.5.1, (399) in §7.3.1.15
- in LoImpfN, (338.d) in §7.2.5.2
- in verbal noun, (370) in §7.3.1.5
- in agentive nominal, (569.f) in §8.8.1
- Rightward Accent Shift, (132) in §3.5.3.2
- in LoImpfP definite participle, (505) in §8.5.3
- in non-subject relative clause, (717.b) in §12.1.2, (728.a,c) in §12.1.4
- root (stem consonants only)
- ǰ and ʦ, §3.1.1.4
- Schwa Epenthesis §3.2.5
- semivowel (cf. “dissimilation,” “vowels”)
- loss of nonfinal, §3.1.1.10
- loss of stem-final, §3.1.1.9
- nonlexical, before Pl suffix, (180) and (184.c-d) in §4.1.2.14
- æwwæC- for PerfP /-owæC-/, (378) in §7.3.1.8
- CvyCu- versus -CuCu-, §7.3.2.9-10
- √f versus √fw ‘(day) break’, §7.3.2.15
- √wrx versus √rx ‘be yellow’, §7.3.2.4
- Short Imperfective (ShImpf) stem, §7.2.3.1
- melody, (82c) and (85) in §3.4.3.2
- with Future particle, §9.6.3
- in purposives, §13.2.1
- in add-on small clauses, §13.4
- in counterfactual consequent, §13.9.2
- short imperfective system, §7.2.3
- Short-V Harmony, (46) in §3.2.6.1, or (50) in §3.2.6.2
- and Prefix Reduction, §3.5.1
- in ShImpf verb, (360.c-d) in §7.3.1.3
- in FePl imperative, §7.4.3
- Sibilant Harmony, §3.2.2.2
- in causatives, (451) in §8.1.2
- Singular prefix (nouns) §4.1.2
- spatial relations (cf. “locational predicate”)
- prepositions, §6.5-6
- stem-extension (nouns) before suffix
- before FeSg -t, §4.1.1.4
- before Pl -æn, -en, §4.1.1.6
- Stem-Final Gemination (nominals), (71) in §3.3.2
- Stem-Final /A-Deletion, (29) in §3.1.2.4
- forces resyllabification, §3.2.4
- and Default Accentuation §3.3.1.2
- in short imperfectives, (314.g-k) in §7.2.3.1
- in verbal nouns, (555) in §8.6.1.4
- Stem-Initial Syncope (cf. “Syncope”), (101) in §3.4.8.1, cf. (52-3) in §3.2.7.1
- and vocalic melody, §3.4.6
- and V-Insertion, §3.4.8.1
- Stem-Initial V-Insertion, (99) in §3.4.8.1
- not in causative short imperfective, §3.4.8.2

- and C₁-Gemination, (102) in §3.4.8.1
- subject (cf. "Subject Prefix Omission"), §9.1.1
 - subject pronominal affix (verbs), §7.4.1
- Subject Prefix Omission, (447) in §7.4.2
- superheavy stem, (79) in §3.4.1.4
- suppletion
 - VblN and long imperfective verb, (561) in §8.6.3
- surface vocalic sequence, §3.4.3.1
- Syncope (cf. "Stem-Initial Syncope"), (56) in §3.2.7.1
 - with Pl -an, §4.1.2.14
 - medial in ablaut plural, §4.1.2.22, (174-5) in §4.1.2.13
 - in onset of Pl noun, (204.b) in §4.1.2.22, (206.c-d) in §4.1.2.24
 - and Accent Reattachment, §4.1.2.22
 - æCC- for -əCəC- (dialectal), §7.3.1.1
- templatic ablaut (*see "ablaut"*)
- tense (*see "Past," "Future"*)
- time
 - days of the week, §5.1.2.9
 - temporal adverbials, §13.1.1.1
 - 'begin' and 'cease', §13.5.2
 - 'do a lot', 'do many times', §13.5.5
 - 'repeat', §13.6.2
 - 'end up (doing)', §13.6.3
 - 'do frequently', 'keep doing', §13.6.4
 - 'have just', §13.6.6
 - 'soon', §13.6.9
- topicalization, §11.1
- u-Spreading, (119) in §3.4.9.3
 - in plural VblN, (166-7) in §4.1.2.12
 - in short imperfective, (318) in §7.2.3.1, (403) in §7.3.1.1.6
 - in long imperfective, (334.e-f) in §7.2.5.1, (374.c) and (375.c) in §7.3.1.7, (394.c) in §7.3.1.14, possibly (367) in §7.3.1.3, (402.c) in §7.3.1.16
 - i...u in bisyllabic causatives, (455.c) in §8.1.4, (461.c) in §8.1.5
 - u...u in bisyllabic VblN's, (554) in §8.6.1.4
- verbal nouns (VblN), §8.6
 - masculine and feminine, §8.6.1
 - negative, (539) in §8.6.1
 - partly homophonous to Instrumental, (581) in §8.11
 - verbs with VblN complements, §13.5
- verbs
 - stem subsystems, (307) in §7.2.1
 - with Augment -t-, §7.1.1
 - phonology of onset, §3.4.8.1-3
 - voice (valency) types, §9.1.1
 - ambi-valent, §9.1.3
 - verb clefting, (752) in §12.2.5, (744) in §12.2.1, (785.b) in §12.3.10
- V-Height Compromise (perfective verb), (98) in §3.4.7
 - with -(C)vCvC- and -(C)vCv-, (375) in §7.3.1.7
 - with, -m-vCvC- and -m-vCv-, (484) in §8.3
 - with causative -s-vCvC-, (455) in §8.1.4
 - not with causative -s-vCvCvC-, (469.a) in §8.1.7
- V-Lengthening (verbal nouns), (165) in 4.1.2.12
- V-Shortening, (207) in §4.1.2.24
- vocalic prefix (nouns), §4.1.2.1
- vocalic melody (*see "melody"*)
- vowels, §3.1.2
 - full and short, §3.1.2
 - mid-height, §3.4.3.1
 - schwa, §3.1.2

- deletable stem-final /t/ and /A/,
 §3.1.2.3, (353-4) in §7.3.1.3
- u/əw and i/əy, §3.1.2.5-7, §4.1.2.6,
 §8.6.1.4, §8.11
- spreading of u to right (verbs),
 (119) in §3.4.9.3
- Sg/Pl stem alternations, §4.1.2.9-
 11, (181) in §4.1.2.14
- ÿCvC- versus -CÿC- verb,
 §7.3.1.1
- C- versus Cə- subject prefix,
 §7.4.1.1
- V-to-C mapping, (180) in §4.1.2.14
- VV-Contraction, §3.2.3 (summary
 §3.2.3.5)
 and Default Accentuation,
 §3.3.1.3, (172) in §4.1.2.13,
 §8.5.2
- exceptions to contraction, §3.2.3.3
 in suffixal plurals of nouns, (39) in
 §3.2.3.3
- w-medial -uwvC- verbs, (377-8) in
 §7.3.1.8
- w-extension
 causative verbs (-svw-), §8.1.1
 passive verbs (-tvw-), §8.2
- χ-Erasure, (136) in §3.5.3.3, (171) in
 §4.1.2.13
 in LoImpfP definite participle,
 (505) in §8.5.3
 in Pl of VblN, (555) in §8.6.1.4
 in Pl of agentive, (569.f-g) in
 §8.3.1
 in non-subject relative clause,
 (720) in §12.1.2, (728.d) in
 §12.1.4
- χ̄-pcl Erasure, (130) in §3.5.3.1
 in Reslt definite participle, (500) in
 §8.5.2
 in LoImpfP definite participle,
 (503) in §8.5.3
 in non-subject relative clause,
 (717) in §12.1.2, (728.a-d) in
 §12.1.4
- suspended with à plus adjective,
 (740.b) in §12.1.6.3
- y-extension
 Mediopassive verbs (-nvy-), §8.3
- y-Insertion (numerals), (226) in
 §5.1.2.1

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