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Noun class semantics in Atlantic languages

1 Introduction

Noun class (NC), also referred to as or subsumed under the notion of ‘gender’, is here understood ‘as a morphosyntactic notion [that] is defined as a particular type of nominal classification in which a partition of the set of nominal lexemes into subsets manifests itself in agreement mechanisms in which nouns act as controllers’ (Creissels this volume a). The functions of such systems can range from semantic ones such as lexicon expansion to syntactic functions like reference tracking and the conveying of definiteness and specificity in the pragmatic domain (see Contini-Morava and Kilarski 2013). In this chapter I present key aspects of semantic parameters observable in Atlantic languages, including the semantic domains that can be identified as underlying the classification of nouns in these languages, such as the productive use of noun class morphology for noun formation, and the mostly abstract semantics of noun class and agreement markers in headless constructions. For a list of languages and sources used in this paper, see Table (57).

The characteristics of the noun class systems of the Atlantic languages discussed in this chapter are of typological and theoretical importance but remain largely underresearched. This is partly due to a scarcity of data on Atlantic languages. Until recently only the very largest languages, like Fula, Wolof, and Temne, had solid descriptions, grammars, and dictionaries. Fortunately, a growing number of descriptions of Atlantic languages and their noun class systems have become available during the last decade, making it possible to formulate new hypotheses on many aspects of these languages, including noun class semantics, for the first time.

My approach to noun class semantics takes account of the full paradigms, i.e. the totality of number-distinguishing forms¹ (see section 2.2). Most nouns have a singular and plural distinction, but some categories of nouns do not have a number distinction at all, and some languages in the Atlantic area have a three-way number distinction with singular, plural, and

¹ What is called ‘paradigm’ here is elsewhere referred to as ‘gender’, although I avoid this term in this context because of its ambiguity, as the term ‘gender’ is also commonly used as an alternative term to ‘noun class’.

collective forms. In this article I adopt a constructional approach to noun classification, assuming that noun class is not an inherent feature of stems or roots. Noun class morphology is here considered as a constructional frame that interacts with roots syntactically and semantically. Noun class is therefore not merely considered an indicator of a stem's nounhood or a manifestation of its inherent meaning, but rather as playing an active part in forming nouns from syntactically underspecified roots, and contributing essential semantic content in the process (section 2.3).

Section 3 of this chapter presents data on semantic categories relevant for noun class semantics drawn from the existing literature and from my own research on Bainounk Gubëeher.² In sections 4 and 5, I address issues surrounding the productive use of noun class morphology with stems that are not purely nominal. Many of the languages discussed in this chapter allow a combination of agreement marking on pronominal stems, whereby the noun class conveys temporal or locative semantics. The combination of noun class morphology with roots that are otherwise compatible with verbal morphology enables the formation of a variety of locative nouns, agent nouns, infinitives, manner nouns, etc. The form-meaning correspondences between the noun classes and the meaning of the formed nouns provide revealing insights into the semantics of noun class. Section 6 focuses on systemic aspects of noun class semantics, such as consonant mutation, animacy agreement, and the choice of affix type (prefixes versus suffixes). The chapter concludes with case studies on contact effects on noun classes from a semantic perspective (section 7). For Bainounk Gubëeher, Bainounk Gujaher, Jóola Eegimaa³, Jóola Kujireray, Manjaku, and Wolof, the Latin-based orthography codified for Senegalese languages is used. The symbols /c/, /j/, /ŋ/, and /x/ correspond to their IPA values, while the following symbols diverge

² I express my gratitude to the Volkswagen Stiftung for having funded research on the DoBeS project 'Pots, plants and people' (2010–2013), led by Friederike Lüpke, within which I conducted research on Bainounk Gubëeher as a PhD student and as a postdoctoral researcher. I also thank the Le ver hulme Foundation for providing funding for the research project 'Crossroads – investigating the unexplored side of multilingualism', hosted at SOAS and led by Friederike Lüpke. I was employed as postdoctoral researcher working on multilingualism involving Gubëeher and neighbouring Jóola languages in the Crossroads Project from 2014 to 2016.

³ Jóola Eegimaa is also known as Jóola Banjal or Jóola Gusilay. In this paper it refers to all the varieties spoken in the villages lying within the area known as Mof Ávvi, approximately 20–30 km west of Ziguinchor.

from the IPA as explained: ě [ə], ñ [ɲ] é [e], e[ɛ], ó [o], o [ɔ]. Vowel length is marked by double vowels.

1.1 Atlantic languages

The term ‘Atlantic’ is currently undergoing revision and is therefore slightly ambiguous. The classic model of the Atlantic languages was established by Greenberg (1963) and Sapir (1971), based on lexicostatistics. The Greenbergian model stipulates three subphyla within Atlantic which have been believed to form a genetically related unit within the larger Niger-Congo phylum: North Atlantic, South Atlantic (or Mel), and the outlier Bijogo. This classification, as well as the genetic relationship between languages of these subphyla, is contested. Future research will have to establish the impact of areal diffusion as a factor for conditioning shared features between Atlantic and Mel. Here, I use a revised model proposed by Pozdniakov and Segerer (this volume) (see also Creissels this volume a), that proposes splitting Atlantic into two independent branches of the Niger-Congo phylum, namely Atlantic and South Atlantic (or Mel). The revised Atlantic family is comprised of Bak and North Atlantic languages, which in turn consist of various clusters of more closely and distantly related languages (see Table (57) in the Appendix). In Pozdniakov and Segerer’s model of Atlantic, the Mel languages have no close genetic relationship to the remainder of the Atlantic languages, apart from the fact that they belong to the Niger-Congo phylum. In this paper I use Pozdniakov and Segerer’s model of Atlantic and the terminology for the branches and subdivision proposed. However, I extend the scope of this chapter to include languages from the Mel group, in keeping with the areal approach of this volume.

1.2 Nominal classification

Noun class systems are a defining feature of both the Greenbergian and the revised Atlantic language family. Noun class is overtly or covertly expressed on the noun through affixes and/or stem alternation. Most of the languages of the Greenbergian Atlantic branch of Niger-Congo have noun class systems, or at least can be assumed to have had noun class systems at some earlier stage of their history (see Diagne 2015 on Cangin languages, which do not have noun classes synchronically). The majority of Atlantic languages have noun class prefixes, although suffixes are attested in all varieties of Fula⁴ and in Kisi. Some Atlantic languages, such as Fula, Sereer, Kobiaana, Kasanga, and the languages of the Tenda group (Konyagi, Basari, Bedik) have complex patterns of consonant mutation grades, associated with specific noun classes. Noun class triggers agreement within the noun phrase with determiners, demonstratives, and other attributes, and in some cases outside of the noun phrase in the form of subject agreement on verbs. For a more detailed definition of noun class systems and an overview of general typological properties of noun class systems in the Atlantic area, see Creissels (this volume a).

1.3 Noun class systems and noun class semantics in Niger-Congo languages

Research on noun class systems has so far focused mainly on morphological, syntactical and typological questions (Aikhenvald 2003; Grinevald 2000; Senft 2000; Craig 1986). A functional perspective on noun class is presented by Contini-Morava and Kilarski (2013), discussing a variety of semantic and discourse functions of noun class and classifier systems. They show that both noun class and classifier systems have semantic as well as discourse functions, although these might manifest differently. Among the semantic functions attested for noun class systems, we find lexicon expansion, affective value, and

⁴ Throughout this paper Fula is used as a hyperonym for a cluster of related languages/language varieties that are spoken across the Sahel from Senegal to Cameroon and beyond. Fula (also known as Fulani) is the English equivalent of the term Peul(h), mostly used in the French literature. Whenever individual varieties, like Maasina Fulfulde, Aadamaawa Fulfulde, Gombe Fula, or Fuuta Jaloo Pular, are discussed, I use the term given by the particular author whose data I present.

individuation. Lexicon expansion via word formation as a function of noun class systems in Atlantic is abundantly discussed in this paper, from a theoretical point of view in section 2 and supported by examples throughout the paper. Individuation is discussed in 3.6, while the affective value of noun class is briefly mentioned in 3.5, the section on diminutives and augmentatives. The discourse functions highlighted by Contini-Morava and Kilarski (2013) include reference tracking and reference management (i.e. matters relating to definiteness, focus, and specificity). Whereas reference tracking is mainly a syntactic function and as such is not discussed in this paper, issues connected to reference management are touched upon in section 6.1.

Within the Niger-Congo phylum, noun systems classes are frequent in Bantu, Gur, and Atlantic languages. Due to the long tradition of research on Bantu languages, noun classification as defined for Bantu has come to be regarded as prototypical for African noun class systems (Heine 1982; Aikhenvald 2003), whereas noun class languages from other Niger-Congo language families such as Atlantic or Gur have received less attention in the typological literature on noun classes. This bias has been noted by Grinevald and Seifart (2004).

The noun class systems found in Atlantic languages are very varied and complex, often in different ways from their Bantu cousins. Whereas Bantu languages are typically prefixing, Atlantic languages can have noun class prefixes or suffixes, and also feature very complex systems of consonant mutation conditioned by noun class. Atlantic languages also show much more variation within the languages of this family than Bantu languages do, for example in terms of the size of noun class systems and the types of agreeing targets. As a consequence, some morphological and semantic properties and patterns manifest more clearly in the Atlantic family than in Bantu languages.

The question of semantics in Niger-Congo noun class systems is still controversial. A strong focus on morphosyntax and historical-comparative aspects of Bantu noun class systems has left the field of the semantic functions of these classification systems rather little explored. However, a variety of different conceptions of classification and methodologies

have been applied to address the semantic content of noun class morphology, and the semantic principles underlying the partition of nouns into classes in Bantu languages. While some authors consider nominal classification to be a purely morphosyntactic device, and deny the relevance of any semantic criteria in the distribution of nouns across the various noun classes, at least for Bantu (Maho 1999; Katamba 2003; Idiata 2005), others concede that the division of concepts into noun classes in Niger-Congo languages may be based on semantic principles to some extent (Richardson 1967; Contini-Morava 1994, Crisma, Marten, and Sybesma 2011). A volume dedicated explicitly to noun class semantics in Atlantic is not yet available, and only a handful of theses or monographs are dedicated specifically to the issue in individual languages, such as Sagna (2008, 2010) on Jóola Eegimaa, Breedveld (1995a, 1995b) and Mohamadou (1994) on Aadamaawa Fulfulde, Cobbinah (2013) on Bainounk Gubéeher, and Watson (2015) on Jóola Kujireray; for an overview see Pozdniakov (2015), and for data on noun class semantics from a historical perspective see Doneux (1975).

2 Theoretical assumptions on noun class

I propose a perspective on nominal classification and specifically on semantic aspects of these systems informed by cognitive and constructional approaches.

2.1 Models of categorisation

The choice of framework underlying categorisation is highly relevant for the nature of the conclusions reached on the semantics of noun class systems. The so-called Aristotelian or classical model of categorisation is based on the assumption of binary and bounded features (see Taylor 1995 for a summary). Applied to nominal classification, this categorisation implies that semantic categories are defined according to a static number of necessary and sufficient conditions. This model does not allow fuzzy boundaries or mixed types; membership of a category is binary, and therefore all nouns are considered to be equally

valid members of a category, without gradation. Applied to noun classification, this means that it is expected that all nouns with the same noun class morphology will share the semantic features established as central for this class, and that no other class will contain items with any of those particular features.

A cluster of alternative models of categorisation have been developed based on the research of Eleanor Rosch (Rosch et al. 1976; Rosch 1978; Mervis and Rosch 1981; Rosch and Mervis 1975; Rosch 1973; Heider 1972) and adapted for linguistics mainly by cognitive linguists such as Lakoff (1987) and Langacker (1987, 1991). Using Wittgenstein's (1953) concept of *family resemblance*, these non-Aristotelian theories stipulate that members of a category are linked in a network of common features. Unlike in the Aristotelian model, categories can have one or more prototypes, defined as an abstract bundle of features. A category can have members that are more and less typical. Typical members have more of the prototypical features; less typical ones have fewer of the prototypical features. A common example is the higher prototypicality of a sparrow for the category of 'bird' than a penguin or an ostrich. These less prototypical birds lack some of the properties considered typical of a bird, such as the ability to fly, to have wings or to be of small size, but they are nonetheless members of the category 'bird'.

In its rigidity, the Aristotelian model of classification is not able to capture the intricacies of noun class systems and is now rarely applied to the study of noun class semantics, although some of its tenets still prevail due to the fact that it was the accepted standard for decades until the 1970s. Researchers using approaches based on family resemblance/prototype theory for their analyses of noun class semantics have had much better results.⁵ For Atlantic languages, models based on prototype theory have been applied to Jóola Eegimaa by Sagna (2008), who has established semantic networks with multiple

⁵ Cf. Moxley (1998) on Swahili. Studies based on psycholinguistic or cognitive approaches with either experimental or corpus-based designs include Palmer and Woodman (2000) on Shona, Hendriks (2001) on Southern Bantu languages, Selvik (2001) on Setswana, Contini-Morava (1994, 1996, 1997, 2000) on Swahili, and Spitulnik (1988) on ChiBemba. From a specifically acquisitional perspective, Demuth, Faraclas, and Marchese (1986, 1985) and Demuth (2000) write on acquisition and loanwords in Sesotho, and Zawada and Ngcobo (2008) on the mechanisms of noun class acquisition in Zulu. The historical studies conducted by Williamson (1989) on Proto-Niger-Congo and by Denny and Creider (1986) on Proto-Bantu have reconstructed the semantic content of noun classes to an idealised earlier stage of the language where noun classes are supposedly definable by single abstract criteria.

prototypes per noun class marker, based on experimental designs. Breedveld (1995a, 1995b) has established semantic networks based on prototypes and family resemblance for Maasina Fulfulde. Cobbinah (2013) and Watson (2015) have applied construction-based, cognitive versions of the prototype model to Bainouk Gubëeher and Jóola Kujireray respectively.

2.2 A paradigm-based approach to noun classification

Although meaning can potentially be attributed to single noun classes, semantic content manifests itself more clearly in the paradigm, defined here as the totality of affixes associated with a specific meaning. The examples in Table (1) from Jóola Kujireray show nouns that occur in pairs and triads, and nouns that do not have a number distinction, like the infinitival form *ku-jel* ‘to insult’, and other abstract nouns and mass nouns.

Table (1) Related paradigms in Jóola Kujireray (Watson 2015: 236)

NC Singular	NC Plural	NC Collective	Example		Semantic domain	Number of items
<i>ka-</i>	<i>ku-</i>	/	<i>ka-at/ku-at</i>	‘leg’	extended and round cross-section	8
<i>fù-</i>	<i>ku-</i>	/	<i>fù-mango/ku-mango</i>	‘mango’	round items, fruits	141
<i>fù-</i>	<i>ku-</i>	<i>ba-</i>	<i>fù-sah/ku-sah/ba-sah</i>	‘bean’	small and round	12
/	/	<i>ku-</i>	<i>ku-jel</i>	‘to insult’	plurality/communication?	10

The majority of stems in Kujireray, like *mango* ‘mango’ in Table (1), are compatible with paired paradigms encoding a singular-plural distinction. Some stems, like *sah* ‘bean’, combine with triadic paradigms to express a three-way number distinction. These items use noun class affixes to encode singular, count plural, and collective forms. The semantics of these collectives depend to some extent on the characteristics of the referent or the way the referent is conceptualised, and may function as a mass plural, a collective plural, or simply

as the unmarked plural for small items that usually occur in a large number, like grains, small insects etc. (see for a detailed discussion of triadic paradigms).

As can be seen in Table (1), attributing semantic content to paradigms instead of to single noun classes allows for a finer gradation of semantic difference. The noun class prefix *ku-*, in Joóla Kujireray, is compatible with paired and triadic paradigms, as well as with single-class items. The semantic associations of the prefix *ku-* on its own remain quite unspecific or heterogeneous; the only semantic parameter that can be identified as being shared by a large proportion of nouns prefixed with *ku-* is ‘roundness’. Basing the assessment of the noun class semantics of the prefixes on the full paradigms, a much more fine-grained and specific picture emerges, allowing us to distinguish long items with a round cross-section, small and round items usually occurring in small quantities, and other round items, including most fruits.

In many Atlantic languages, roots can combine with various paradigms, creating distinct nouns with related meanings. The totality of compatible paradigms is here called the paradigmatic network. Table (2) shows an example of a paradigmatic network that involves the derivation of language terms and group terms from roots referring to ethnic divisions. Many Atlantic languages allow the use of one root with various paradigms to refer to a language, an ethnic group, a locality inhabited by that group, etc. The Temne language is very rich in this respect:

Table (2) Paradigmatic network of items in Temne (Yillah 2011: 75)

NC paradigm	Root	Gloss
<i>kí-</i>	<i>ʒèmne</i>	‘Temne language’
<i>rí-</i>		‘Temnehood’
<i>má-</i>		‘Temne fashion or manner’
<i>i-/à-</i>		‘Temne person/people’

A paradigm-based approach has been applied consistently to Bāinounk Gubēeher (Cobbinah 2013), Jóola Kujireray (Watson 2015), and Bāinounk Gujaher (Lüpke this volume), and is called for by Kihm (2000) for the analysis of the Manjaku noun class system. Fudeman (1999) also points out that a paradigm-based approach would be more fruitful for Balant-Ganja than one based on individual prefixes, although she opts for a single-class mode of presenting noun classes in this language for better compatibility with earlier descriptions. Pozdniakov (2009) remarks that semantically well-established paradigms can be mixed, in order to express that a noun has characteristics of both of them, offering an additional dimension of semantic classification. In such a case, the singular would refer to one specific paradigm with its semantic load, and the plural to another one, which adds a further nuance to the noun thus classified.

2.3 A constructional approach to noun classification

In many Atlantic languages, lexical roots can combine with more than one noun class or noun class paradigm. This phenomenon, which has been labelled ‘noun class shift’ by Crisma, Marten, and Sybesma (2011), or ‘variable classification’ by Contini-Morava and Kilarski (2013), offers the possibility of creating new nouns in a productive fashion and thus expanding the lexicon. Additionally, roots throughout the Atlantic phylum are highly flexible in terms of whether they occur in nominal, verbal or adjectival frames (discussed in Kihm 2000 for Manjaku; Watson 2015 for Jóola Kujireray; Cobbinah 2013 for Gubēeher; Bondéelle 2015 for Wolof), without the use of any further derivational morphology. An example for this is the Manjaku root *lik* in Table (3), which is compatible with several noun class paradigms, and also with nominal and verbal morphology.

Table (3) The paradigmatic network of the root *lik* in Manjaku (Kihm 2000)

NC paradigm	Root	Gloss
<i>m-</i>	<i>lik</i>	'water'
<i>ka-</i>		'juice'
<i>pě-/i-</i>		'well/s'
<i>pě-</i>		'draw water from well'

In the absence of any derivational morphology, it is difficult, if not impossible, to determine the direction of derivation, or to determine any of the nouns sharing the same root as being more basic than any other. In consideration of these facts, I adopt a constructional approach (Goldberg 1995), treating roots as underspecified with regard to noun class, as well as to syntactic category. Noun class morphology is therefore considered, in this account, to form nouns from syntactically underspecified roots, and to add meaning to semantically underspecified roots. Whether this is just a convenient solution for the description, or whether it reflects a deeper essence of noun classification, cannot be answered here.

This constructional character of noun class systems is mentioned anecdotally for many Atlantic noun class languages, among others by Childs (2011) on Mani, in Table (4); see also Segerer (2015a: 143f) for examples from Jóola Keerak.

Table (4) Paradigmatic networks in Mani (Childs 2011: 133)

Root	Item	Gloss	Item	Gloss
<i>mɔ</i>	<i>ù-mɔ</i>	'breast'	<i>m̃-mɔ</i>	'mother's milk'
<i>bɛl</i>	<i>m̃-bɛl</i>	'palm nuts'	<i>ì-bɛl</i>	'palm nut clusters'
<i>wá</i>	<i>wá/ì-wá</i>	'palm tree/s'	<i>d̃-wá</i>	'palm leaf'
<i>cú</i>	<i>ì-cú</i>	'cooking pot'	<i>ù-cú</i>	'metal'

The noun class system of the Tenda language Konyagi is described by Santos (1996: 104) as also having solid semantic associations (Santos 1996: 173). In Konyagi it is possible to create nouns from a single root through combination with various noun class paradigms.

The nouns in Table (5) share the same root. Their different onsets are due to stem-initial consonant mutation (see 6.2 and McLaughlin (this volume) on consonant mutation).

Table (5) Paradigmatic networks in Konyagi (Santos 1996: 181)

Konyagi	Gloss
<i>i-yəká</i>	‘look at oneself’
<i>à-yəká</i>	‘surveillant’
<i>và-yəká</i>	‘surveillants’
<i>è-ncəká</i>	‘mirror’
<i>væ-ncəká</i>	‘mirrors/ glasses’
<i>yəká</i>	‘face’
<i>wè-yəká</i>	‘faces’
<i>i-yəká</i>	‘sorting utensil’
<i>vi-yəká</i>	‘sorting utensils’

The paradigmatic network of a root can offer insights into regular semantic patterns and correspondences between noun class paradigms and the roots they combine with. Table (6) shows an extended paradigmatic network from Gubëeher, which demonstrates the semantic contribution of noun class morphology to root semantics. As for the semantic contribution of the root *liin* to the nouns that are formed from it, there are two possibilities. Either it is semantically underspecified and conveys a broad sense of ‘something to do with weaving’, or it is polysemous between all the meanings in Table (6).

Table (6) The paradigmatic network of the root *liin* in Gubëeher (Cobbinah 2013: 331)

NC paradigm	Root	Gloss
<i>u-/ñan-</i>	<i>liin</i>	'weaver/s'
<i>sin-/ñan-</i>		'spider web/s'
<i>a-/a- (-ŋ)/bi-</i> ⁶		'spider/s'
<i>ran-</i>		'to weave cloth (Inf.)'
<i>bu-</i>		'to weave (Inf.)'
<i>ta-/ja-</i>		'cloth/s (plain white)'

The semantic contribution of the prefixes and paradigms to the semantics of the formed noun in the Gubëeher example becomes apparent. The paradigm *u-/ñan-* in Gubëeher is exclusively reserved for humans and is productively used to derive actor nouns, as in this example, to form the noun 'weaver'. The majority of items in the *sin-/ñan-* paradigm, here used to derive the noun for 'spiderweb' from the root *liin*, denote thread-like items. This paradigm is also used productively to derive terms denoting plant fibres, from roots belonging to the botanical domain. The paradigm *a/a(-ŋ)/bi* contains only insects and other small crawling animals. The robustness of this paradigm in terms of associated semantics becomes obvious here, as it clearly and unequivocally characterises the noun as belonging to the domain of small crawling animals, while the root specifies which insect is referred to. In this case the spider is referenced by its characteristic activity of weaving webs. The paradigm *ta-/ja-* is quite marginal but contains a few other types of cloth. The ease with which roots can be fitted into a variety of constructions which change their word class or their meaning in Gubëeher and other Atlantic languages (Watson 2015; Bondéelle 2015) makes the underspecification hypothesis more plausible. A conclusive statement on this matter is at the moment impossible to make.

In some domains, most notably the botanical realm, roots denoting plants have access to a whole set of paradigms used to productively derive a variety of plant parts and/or plant products from the lexical root (see 3.3.2). Extreme examples of lexical roots compatible

⁶ This is a triadic paradigm with two plurals, a count plural marked with a plural suffix and a prefixed mass plural. The full forms are: *a-liin* 'spider [singular]'/*aliin-eŋ* 'spiders [count plural]'/ *bi-liin* 'spiders [unlimited plural]'

with multiple paradigms are the so-called omniclass roots, attested for Bāinounk Gubēher, Manjaku (Segerer 2015b), and Buy (Doneux 1990); for a discussion of historical aspects of an omniclass root, see Pozdniakov (2015: 98f). The Bāinounk Gubēher root *no*, whose paradigmatic network is presented in Table (7), is semantically bleached to a general concept such as ENTITY, the more specific semantics of the noun being entirely contributed by the 14 noun class prefixes and 8 paradigms with which it combines.

Table (7) The omniclass root ‘no’ in different paradigms in Gubēher (Cobbinah 2013: 334)

NC paradigm	Root	Gloss	Main semantic domains associated with paradigm
<i>bu-/i-/di-</i>	<i>no</i>	‘fruit’	only fruits
<i>si-/mun-</i>		‘tree’	mostly trees and wooden objects
<i>a-/bi-</i>		‘insect’	only insects
<i>ran-/ñan-</i>		‘bad person’	amphibians
<i>ta-/ñan-</i>		‘bird’	cloth
<i>kun-</i>		‘palm wine’	
<i>gu-</i>		‘thing’	miscellaneous, hard objects, small objects, long objects
<i>ja-</i>		‘grass/organic material’	leaves, agricultural activities

The semantic contribution of noun class morphology in the above example is in no way random. For example, the paradigm *bu-/i-/di-*, which productively derives names of fruits from roots denoting botanical species in combination with the omniclass root *no*, refers to fruit in general without specifying the species. For a detailed discussion of the other paradigms in this example, see Cobbinah (2013: 334). The constructional and paradigmatic character of Atlantic noun class systems is highly relevant for an understanding of the semantic components of nominal classification, and will be illustrated throughout the paper in relation to various Atlantic languages and noun class-related phenomena.

3 Semantic categories of classification

Despite the absence of experimental data on noun class semantics in Atlantic languages (an exception is Sagna (2008), who uses novel word experiments in Jóla Eegimaa), many grammars and descriptions of these languages include at least anecdotal evidence of the semantic parameters of noun classes or noun class paradigms. It has to be remembered that the semantic criteria underlying nominal classification valid at an earlier stage of the language might not be active at a later stage. Noun class systems are to some extent lexicalised and consist of a multitude of layers, formed through millenia of vocabulary extension, loan integration, and semantic and formal reanalysis, all of which play a role in the idiosyncrasies, exceptions, and conflicting semantic criteria within a noun class or paradigm that are observable synchronically. Nevertheless, it can safely be stated that the noun class systems of all Atlantic languages have at least some degree of semantic underpinning. This section offers examples of some well-established semantic parameters underlying noun classes in Atlantic.

Distinct subsets of noun class paradigms reserved mainly for human beings or human-like beings are attested all over the Atlantic area (3.1), and also in the noun class systems of other Niger-Congo languages. Cases of specific classes for animals or types of animals are occasionally reported (3.2). Other semantic parameters which are stipulated to be relevant for the organisation of noun class systems in Atlantic are shape (3.3) and shape-based semantic distinctions within the botanical domains (3.3.2). Liquid classes are solidly attested in Atlantic and Niger-Congo (4). The use of diminutive and augmentative class paradigms, whether exclusively reserved for manipulating the size of an entity, or also associated with other semantic fields such as the speaker's attitude towards that entity, is discussed in section 3.5. Issues surrounding individuation, i.e. number marking, including collectives and singulatives, are discussed in section 3.6.

Semantic domains based on cultural conceptions are not discussed here, although cultural conceptions are claimed to underlie noun class semantics in Maasina Fulfulde (Breedveld 1995a, 1995b), and also in Sagna's (2008) account of Jóla Eegimaa. A potential drawback

for culturally defined criteria is that it is difficult to establish to what degree these criteria are the result of introspection by the analysing linguist, making post-hoc assumptions about highly layered systems that have evolved over large periods of time, and that are therefore only semantically transparent to a certain extent from a synchronic point of view (see also Dingemans's 2006 critique of Palmer and Woodman 2000).

3.1 Human noun class paradigms

Noun class paradigms and agreement marking exclusively reserved for humans are very stable across Atlantic. Table (8) shows examples of noun class paradigms that are mainly used for humans in various Atlantic languages.

Table (8) Dominant human paradigms in Atlantic languages

Language	Human NC paradigm(s)	Human NC agreement	Source
Baga Mandori	ɔ-/a-	ɔ-/a-	Seidel (this volume a): 13
Bainouk Gubëcher	u-/ñan- u-/in-	u-/in-	Cobbinah (2013)
Balant	ha-/bi- ø-/bi- ø-/gi-	ha-/bi-	Biaye and Creissels (2015)
Basari	anI-/bənI-	anI-/bənI-	Perrin (2015: 537)
Biafada	u-/bə-	u-/bə-	Bassène (2015)
Bijogo	o-/ya-	o-/ya-	Segeberer (2002: 100)
Jóola Kujireray	a-/u- a-/ku-	a-/ku-	Watson (2015); see Table (9)
Kobiana	ø/ʃa u/i	a-/i wo-/i-	Voisin (2015a: 349)
Konyagi	aI-/vəI	?	Santos (1996)
Laalaa	not always marked on noun	y-/b-	Dieye (2015: 95, 102)
Manjaku	na-/ba- a-/ba-	na-/ba-	Segeberer (2015b: 202)
Sereer	oII-/ øI-	ox/we	Renaudier (2015: 501)

Some Atlantic languages, such as Jóola Kujireray, presented in Table (9) have several human paradigms, reflecting social categories such as kinship, ethnic terms, or persons who are parts of a group (professional or otherwise). All of these items have semantic agreement (*a-* in the singular and *ku-* in the plural); see 6.3 for more information on animacy agreement in Atlantic languages.

Table (9) Summary of paradigms occurring with human nouns in Jóola Kujireray [*n* = 186] (Watson 2015)

Singular NC	Plural NC	Example		Semantic domain	Number of items
<i>a-</i>	<i>u-</i>	<i>a-are/u-are</i> <i>a-rem-a/u-rem-a</i>	‘woman’ ‘drinker’ > <i>rem</i> ‘drink’	exclusively human paradigm; used for deriving agent or actor nouns	> 50
<i>a-</i>	<i>ku-</i>	<i>a-som/ku-som</i> <i>a-pal/ku-pal</i>	‘paternal aunt’ ‘friend’	exclusively human paradigm; kinship and relations	5
<i>a-</i>	<i>e-</i>	<i>a-labe/e-labe</i> <i>a-Jóola/e-Jóola</i>	‘priest’ ‘Jóola’	exclusively human paradigm; ethnonyms, professions	> 10
\emptyset	<i>si-</i>	<i>pai/si-pai</i> <i>jei/si-jei</i>	‘father’ ‘mother’	parents (with human agreement), loanwords (with morphological agreement)	2 human
<i>e-</i>	<i>si-</i>	<i>e-mbot/si-mbot</i>	‘boy’	many non-human nouns and some socially marked humans	4 human

Terms denoting types of persons culturally considered as divergent or in some way special may occur in other paradigms, but are marked as human by triggering the agreement pattern associated with the human paradigm. In Mani (Childs 2011: 121), most human nouns are in the *wɔ/ŋa* paradigm (prefixed on the noun with *u-* or zero in the singular and *a-* in the plural⁷), as shown in example (1) below; however, a number of terms for persons with physical deformities have their singular in noun class *nyɛ* and are prefixed with *i-*, as shown in example (2). Other human terms like ‘policeman’, ‘old person’, ‘enemy’, ‘lover’ have the singular in the human class *wɔ* but form their plural in class *nyɛ*, as shown in example (3). As in Kujireray, all human nouns have agreement in the human paradigm, in this case *wɔ/ŋa*.

⁷ The nomenclature of classes in Mani is based on the form of the possessive, not the prefix on the noun (Childs 2011).

1. a) *Ø-bóbbó* b) *à-bóbbó*
 CL.wɔ-mute CL.ɲa-mute
 'mute person' 'mute persons'
 Mani (Childs 2011: 121)
2. a) *ì-nàmtá* b) *à-nàmtá*
 CL.nyɛ-crippled person CL.ɲa-crippled.person
 'crippled person' 'crippled persons'
 Mani (Childs 2011: 121)
3. a) *Ø-yáhù* b) *ì-yáhù*
 CL.wɔ-enemy CL.nyɛ-enemy
 'enemy' 'enemies'
 Mani (Childs 2011: 122)

3.2 Animals

In most Atlantic languages, designations for animals are spread out across various noun class paradigms and reflect the shape or size of the animals. It has been shown for Jóla Eegimaa that animals are classified by noun class according to their shape (Sagna 2008: 276). Many roundish types of birds and fish have their singular in the *fɪ*-class, which also contains round body parts, fruits, and other round items (see Table (15) in section 3.3 for examples). A few languages, however, have specific noun classes for animals in general or for specific types of animals. The South Atlantic language Mani has a noun class paradigm (*wɔ/sa*) uniquely reserved for animals (Table (10)), although other noun classes do also contain animal terms. Nouns in this paradigm trigger semantic agreement (see 6.3 for a discussion of animacy agreement in Mani).

Table (10) Some examples from the animal paradigm in Mani (Childs 2011: 124)

Singular (class <i>wə</i>)	Plural (class <i>sə</i>)	Gloss
<i>tərmà</i>	<i>sì-tərmà</i>	'tortoise'
<i>kóŋkólón</i>	<i>sì-kóŋkólón</i>	'millipede'
<i>kùlùn</i>	<i>sì-kùlùn</i>	'goat'
<i>lòntər</i>	<i>sì-lòntər</i>	'snake'
<i>nár</i>	<i>sì-nár</i>	'cow'
<i>pò</i>	<i>sì-pò</i>	'grey dove'

The Bak language, Manjaku, is also reported to have a class paradigm (*u-/ŋgə-*), which, despite being one of the most frequent paradigms in Manjaku, contains all animals. For the other items in the class, no semantic commonalities have yet been established (Seegerer 2015b: 202). The same holds for the related languages Pepel (Ndao 2014: 67) and Mancagne. According to Trifković (1969: 75), the Mancagne paradigm *u-/ŋ-* contains all nouns denoting animals, as well as nouns from a variety of domains such as celestial objects and phenomena, body parts, and abstract notions.

Table (11) Animals in Mancagne (Trifković 1969: 75)

Singular (class <i>u-</i>)	Plural (class <i>ŋ-</i>)	Gloss
<i>u-guk</i>	<i>ŋ-guk</i>	'hen'
<i>u-bob</i>	<i>ŋ-bob</i>	'termite'
<i>u-čöb</i>	<i>ŋ-čöb</i>	'fish'
<i>u-điiku</i>	<i>ŋ-điiku</i>	'partridge'
<i>u-θagal</i>	<i>ŋ-θagal</i>	'porcupine'

Gubëcher has two noun class paradigms uniquely reserved for specific types of animals. All nouns in the triadic paradigm *fà-/fà-(-ŋ)/ja-* are fish (see Table (12)); the triadic paradigm *a-/a-(-ŋ)/bi-* exclusively contains insects and small crawling animals (Table (13)).

Table (12) The *fā-/fā(-ŋ)/ja-* triad with suffixed plurals in Gubëeher (from Cobbinah 2013: 305)

Singular	Plural	Collective	Gloss
<i>fā-xat</i>	/	<i>ja-xat</i>	'fish'
<i>fā-susugen</i>	<i>fā-susugen-eŋ</i>	<i>ja-susugen</i>	'type of fish'
<i>fë-lóg</i>	<i>fë-lóg-oŋ</i>	<i>jë-lóg</i>	'type of fish'
<i>fā-ŋaja</i>	<i>fā-ŋaja-eŋ</i>	<i>ja-ŋaja</i>	'type of fish'
<i>fë-rój</i>	<i>fë-rój-oŋ</i>	<i>jë-rój</i>	'type of fish'

Table (13) Insects and small animals in the triadic paradigm *a/a (-ŋ)/bi* in Gubëeher (from Cobbinah 2013: 304)

Singular	Plural	Collective	Gloss
<i>a-yum</i>	<i>a-yum-oŋ</i>	<i>bi-yum</i>	'bee'
<i>a-dig</i>	<i>a-dig-eŋ</i>	<i>bi-dig</i>	'type ant'
<i>a-bembelut</i>	<i>a-bembelut-oŋ</i>	<i>bi-bembelut</i>	'butterfly'
<i>a-wux</i>	<i>a-wux-oŋ</i>	<i>bi-yux</i>	'mosquito'
<i>a-meh</i>	<i>a-meh-eŋ</i>	<i>bi-meh</i>	'termite'

The insect paradigm in Gubëeher is one of the most solid and unequivocal examples of the semantic contribution of noun class morphology on the paradigmatic level. As shown in Table (6) it can even be used to create insect names from roots denoting the main activity of that insect, such as *a-liin* 'spider' from the root *liin*, which is associated with the semantic domain of weaving. This fact would not emerge nearly as clearly if only the singular class was taken into account, as class *a-* contains nouns from many other domains. Only the combination of a singular in *a-* and an unlimited plural in *bi-* refers to the domain of insects and small animals. A detailed discussion of the role of animacy on the agreement nouns denoting humans and animals is provided in section 6.3.

3.3 Shape

Shape-based semantic parameters have been proposed as core semantic criteria in a large number of Atlantic noun class systems, including features such as round, long, string-like, and flat, in various combinations. In some languages, terms denoting body parts and animals are distributed across noun classes according to their shape. Shape-based parameters in noun class semantics have been proposed for other Niger-Congo languages as well; for Bantu, see Creider (1975), Zawada and Ncobo (2008), and Selvik (2001). Within Atlantic, the relevance of shape as a parameter underlying nominal classification in Jóola and Bāinounk languages has been demonstrated (see Sagna 2008; Watson 2015; Cobbinah 2013). Shape-based criteria are also active in other Atlantic languages, as these are often evoked even in concise sections on noun class semantics in grammatical descriptions.

3.3.1 Shape-based parameters

A detailed account of shape-based noun class semantics is provided by Sagna (2008, this volume) for Jóola Eegimaa. The analysis is based on experiments using novel words and an indefinite agreement-marked pronoun. Sagna shows that when prompted to invent names for novel objects, speakers of Eegimaa are sensitive to shape, including flatness, roundness, thickness, thinness, and longness. When prompted to describe objects in photographs, or refer to them with an indefinite pronoun, the noun class agreement they chose reflected the shape of the items. These shape-based parameters match the shapes of Eegimaa words that can be found in the relevant class (Table (14)). Other relevant criteria identified by Sagna are fragility, hardness, and flexibility.

Table (14) Noun class and shape in Jóola Eegimaa (Sagna 2008)

NC	Semantic parameter	Example	Gloss
<i>u-</i>	flatness (plural)	<i>u-giŋ</i>	‘chests’
<i>gu-</i>	roundness (plural)	<i>gu-nnu</i>	‘ears’
<i>fú-</i>	roundness, thickness	<i>fú-baloŋ</i>	‘football’
		<i>fú-lac</i>	‘shark’
<i>ga-</i>	flat, thin, wide	<i>ga-ppex</i>	‘mat’
		<i>ga-félej</i>	‘type of flat fish’

Many animal terms are not classified according to the type of animal they denote but according to the shape of the animal as round or flat. Sagna (2008: 275) provides a detailed description of the division of bird names into various noun classes, shape being the deciding factor.

Table (15) Birds and noun classes in Jóola Eegimaa (Sagna 2008: 275)

NC paradigm	Number of birds in paradigm	Percentage	Class semantics
<i>e-/su-</i>	18	24%	mixed sizes and shapes
<i>fú-/gu-</i>	13	17.3%	round birds, edible birds
<i>ga-/u-</i>	23	30.7%	large birds
<i>ju-/mu-</i>	21	28%	small birds
Total	75	100%	

Kommentiert [A1]: It would be good if this table and table 9 had the same format and equivalent information (so please calculate percentages for Kujireray, too).

Sagna’s (2008) findings about shape-based criteria underlying nominal classification in Jóola Eegimaa are confirmed by Watson (2015: 72, 236) for the closely related language Jóola Kujireray, where roundness as a semantic criterion plays a prominent role. This is also true for the Bāinounk languages Gubëcher, Guñaamolo, and Gujaher (Cobbinah 2013; Lüpke this volume). In the three languages Jóola Eegimaa, Jóola Kujireray, and Bāinounk Gubëcher, fruits share a noun class paradigm with other round items such as circle, tyre, sun, types of baskets, round animals, body parts, etc. It would be valuable to have this and other shape-based criteria for noun class semantics tested for a larger number of Atlantic

languages. In Gubëeher, noun class paradigms have high concentrations of items sharing shape-related characteristics. Long and hard items cluster in the paradigm *gu-/ha-*, while the paradigms *bu-/i-* and *bi-/i-* contain a large number of round objects (Cobbinah 2013: 277ff), such as *bi-nég* ‘sun’, *bu-hai* ‘circle’, *bu-baloy* ‘ball’, *bu-nin* ‘egg’, and several terms for round baskets and pots. The distribution of body parts across noun class paradigms reflects these shape-based criteria: long and hard or bony body parts cluster in the paradigm *gu-/ha-*, whereas round body parts or those with a round cross-section occur in the *bu-/i-* paradigm.

Table (16) *Shape and noun class: body parts in Gubëeher*

NC paradigm	Singular	Plural	Gloss
<i>gu-/ha-</i> long and bony	<i>gu-xunum</i>	<i>ha-xunum</i>	‘finger’
	<i>gu-huur</i>	<i>ha-huur</i>	‘elbow’
	<i>gu-meeñ</i>	<i>ha-meeñ</i>	‘hand’
	<i>gu-teep</i>	<i>ha-teep</i>	‘foot’
	<i>gu-huun</i>	<i>ha-huun</i>	‘bone’
	<i>gu-ril</i>	<i>ha-ril</i>	‘tooth’
<i>bu-/i-</i> round shape or cross-section	<i>bu-laax</i>	<i>i-laax</i>	‘buttock’
	<i>bu-ciñ</i>	<i>i-ciñ</i>	‘liver’
	<i>bu-gof</i>	<i>i-gof</i>	‘head’
	<i>bu-fil</i>	<i>i-fil</i>	‘penis’
	<i>bu-boŋk</i>	<i>i-boŋk</i>	‘thigh’
	<i>bu-mind</i>	<i>i-mind</i>	‘breast’ (cf. <i>mind</i> ‘milk’)

Compare also the paradigmatic network of the root *mañ*, semantically associated with metal/iron, in Table (17). The noun derived with the paradigm *gu-/ha-* refers to an iron post, confirming the association of this paradigm with long and hard objects.

Table (17) *The paradigmatic network of the root mañ ‘iron’*

NC paradigm	Root	Gloss
<i>bu-</i>	<i>mañ</i>	‘iron (substance)’
<i>sin-/ñan-</i>		‘iron thread’
<i>gu-/ha-</i>		‘iron rod’

More detailed analyses in these and other Atlantic languages could help to reveal whether shape is an independent semantic criterion or whether shape can be subsumed together with other parameters under more general notions, such as boundedness. Segerer (2002: 116–121) proposes ‘oblong’ and ‘pointed/sharp/small’ as shape-based criteria for Bijogo noun classes, while Diallo’s (2010) list of semantic criteria for noun classes features ‘long/sharp/circular things’, just to mention a couple of examples. Attempts at identifying more abstract criteria have been made by Mohamadou (1994) for Aadamaawa Fulfulde, considering semantic notions such as discreteness, density, and compactness.

3.3.2 Shape-based distinctions and lexical roots from the botanical domain

The geographic area in which Atlantic languages are spoken is a rural environment. Possibly due to the high relevance of agriculture and ethnobotanic knowledge in people’s daily lives for the purposes of construction, medicine, and food, languages spoken in this area allows for sophisticated distinctions in the botanical domain. The botanical domain is a very rich source for research into noun class semantics. In many Atlantic languages, lexical roots from the botanical domain are compatible with a variety of noun class paradigms, with productive and regular correspondences between the part of the plant that is referred to and the paradigm used for the creation of that noun. Shape and plant morphology are relevant criteria for the choice of language paradigm with which to form, from the lexical root referring to the plant species, the various nouns denoting plant parts.

The derivation of plant parts from a common root by inserting the root into different paradigms is described as productive for many Atlantic languages. Fruit and tree paradigms are attested in the majority of Atlantic languages, as can be seen in the examples provided by Santos (1996: 104) for the Tenda language Konyagi in Table (18). Unfortunately, it cannot be established from the available description of Konyagi whether fruits and round items occur in the same paradigm as they do in the Bainounk and Jóola languages mentioned above.

Table (18) Botanical paradigmatic network in Konyagi (Santos 1996: 180)

NC paradigm	Semantics of paradigm	Example with root <i>gwɔ́d</i> 'mango'
<i>æ III-/væ III</i>	tree	<i>æ-nkwɔ́d</i> 'mango tree' <i>væ-nkwɔ́d</i> 'mango trees'
<i>i II-/wae I</i>	fruit	<i>ì-gwɔ́d</i> 'mango fruit' <i>wæ-wɔ́d</i> 'mango fruits'
<i>yæ I</i>	leaves	<i>yæ-wɔ́d</i> 'mango leaves'

Wolof uses noun classes in a productive way to distinguish fruit, tree, the plural of both fruit and tree, and a collective plural of fruits (Table (19)).

Table (19) Botanical items in Wolof (Pozdniakov and Robert 2015: 628)

Root	NC	Gloss
<i>màngo</i>	<i>g</i>	'mango tree'
	<i>b</i>	'mango fruit'
	<i>y</i>	'mango fruits or trees'
	<i>j</i>	'mango fruits (collective)'

Mancagne also has a productive way of creating plant-related vocabulary, although the plural of trees and fruits is conflated, due to the fact that the two paradigms involved (*p-/m-* for fruits and *b-/m-* for trees) both have their plural in class *m-*.

Table (20) Botanical items in Mancagne (Trifković 1969)

Root	NC	Gloss
<i>~kaadu</i>	<i>p-</i>	'cashew fruit'
	<i>m-</i>	'cashew fruits or trees'
	<i>b-</i>	'cashew tree'

In Baïnouk Gubêeher, up to nine paradigms have so far been found to be involved in the formation of names for botanical species and parts of plants. Speakers of Gubêeher, which in this respect is representative of other Casamance languages and beyond, use the rich

noun class system of their language for the expression of highly differentiated folk taxonomies and to distinguish different parts of plants. The botanical species referred to is indicated by the lexical root, which can combine with several of these noun class paradigms in order to specify the part or type of the plant. Using different noun class paradigms allows speakers of Gubëeher to distinguish trees from vines, grasses, and low-growing bushes and shrubs. Different types of fruits are also derived from the root, with paradigms distinguishing comestible fruits growing on trees, ground-growing tubers, and hard and seed-like fruits. Other parts of plants, such as fibres, leaves, and resin, can also be derived from the same root. Additionally, there are terms for groups of plants, in some cases even distinguishing grown specimens from young ones. For most of these paradigms there is a strong semantic connection between the plant parts they refer to and shape-based distinctions in the same or related paradigms outside of the botanical domain. As suggested by the data in Table (21) (see Cobbinah 2013: 322 for a detailed discussion), the semantics of noun class paradigms used in the botanical domain to distinguish a multitude of plant parts and products is related to shape-based semantics in other domains.

Table (21) Paradigms of the botanical domain in Bainounk Gubëeher (Cobbinah 2013: 316)⁸

Singular NC	Plural NC	Collective NC	Semantics in the botanical domain	Semantics in other domains
<i>bu-</i>	<i>i-</i>	<i>di-</i>	edible fruits from trees	round objects in paradigm <i>bu-/i-</i>
<i>bu-</i>	<i>i-</i>	<i>ba-</i>	tubers/ground growing fruits	
<i>gu-</i>	<i>ha-</i>	<i>ba-</i>	kernels, hard inedible fruits, low plants	single object(s) which otherwise occur in large quantities (shells, beads);
<i>gu-</i>	<i>ha-</i>	<i>ja-</i>	small plants, grasses	parts of human or animal bodies (feathers, hair)
<i>si-</i>	<i>mun-</i>	<i>(ja-)</i>	tree	wooden objects
<i>sin-</i>	<i>ñan-</i>		fibre	stringlike objects, long objects, metaphorical extension of string
		<i>ti-</i>	resin	
		<i>ja-</i>	leaves/roots/wood	collectives of small items that usually occur in large masses
		<i>ba-/ja-</i> (+plural suffix)	group of trees	collective and abstract nouns

One might go as far as to suggest that the botanical domain serves as a blueprint for noun class semantics in other domains. Berlin (1977) proposes that shape-based semantics could very well derive from the use of noun classes in creating vocabulary for plant parts, mapping the shapes of those plant parts onto other domains (e.g. fruit paradigms are extended to round items, tree paradigms to long items, etc.). Therefore, the elicitation of data on a variety of plant parts promises to be an extremely beneficial road towards a better understanding of noun class semantics in other domains, too.

Not all lexical roots in Gubëeher are compatible with all of the paradigms, depending on usefulness of a particular plant part and whether it is a feature of that species at all. The mangrove, for example, is a culturally relevant bushy type of plant used mainly for construction. It has hard fruits which are used for making jewellery, and grows in colonies in marshy wetlands. As shown in Table (22), four of the paradigms this root occurs in refer to spatial configurations of this plant, the single plant being distinguished from a bush

⁸ The forms labelled as plural are used to refer to small amounts of the referent, usually qualified by a numeral. Collective forms are used for large or unspecified amounts.

consisting of several single plants and also from an expanse of mangrove plants, distinguishing between young and old plants.

Table (22) The paradigmatic network of the root *rac* 'mangrove' in Gubéeher (Cobbinah 2013: 134)

NC paradigm	Root	Plural suffix	Gloss
<i>si-/mun-</i>	<i>rac</i>	/	'mangrove plant'
<i>gu-/ha-/ba-</i>			'mangrove fruit'
<i>bu-</i>			'mangrove bush'
<i>ja-</i>			'(sticks of) mangrove wood'
<i>ba-</i>		<i>-aŋ</i>	'mangrove grove'
<i>ja-</i>		<i>-aŋ</i>	'grove of little mangrove trees'

In elicitation, a certain amount of variation for little-used items can be noted, which indicates that speakers use the noun class system as an ad-hoc classificational tool, classifying the referent rather than the noun. This is unusual, as in the literature on noun classification it is generally agreed that it is nouns as linguistic concepts that are classified, and not the real-world entities that they denote (Greenberg 1978; Corbett 1991; Aikhenvald 2000; Creissels 2001, among others). During an elicitation session covering all entries related to the botanical domain, for example, some consultants classified low bushy plants as trees and used the tree paradigm *si-/mun-*, while others treated them as herbs and used the *gu-/ha-* paradigm. The name for the tomato plant, with the root *mentej*, was thus provided as *si-mentej* as well as *gu-mentej* by different speakers. This could also be due to dialectal variation, but especially with little-used terminology or rare plants, consultants varied substantially and seemed to use their knowledge of the semantic value of the botanical noun class paradigms in order to derive nouns on the go for these plants or their parts from the lexical root.

3.4 Liquids

A specific class that groups liquids is also one of the most robust cognates across Niger-Congo (Creissels 2015: 45). As can be seen in Table (23), the bilabial nasal is well attested

across Atlantic and Mel languages, although some languages have liquid classes of different phonetic shapes, as in Konyagi, Sereer-Sin, Konyagi, and varieties of Fula.

Table (23) *Liquid classes in selected Atlantic languages*

Liquid NC	Language	Example
<i>ma-</i>	Gola	Koroma (1994: 27)
<i>ma</i>	Kisi	Childs (1995: 165f)
<i>wæ II, wæ III</i>	Konyagi	Santos (1996: 154)
<i>mu-</i>	Jóola Kujireray	Watson (2015: 267)
<i>m-</i>	Mancagne	Trifković (1969: 76)
<i>m-</i>	Bijogo	Segerer (2002: 120)
<i>ma</i>	Mani	Childs (2011: 129)
<i>mun-</i>	Bainouk Gujaher	Lüpke (this volume)
<i>mun-/di-</i>	Bainouk Gubêeher	Cobbinah (2013)
<i>fô-</i>	Sereer Siin	Renaudier (2015: 503)
<i>ma-</i>	Biafada	Bassène (2015: 482)
<i>-dân</i>	Futa Jallon Pular	Diallo (2010)
<i>-dâm</i>	Aadamaawa Fulfulde	Mohamadou (1994)
<i>m</i>	Wolof	Pozdniakov and Robert (2015: 632)
<i>maI-</i>	Kobiana	Voisin (2015a: 360)

In some Atlantic and Mel languages, a noun class that has a high concentration of nouns denoting liquids also extends to include other substances, especially masses like salt and sand (Segerer 2002: 120f).

Table (24) Examples for nouns in the ‘liquid’ classes in Atlantic and Mel languages

Language	Liquid NC	Example	Source
Gola	<i>ma-</i>	<i>ma-mai</i> ‘water’ <i>mahēi</i> ‘salt’	Koroma (1994: 27)
Kisi	<i>ma</i>	<i>mèŋ</i> ‘water’	Childs (1995: 165f)
Konyagi	<i>wæ III</i>	<i>wàmbàlè</i> ‘honey’	Santos (1996: 154)
Jóola Kujireray	<i>mu-</i>	<i>musis</i> ‘salt’ <i>mulo</i> ‘salt water’	Watson (2015: 267)
Mancagne	<i>m-</i>	<i>m~tulan</i> ‘dew’	Trifković (1969: 76)
Bijogo	<i>m-</i>	<i>mme</i> ‘honey’ <i>nkidiŋ</i> ‘palm oil’	Segerer (2002: 120)

In Kisi, for example, liquids, juicy fruits, pointed objects, and items with a semantic connection to these domains can be found. Konyagi’s liquid noun class also contains nouns for the names of languages and for unbounded masses.

3.5 Dimension

A productive way of deriving nouns of unexpectedly large (augmentative) or small (diminutive) size can be found in many Atlantic languages. There are differences between languages in terms of how productive the pattern is, and whether the class paradigms involved in the formation of these forms occur elsewhere in the system or are reserved exclusively for these purposes. The Bainouk languages also have specialised diminutive and augmentative paradigms maintaining singular/plural distinctions which are fully productive on concrete nouns; Table (25) shows these for the example of Guñaamolo.

Table (25) Dimensional derivations in Bainouk Guñaamolo (Bao-Diop 2013: 128ff)

NC paradigm	Function
<i>ko-/ño</i>	diminutive
<i>da-/din-</i>	augmentative

Jóola languages use a range of noun class paradigms with diminutive and augmentative functions. While, in Jóola Eegimaa, the diminutive paradigm *ji-/mu-* is fully productive, the noun classes used with augmentative semantics to derive oversized items are not entirely productive and are mostly used in a conventionalised way, often with affective overtones (Sagna 2008: 281).

Table (26) Examples of diminutive and augmentative noun class in Jóola Eegimaa (Sagna 2008: 224)

Item	Gloss	Function
<i>a-ññil</i>	‘child’	regular noun class
<i>fi-ññil</i>	‘fat child’	augmentative
<i>ga-ññil</i>	‘bad child’	augmentative
<i>ji-ññil</i>	‘small child’	diminutive

Apart from size-related semantics, diminutives and augmentatives often indicate the speaker’s attitude towards an entity. Diminutives tend to have endearing overtones, and both augmentatives and diminutives can also have pejorative connotations, as is the case in Eegimaa for augmentatives. The full Eegimaa paradigms are presented in Table (27).

Table (27) Dimensional paradigms in Jóola Eegimaa (Sagna 2008, this volume)

NC Paradigm	NC semantics	Productivity	Example and gloss	
<i>ji-/mu-</i>	diminutive	fully productive, contains some non-diminutive items	<i>e-siho/si-siho</i> <i>ji-siho/mu-siho</i>	‘cat’ ‘little cat’
<i>bu-/u-</i>	augmentative/enormous size	conventionalised	<i>e-ñundu</i> <i>ba-ñundu</i>	‘nose’ ‘big nose’
<i>ga-/u-</i>	augmentative/derogatory	limited productivity	<i>fû-xow</i> <i>ga-xow</i>	‘head’ ‘big head’
<i>fû-/gu-</i>	augmentative/ round shape	conventionalised, used mostly for class <i>ga-</i> nouns	<i>a-ññil</i> <i>fi-ññil</i>	‘child’ ‘fat child’

Other Jóola languages, such as Keerak, have productive ways of deriving diminutives (paradigms *ji-/mu-* for some nouns and *ji-/ba-* for others; see Segerer 2015a: 130) and augmentatives (paradigm *hu-/ku-*; see Segerer 2015a: 131).

Kisi is comparatively restricted in its use of size-changing derivations. Childs (1995: 166) only provides a diminutive singular pattern (class *-le*), which seems to be of limited productivity; apart from the example in (4) the only examples provided are *cùàá* ‘girl’/ *cùàléŋ* ‘little girl’ and *pòó* ‘boy’/ *pòléŋ* ‘little boy’.

4. ò cùlúl yá **mámó-lé** nì-lé pómòò-léŋ dīl méeú
 he -⁹ finish me rice-PRO my-PRO little SUF completely eat
 ‘He finished eating all of the little rice I had.’
 Kisi (Childs 1995: 166)

Konyagi (Santos 1996: 160) has an interesting split in the augmentative singular (Table (28)). Nouns of classes 1 (*a-I*) and 3 (*æ-III*) form their augmentative singular in class 20 (*ga-III*), all other nouns in class 18 (*bə- I*). Classes 20 and 18 are exclusively used for augmentatives.

Table (28) *Split augmentative in Konyagi (Santos 1996: 160)*

Singular	Singular augmentative	Gloss
<i>à-sàèn</i>	<i>gà-càèn</i>	‘man’
<i>à-mbu</i>	<i>gà-mbu</i>	‘baobab’
<i>ì-ní</i>	<i>bə-yí</i>	‘elephant’
<i>làn</i>	<i>bə-làn</i>	‘snake’

Fula, with its large and complex noun class system, has productive means of deriving diminutives and augmentatives with noun class suffixes exclusively used for this purpose.

⁹ PRO and SUF refer to noun class morphology in Child’s glossing conventions.

The forms in Table (29) are from Arnott’s description of a Nigerian variety of Fula, referred to by the author as ‘Gombe Fula’.

Table (29) Dimensional paradigms in Gombe Fula (Arnott 1970: 79)

Root	NC suffix	Gloss	Productive function of noun class
<i>loo</i>	<i>-nde</i>	‘storage pot’	singular class
	<i>-dê</i>	‘storage pots’	plural class
	<i>-ŋgeɫ</i>	‘small pot’	diminutive singular
	<i>-ŋgum</i>	‘worthless little pot’	diminutive singular pejorative
	<i>-kon</i>	‘small pots’	diminutive plural
	<i>-ŋga</i>	‘big pot’	augmentative singular
	<i>-ko</i>	‘big pots’	augmentative plural

Mass items in Gombe Fula have a more restricted choice of paradigms and combine with various noun class prefixes, most notably the mass diminutive class *-kal* (Table (30)).

Table (30) Mass nouns and dimensional paradigms in Gombe Fula (Arnott 1970: 80)

Root	NC suffix	Gloss	Noun class semantics
<i>biraa</i>	<i>-dām</i>	‘fresh milk’	liquid class
	<i>-kal</i>	‘a little fresh milk’	mass diminutive
	<i>-kon</i>	‘small quantities of fresh milk’	diminutive plural

Like Gombe Fula, Bāinounk Gubëeher has a specialised diminutive *ho-* for mass nouns, different from the diminutive prefixes used with count nouns (*ko-/ño-*), expressing ‘a small amount of a mass’ as in *ho-rux* ‘some water’, as opposed to *ba-rux* ‘water’, or *ho-luur* ‘some rice’ as opposed to *di-luur* ‘rice’ (see Cobbinah 2013: 333 for more examples). In Jóola Keerak (Segerer 2015a: 142), the diminutive singular prefix *ji-* is used for diminutives of both masses and of entities. Compare *ka-sera-ak* ‘spoon’ and its diminutive *ji-sera-aj* ‘little spoon’ with *mu-mel-am* ‘water’ and its diminutive form *ji-mel-aj* ‘some water’.

3.6 Individuation

Number distinction is one of the most important functions of noun class morphology in Atlantic languages. A special focus will be given in this paper to collective forms, which are deeply integrated into the noun class systems of the languages in which they occur. Other features related to individuation, also discussed here, are the formation of singulatives and of generic nouns.

An intriguing and far from exhaustively described feature of Atlantic noun class systems is the existence of triadic paradigms, i.e. of paradigms consisting of a singular and two plural forms, as shown in example (5) from the Bak language, Manjaku.

5. a) <i>pə-konj</i>	b) <i>kə-konj</i>	c) <i>ɪ-konj</i>
CL.gu-finger	CL.ha-finger	CL.ja-finger
'finger'	'fingers (pl.)'	'fingers (coll.)'
Manjaku (Segerer 2015b: 205)		

In some languages, notably of the Bak (Jóola varieties, Manjaku) and Nyun-Buy groups (Baïnounk languages, Kobiana), second plurals are an integrated part of noun class paradigms, forming triadic paradigms for certain types of animals (birds, fish, insects, amphibians, crabs) and items that usually occur in large quantities (feathers, beads, grains, fruit). For the Baïnounk languages and Kobiana, the existence of triadic paradigms is well established in the descriptions of these languages.¹⁰ It is unclear whether, in the various Jóola languages, the status of these noun classes and the nature of the paradigms in which they are involved is different, or whether the difference lies purely in the analyses applied to this phenomenon. Table (31) provides references for data on potential candidates for

¹⁰ Sauvageot (1967, 1987) assumes triadic paradigms for Baïnounk Guñaamolo; Bao-Diop (2013: 241) acknowledges their existence but does not make a statement as to their status with respect to singular and count plural forms in Guñaamolo. For Gujaher, the existence of triadic paradigms is confirmed (Lüpke this volume), Quint (2015: 439ff) strongly suspects that triadic paradigms are attested in Guñun of Djifanghor as well.

collective forms as part of triadic noun class paradigms, although the analyses of these forms by the authors vary.

Table (31) References on triadic plural paradigms and collective plurals in Atlantic languages

Language	Source
Bainounk Gubêeher	Cobbinah (2013), Cobbinah and Lüpke (2014)
Bainounk Gujaher	Lüpke (this volume)
Bainounk Guñaamolo	Bao-Diop (2015: 414), Sauvageot (1967, 1987)
Bainounk Guñun (?)	Quint (2015: 439)
Jóola Eegimaa	Sagna (2008, this volume)
Jóola Fogny	Sapir (1969: 64)
Jóola Keerak	Segerer (2015a: 135)
Jóola Kujireray	Watson (2015)
Jóola Kuwaatay	Coly (2010: 44)
Kobiana	Voisin (2015a: 362)
Manjaku	Segerer (2015b: 205)

In this paper the term ‘collective’ is used, although the labels ‘uncountable’ and ‘unlimited plural’ might be more fitting for at least some of these forms in certain contexts. Indeed, preliminary evidence points to the conclusion that the semantic value of these plural forms depends to some extent on the semantic properties of the referent, or at least on the way the referent and its properties are conceptualised by the speakers with the linguistic means available. Mid-sized animals which are clearly conceivable as independent entities and have a high probability of being referred to as such in discourse, like snakes, crabs, and birds, tend to have a reading of their second plural as unlimited plurals or as general reference to a species (as in: ‘snakes are dangerous’), as opposed to small and countable quantities with different class marking. Smaller items that are rarely referred to in single units or numerically qualified amounts, such as cereals or grains, offer a collective reading or a substance reading with the second plural, which is also usually the default form in elicitation. In Bainounk Gujaher, the semantic difference in the interpretation of second plurals with different types of entities has syntactic repercussions. Second plurals can trigger singular or plural agreement on the verb, depending on the type of entity they refer

Bainouk Gubëeher employs the noun class prefixes *bi-*, *di-*, *ba-*, and *ja-* as unlimited plural forms in triadic paradigms, as shown in Table (32).

Table (32) The semantics of triadic paradigms in Bainouk Gubëeher

NC paradigm			Domain
Singular	Plural	Collective	
<i>bu-</i>	<i>i-</i>	<i>di-</i>	fruits
<i>gu-</i>	<i>ha-</i>	<i>ja-</i>	grassy plants, plant parts, body parts
<i>gu-</i>	<i>ha-</i>	<i>ba-</i>	small fruits, small objects
<i>bu-</i>	<i>i-</i>	<i>ja-</i>	animals
<i>bu-</i>	<i>i-</i>	<i>ba-</i>	tubers/ground growing plants
<i>ran-</i>	<i>n̄an-</i>	<i>ja-</i>	amphibians
<i>a-</i>	<i>a-/-ŋ</i>	<i>bi-</i>	only insects
<i>fā-</i>	<i>fā-/-ŋ</i>	<i>ja-</i>	only fish

To take an example from a triadic fruit paradigm in Gubëeher (such as *bu-mangu/ i-mangu/ di-mangu* ‘mango’), it is problematic to consider the form prefixed with *i-* as the regular plural of the *bu-*prefixed singular, and the *di-* form as a derived unlimited plural. The collective form, in this case *di-mangu* ‘mangos’, is often provided by consultants as the citation form for such items in elicitation, rather than the relevant singular or count plural forms. This is probably a reflection of the configuration of the item most usually encountered in the world. The plural form, in this example *i-mangu* ‘mangos’, occurs in very specific and restricted contexts, such as when determined by a numeral. When it is used without any numeral, the number of items is interpreted with paucal semantics, as shown in example (9).

9. *u-në'-t-ëm* *i-mangu*
 2-give-VEN-1SG.OBJ CL.i-mango
 ‘Give me some mangos’
 Bainouk Gubëeher (Cobbinah, field notes)

Example (10) illustrates the existence of triadic paradigms in Kobiana, a language related to the languages of the Bāinounk group. Voisin (2015a: 362) states that terms denoting vegetables like ‘okra’, ‘sweet potato’, and ‘bitter aubergine’, which have their singulars in class *a-* and plurals in class *ge-*, allow a collective form in class *be-*.

10. a) <i>a-jjakato</i>	b) <i>ga-zakato</i>	c) <i>ba-zakato</i>
CL.a.II-bitter.aubergine	CL.ge.I-bitter.aubergine	CL.be.I-bitter.aubergine
‘bitter aubergine’	‘bitter aubergines’	‘bitter aubergines (coll.)’
Kobiana, Voisin (2015a: 362)		

Table (33) shows examples of triadic paradigms in Manjaku, compiled by Segerer (2015b: 205).

Table (33) *Examples of nouns with collectives in Manjaku (Segerer 2015b: 205)*

Singular	Plural	Collective	Gloss
<i>bə-ben</i>	<i>ngə-ben</i>	<i>m-ben</i>	‘fan palm/s ¹¹ ’
<i>bə-nana</i>	<i>gə-nana</i>	<i>m-nana</i>	‘banana tree/s’
<i>pə-kəs</i>	<i>kə-kəs</i>	<i>ɪ-kəs</i>	‘eye/s’

Collective plurals are also reported for various Jóola languages. Sapir (1969) attributes collective plural semantics to the noun class prefixes *ba-*, *bu-* *ε-*, and *fā-*, all of which form triadic paradigms.

¹¹ The ‘African fan palm’ or ‘Palmyra palm’ is known in French as *ronier*, the scientific name is *Borassus aethiopicum*.

Table (34) Triadic paradigms in Jóola Fogny (Sapir 1969: 64)

Triadic NC paradigm	Combines with stem	Gloss	Semantics of paradigm
<i>ji-/mu-/ba-</i>	<i>ɲil</i>	‘little child’	diminutive
<i>e-/si-/ba-</i>	<i>əu</i>	‘housefly’	not specified
<i>fù-/ku-/ba-</i>	<i>lɛntɪn</i>	‘rock’	not specified
<i>ka-/u-/ɛ-</i>	<i>mɑːnɔ</i>	‘rice’	grains and vegetable materials
<i>e-/si-/bu-</i>	<i>lɔl</i>	‘termite’	only one recorded item
<i>fù-/ku-/bu-</i>	<i>jɛk</i>	‘charcoal’	only one recorded item
<i>e-/si-/fà-</i>	<i>bəngund</i>	‘cricket’	insects

Sagna (2008: 241) reports collective forms of nouns prefixed with *ba-*, but considers them as derivations outside the singular-plural paradigms in Jóola Eegimaa. These collectives are treated as productive derivations that can apply to any noun, with potential diminutive semantics (‘collection of small things’) and pejorative overtones. One of the examples provided is the noun *ba-nux* ‘pile of beads’, the collective plural of the pair *e-nux* ‘bead’/ *su-nux* ‘beads’.

Table (35) The paradigmatic network of *nux* in Jóola Eegimaa (Sagna, personal communication)

NC paradigm	Root	Gloss
<i>e-/su-/ba-</i>	<i>nux</i>	‘bead’
<i>u-/ga-</i>		‘necklace’

In a more recent paper, Sagna (this volume) describes *ba-* as a diminutive collective, *fà-* as a collective for animals occurring in swarms, and *e-* as a collective for people and colonising plants.

A similar analysis is presented by Coly (2010: 44) on the collectives in class *bV-* in Jóola Kuwaatay; he analyses *e-filimis/si-filimis* as regular singular and plural forms of ‘flea’, and *bi-filimis* as a derived collective outside of the paradigm, with the meaning ‘large quantity of fleas’.

In her analysis of Jóola Kujireray, a variety closely related to Jóola Eegimaa, Watson (2015) considers collectives as part of the paradigms, which she analyses as triadic. Apart from the noun class prefix *ba-*, which is also found in Jóola Eegimaa, the prefix *e-* also

occurs as a collective noun class marker as part of a triad. Segerer (2015a: 135) considers the three noun class prefixes *ba-*, *bu-*, and *e-* as having the potential to express collective semantics as part of several triads in yet another Jóola language, Jóola Keerak (Table (36)).

Table (36) Examples for nouns with collective plurals in Jóola Keerak, Segerer (2015a: 135)¹²

Singular	Plural	Collective	Gloss
<i>ka-gɛt-ak</i>	<i>u-gɛt-aw</i>	<i>ba-gɛt-ab</i>	'young sow'
<i>e-hemb-ay</i>	<i>st-hemb-as</i>	<i>ba-hemb-ab</i>	'type of fruit'
<i>ka-ruŋ-ak</i>	<i>u-ruŋ-aw</i>	<i>bu-ruŋ-ab</i>	'thorn'
<i>ka-caacɛn-ak</i>	<i>u-caacɛn-aw</i>	<i>e-caacɛn-ay</i>	'palm leaflet'

Another intriguing phenomenon connected to the issue of collective plurals is the existence of so-called 'generic nouns', which are described as 'neither singular nor plural' (Caudill and Diallo 2000: 25, quoted by Creissels this volume a: 13f), such as *leemunne on* 'orange (generic)' in Fuuta Jalloo Pular, the variety of Fula mainly spoken in Guinea and Senegal. The singular and plural forms of the noun are *leemunneere nden* 'orange' and *leemunneeje dɛn* 'oranges'. It is not clear whether or how these forms correspond to the unlimited/collective plural forms of the nouns in the Bainounk and Jóola languages described above.

More or less productive ways of forming singulatives from mass or collective nouns are attested in various Atlantic languages. Koroma (1994: 25ff) reports for Gola that class 4 is used to derive singulatives from the collectives in class 7; Kamarah (2007: 69) states that in Temne liquids can be used with a singular noun class prefix, with the meaning 'a drop of [liquid]', although this is contested by Yillah (2011: 60), who states that liquids only occur in a one-class paradigm. Biaye and Creissels (2015: 40) mention the frequent but not fully productive use of noun class prefix *ti-* in Balanta Ganja to derive singulatives from nouns such as *gì-tɔɔm* 'salt grain' from *tɔɔm* 'salt', *gì-tɔw* 'piece of meat' from *tɔw* 'meat', and *gì-máŋgò* 'slice of mango' from *f-máŋgò* 'mango'. The examples in (11) show that

¹² The suffix is a determiner agreeing with the noun class of the item.

Aadamaawa Fulfulde is sensitive to the spatial configuration of items. The noun prefixed with the noun class associated with liquids only refers to the liquid as a mass. The nouns in 11b) and 11c) refer to bounded instances of tear, i.e. drops of tear which can be counted, unlike the mass noun in (10a).

11. a) *ngon-dam* b) *gon-dí* c) *gon-ngol*
 tear-CL.dam tear-CL.dí tear-CL.ngol
 'tears' 'tear (drops)' 'tear (drop)'
 Aadamaawa Fulfulde (Mohamadou 1994: 84)

Data from individual languages on collectives/unlimited plurals as part of a triadic paradigm, and also data on less integrated ways of forming singulatives and collectives, would greatly further our understanding of the functions of noun classes in Atlantic languages. The scarcity of data on this phenomenon might be attributable to the canonical conception of noun class paradigms as always occurring in pairs.

4 Absolute use of noun classes

The use of noun class morphology in the absence of a head noun is referred to as the absolute use of noun classes, following Grinevald's (2000: 255) terminology. The agreement morphology combines with a pronominal base and conveys adverbial semantics to it, e.g. locative, circumstantial, or temporal meanings. This phenomenon is attested in several Atlantic languages. Some of these languages employ noun class morphology that is compatible with roots exclusively denoting entities. Other languages have specialised morphology that is restricted to the absolute use, and is not or is only marginally productive with nouns.

Jóola languages such as Kujireray and Eegimaa have specialised morphology for forming items with adverbial semantics from pronominal bases. Although they attach to stems in the

same way as regular agreement prefixes, they are only marginally attested on nouns (Rachel Watson, personal communication).

Table (37) Absolute use of NC in Kujireray (Watson 2015: 270)

NC	Example with demonstrative pronoun -o	Gloss	Semantics of NC prefix
<i>t</i>	<i>t-o</i>	‘there’	location precise
<i>b</i>	<i>b-o</i>	‘there’	location general
<i>d</i>	<i>d-o</i>	‘there’	location inside
<i>n</i>	<i>n-o</i>	‘then/ at that time’	temporal
<i>m</i>	<i>m-o</i>	‘in that manner’	manner

A similar pattern can be observed in Wolof, where agreement markers of the classes *l*, *k*, and \tilde{n} can form demonstratives, relative pronouns, and indefinites in the absence of a head noun, as shown in Table (38). Of these, classes *l* and *n* exclusively occur in absolute use, whereas classes *k*, \tilde{n} , and *l* also occur on nouns.

Table (38) Noun class prefixes in absolute use in Wolof (Biaye and Creissels 2015: 43)

NC	NC semantics	Example demonstrative	Gloss
<i>f</i>	locative	<i>f-ii</i>	‘here’
<i>l</i>	thing	<i>l-ii</i>	‘this thing’
<i>n</i>	manner	<i>n-ii</i>	‘in this manner’
<i>k</i>	person	<i>k-ii</i>	‘this person’
\tilde{n}	persons	\tilde{n} -ii	‘these persons’

In example (12) the class *l*- demonstrative *loolu* ‘that’ is used for inanimate indefinite reference and the stem for the numeral ‘one’ -*enn* is used in conjunction with the class agreement prefix *f*- in a negative statement, meaning ‘nowhere’.

12. *Loolu . amul fenn ci àddina si*
 CL.I:DEM.NEUT have:NEG.3SG CL.f:QNT.TOT. LOC world CL.s:PROX
 ‘This exists nowhere in the world.’
 Wolof (Pozdniakov and Robert 2015: 603)

Example (13) features three Wolof forms derived from the root of the quantifier *épp* ‘all’, the noun class morphology adds meaning accordingly.

13. *Yalla mi boroomu képp lépp fépp la*
 God CL.m:PROX master:CONN CL.k:QNT.TOT CL.I:QNT.TOT CL.f:QNT.TOT FOC.COMP.3SG
 ‘God is the master of each person, each thing and each place.’
 Wolof (Pozdniakov and Robert 2015: 605)

Bainouk Gubëher allows for various pronominal forms to occur in headless constructions of this type. All but one of the six noun class prefixes involved in absolute use also occur regularly with nouns. Only the prefix *ni-* is never prefixed to any nominal forms. For four of the remaining prefixes, the semantics of the noun class in the absolute use is related to its semantics when used regularly with nouns, e.g. the locative semantics of *bu-* and *kan-*, both of which are used to form locative nouns from roots denoting events and activities, is retained (see section 5.). The prefix *da-*, which has temporal semantics in the absolute use, referring to a specific day, also forms the noun for ‘day’ *dë-nég*.

Table (39) The absolute use of noun class markers (Cobbinah 2013: 351)

NC	In absolute use	Usage with nouns
<i>ho-</i>	thing	<i>honj</i> 'thing'
<i>bi-</i>	locative	<i>bi-tix</i> 'place';
<i>kan-</i>	locative	<i>kan-tix</i> 'place';
<i>ni-/nu-</i>	causal	not attested on nouns
<i>da-</i>	temporal	<i>dě-nég</i> 'day'
<i>fâ-</i>	temporal	attested but not with related semantics

Example (14) shows an example from Gubêcher with a relative pronoun that combines with the noun class *fâ-*, conveying temporal semantics and used in this case to introduce a subordinate clause. For an overview of pronominal forms with noun class prefixes in their absolute use, see Cobbinah (this volume).

14. *en ce moment* *gu-r-oŋ* *di-fand,* *fě-gini* *u-hangul*
then be- NEG.PERF-3SG.SUBJ CL.di-fan.palm.fruit CL.fa-REL 2-can
- u-dóm* *a-yen-a* *di-fand*
2-swallow 3-say-PASS CL.di-fan.palm.fruit
'At that point, it is not a fan palm fruit. **When** you can eat it and it is soft it's a fan palm fruit.'
AB, DJI121109AC3

The absolute use of noun classes provides valuable clues for the semantics of noun classes. In the absence of a noun, the semantic contribution to the pronoun it combines with becomes evident. Once more data on this phenomenon is available from a wider range of languages it will be instructive to compare the absolute use of noun class prefixes with their canonical use on nouns within a language but also across languages.

5 Productive patterns of noun formation

The productive formation of concrete and abstract nouns from roots denoting entities or events and states is well attested across the range of Atlantic languages. Actor nouns, manner nouns, states, results, locatives, instruments, and properties can be created in many of these languages by combining a root with noun class morphology, without any additional derivational morphology. Some Atlantic languages distinguish semantic subsets within a domain, e.g. smells in Gubêcher are derived using a different noun class prefix than other properties (see Table (42)). The special case of infinitives and action nouns is the topic of a separate paper within this volume by Rachel Watson (this volume b), which also addresses questions of finding overarching semantic criteria that integrate concrete and abstract nouns as well as productively derived and lexicalised nouns into noun class paradigms. A pertinent question is to what extent the semantics of these derived abstract nouns and verbo-nominals relate to the semantics of concrete nouns from other semantic domains.

Some languages have specialised noun classes or paradigms for the derivation of abstract nouns or locatives. Gola has a specialised class (*e-*), which contains mostly abstract nouns and is used for the derivation of nouns with eventive or resultative readings (Table (40)).

Table (40) *Abstract nouns in class e- in Gola (Koroma 1994: 26ff)*

Stem	Gloss	Abstract noun	Gloss
<i>(le)-sua</i>	'belly'	<i>e-sua</i>	'pregnancy'
<i>deene</i>	'meet'	<i>e-deene</i>	'meeting'
<i>gougou</i>	'age (v.)'	<i>e-gougou</i>	'age (n.)'
<i>neemu</i>	'wound (v.)'	<i>e-neemu</i>	'wound (n.)'

Class *e-* serves also for the nominalisation of verb phrases (15), an interesting extension of the use of noun class morphology beyond the nominal phrase.

Bainouk Gubëeher also has a substantial number of noun class paradigms which are productively used for various types of nominalisations (Table (42)). Some of the noun class paradigms combine with derivational affixes to form nouns from roots that also denote events, states, and properties.

Table (42) Formation of nouns from eventive roots in Gubëeher (summary from Cobbinah 2013)

NC	Derivational suffix	Semantics	Example
<i>u-/ñan- ji-/ji- -ŋ</i>		actor person having property	<i>u-hup/ñan-hup</i> 'pourer' > <i>hup</i> 'pour' <i>ji-def/ji-def-eŋ</i> 'old person' > <i>def</i> 'old'
<i>gu-/ha-</i>	<i>-um</i>	instrument	<i>gu-laŋk-um/ha-laŋk-um</i> 'oar' > <i>laŋk</i> 'row'
<i>man-</i>	<i>-an</i>	manner	<i>man-dëëk-an</i> 'manner of walking' > <i>dëëk</i> 'go'
<i>ba-</i>		properties	<i>ba-dox</i> 'shortness' > <i>dox</i> 'be short'
<i>si-</i>		smells; human properties	<i>si-suul</i> 'fish smell' > <i>suul</i> 'smell of fish' <i>si-dox</i> 'shortness (of people)' > <i>dox</i> 'be short'
<i>ba-</i>	<i>-i</i>	item having property	<i>ba-muutin-i</i> 'dark place' > <i>muutin</i> 'be dark'
<i>bu-</i>		location	<i>bu-noox</i> 'seat' > <i>noox</i> 'sit'
<i>kan-</i>	<i>(-um)</i>	location	<i>kan-jula-um</i> 'selling place' > <i>jula</i> 'buy, sell, trade'

Both classes *bu-* and *kan-* occur as regular prefixes on non-locative nouns and are also attested in the absolute use with locative semantics (see section 4). The prefix *bu-* is one of the most frequent noun class prefixes in Gubëeher on concrete nouns – among which are many round ones – as well as in the function of the productive infinitiviser. It has a stable association with locative semantics, when prefixed to roots which allow this reading. This is evidence for the fact that noun class morphology can contribute multiple meanings to the nouns they form. The pattern of one noun class conveying both roundness and location is observed in other languages as well (for data on Jóola Kujireray see Watson 2015).

Gola has a noun class prefix (*ko-*) dedicated entirely to the formation of locatives from body parts and other predominantly nominal roots (Table (43)) and it is also used for the nominalisation of temporal propositions (17).

Table (43) Locative derivations in Gola (Koroma 1994: 26f)

Locative noun	Gloss	Stem	Gloss
<i>ko-jawa</i>	‘at the town’	<i>e-jawa</i>	‘town’
<i>ko-sãã</i>	‘at the house’	<i>ke-sãã</i>	‘house’
<i>ko-hawe</i>	‘place to lay down’	<i>hawe</i>	‘lay down’
<i>ko-jei</i>	‘seat’	<i>jei</i>	‘sit’
<i>ko-fɛɪ</i>	‘in front of’	<i>fɛɪ</i>	‘front’

17. *ko-fɔwɔ* *ya* *kpeɪ* *ke* *ko* *a* *ya* *keɛ* *sua*
 CL.ko-play be and:then then CL.ko 3PL be pound:sacrifice:rice PRG

dɛɛ *le*
 sacrifice:rice DEF.CL.e
 ‘During the playing, they pounded the sacrifice rice’
 Gola (Koroma 1994: 27)

Balant Ganja has a productive way of deriving abstract nouns from nouns that denote human beings, to denote a quality that characterises that group of people, by prefixing the noun class marker *gi-* (Biaye and Creissels 2015: 12, Creissels this volume b: 12) *gi-láantè* ‘masculinity’ (cf. *à-láantè* ‘man’ pl. *bì-láantè*), *gi-mbùutá* ‘childhood’ (cf. *mbùutá* ‘child’/ *ɲ-mbùutá* ‘children’). Another type of derivation found in Balant Ganja creates nouns from roots that also form concrete entities, which have the meaning of ‘a particular kind of X’, prefixing noun class *b-*: *b-láantè* ‘kind of man’ (compare: *à-láantè* ‘man’/ *bì-láantè* ‘men’) or *b-gbáalè* ‘kind of house’ (compare: *gbáalè* ‘house’/ *g-gbáalè* ‘houses’) These items ‘are used in contexts in which English would use for example sentences like “I don’t like this kind of man”, or “This kind of house cannot be found here”’ (Creissels this volume b: 13).

These productive patterns deserve thorough description, as they allow the identification of semantic patterns in the formation of different types of abstract nouns, and also testify to the role of noun class morphology in word formation. The derivation of non-finite verbal

nouns is a promising topic, especially for languages where several forms derived with more than one noun class affix are used, as is the case for many Jóola and Nyun-Buy languages. The classification of events through nominal morphology offers deep insights into the semantic properties of noun class systems. This topic is not discussed further here; the reader is instead referred to Watson (this volume b).

6 Semantics of systemic features of noun class systems

Meaning can be conveyed not only through the choice of noun class morphology, i.e. through affixes on the noun or agreement, but also through systemic formal features such as the presence or absence of noun class marking on the noun, as in the Mel languages Gola and Kisi (see section 6.1), or mutation grades of noun stems or of the affixes themselves, as in Fula (see section 6.2). Animacy agreement is discussed in section 6.3.

6.1 Competing prefixes and suffixes

The South Atlantic language Gola has prefixes and postposed clitics (see Table (44)). Interestingly, nouns can occur with either prefixes or enclitics, and also with both or with neither. In all cases, agreement on dependent targets is expressed.

Table (44) Prefixes and enclitics in Gola (Koroma 1994: 26)

NC prefix	<i>(w)o-</i>	<i>a-</i>	<i>(w)ɔ̀-</i>	<i>ke-</i>	<i>ma-</i>	<i>e-</i>	<i>le-</i>	<i>ko-</i>
NC enclitic	<i>ɔ</i>	<i>na</i>	<i>ɔ</i>	<i>ε</i>	<i>ma</i>	<i>le</i>	<i>le</i>	<i>i</i>

Koroma (1994: 30) links the parameter of presence/absence of noun class morphology to referentiality and definiteness. Accordingly, noun class prefixes are presumed to establish referentiality, and noun class enclitics definiteness. Double-marked nouns would be explicitly marked as definite and referential (18), whereas unmarked nouns are not specified

with respect to these parameters. Nouns with neither noun class prefixes nor enclitics are often used in contexts where they are indeed non-referential (19). Nouns bearing only the prefix are referential but unspecified for definiteness, as in (20). The use of an enclitic without a prefix is rare (Koroma 1994: 31).

18. *yee o nā ti-e ma-kpɔ ma yee ō nā*
 and 3SG NAR drink-MK CL.5-gravy DEF:CL.5 and NAR 3SG

gbil-e o-yili-ɔ [...]

eat-MK CL.1-meat-DEF:CL.1

‘and he drank the gravy and ate the meat [...].’

Gola (Koroma 1994: 32)

19 *ye jɔa mu-ɔ ya ju suja sīa*
 mother little 2SG-DEF:CL.1 be person fish good

‘Your aunt is a good fisher woman.’

Gola (Koroma 1994: 33)

20 *deda jɔa mi-ɔ ya wo-ju gbīe gbamā*
 father little 1SG-DEF:CL.1 be CL.1-person throw gun

‘My uncle is a hunter.’

Gola (Koroma 1994: 33)

Childs (1995: 159) reports the use of noun class prefixes instead of the usual noun class suffixes in the Kisi language in specific syntactic and semantic environments such as negations, exclamations, some questions, comparative constructions, etc. The noun ‘pumpkin’, which usually occurs in the suffixed version *cà-léŋ*, appears in example (21) in its prefixed version *lé-cá*, the prefixation here conditioned by the negating morphology.

21. *ò có lé-cá lé*

it COP CL- pumpkin NEG
 'It's not a pumpkin.'
 Kisi (Childs 1995: 159)

In proverbs, riddles and folktales, nouns also appear without any noun class morphology (Childs 1995: 161f): compare the nouns *càngúl-ó* 'catfish' and *bàá* 'hand' with the affixless equivalents *càngúl* and *bá* in (22).

22. *càngúl* *sìlálá* *ó* *bá* *còó* *lé*
 catfish slip to hand on NEG
 'The catfish doesn't slip on its hands.'
 Kisi (Childs 1995: 161)

6.2 Consonant mutation

A specific feature of some languages of the Northern branch of Atlantic is their systems of consonant mutation, that is, stem-initial alternations conditioned by nominal or verbal morphology or indicating category change. Relevant for the scope of this paper are the consonant alternations triggered by noun class morphology. All Atlantic languages of the northern branch, except Nyun, have consonant mutations or traces of them, whereas none of the Bak languages do. This means that mutations are one of the most important isoglosses for the classification of Atlantic languages (Pozdniakov and Segerer this volume). Other languages such as Wolof (Pozdniakov 1993; Pozdniakov and Robert 2015), Nalu (Seidel this volume b), Bainouk languages (Wilson 1997) and Pajade (Wilson 1965) are believed to have had consonant mutation at earlier stages, of which only traces now remain. In languages with consonant mutation, consonants pattern into grades or series, defined to some degree by phonological properties such as plosive, fricative, prenasalised, or implosive. In Konyagi (see Table (45), grade I contains voiced fricatives and glides, grade II mostly plosives and nasals, and grade III prenasalised plosives. The mutation system of

Konyagi is fairly regular in terms of correspondences between grades and phonological criteria, except that voiceless plosives of grade II do not have a prenasalised counterpart in grade III.

Table (45) Consonant mutation grades in Konyagi (Santos 1996: 79)

I	<i>f</i>	<i>v</i>	<i>w</i>	<i>w̃</i>	<i>r</i>	<i>ry</i>	<i>l</i>	<i>l̃</i>	<i>s</i>	<i>y</i>	<i>y</i>	<i>ỹ</i>	<i>x</i>	<i>y/w</i>	<i>ỹ/w̃</i>
II	<i>p</i>	<i>b̃</i>	<i>b</i>	<i>m</i>	<i>t</i>	<i>d'</i>	<i>d</i>	<i>n</i>	<i>c</i>	<i>y'</i>	<i>j</i>	<i>ñ</i>	<i>k</i>	<i>g</i>	<i>ŋ</i>
III	<i>p</i>	<i>mb</i>	<i>mp</i>	<i>m</i>	<i>t</i>	<i>nd</i>	<i>nt</i>	<i>n</i>	<i>c</i>	<i>nj</i>	<i>nc</i>	<i>ñ</i>	<i>k</i>	<i>nk</i>	<i>ŋ</i>

An example of a mutating stem-initial consonant is provided in Table (46) for Konyagi and another example from Sereer in Table (47). The consonantal onset of the stems for ‘baobab’ and ‘donkey’ mutate according to the grade triggered by the noun class prefix that combines with the root.

Table (46) Consonant mutation in Konyagi (Santos 1969: 80)

Grade	Example	Gloss
I	<i>wə-vu</i>	‘baobab fruits’
II	<i>ì-bú</i>	‘baobab fruit’
III	<i>ə-mbu</i>	‘baobab tree’

Table (47) Consonant mutation in Sereer (Renaudier 2015: 487)

Grade	Example	Gloss
I	<i>go-faam</i>	‘donkey’
II	<i>a-paam</i>	‘donkeys’
III	<i>ga-mbaam</i>	‘big donkey’

The correspondence between noun class morphology and mutation grade is language-specific. Consonant mutation grades can be fixed to specific noun classes and their agreement in a one-to-one way, or they can operate independently of the noun class prefix and contribute to the semantics of the noun just like the prefix does. In Biafada (Bassène

2015), each prefix corresponds to a specific degree of mutation, which is also reflected in agreement. In Kobiana, on the other hand, some noun classes share the same prefix but trigger different degrees of consonant alternation on the stem (Voisin 2015a), while a large number of noun classes trigger agreement of different degrees of alternation. The Kobiana noun for ‘saliva’ *ma-yet* in example (23a) is in class *ma(I)-*, a noun class that contains only liquids and the related items ‘salt’ (filtered out of salt water) and ‘light’ (possibly a metaphorical extension). All of these items require the stems of the nouns in this class, as well as the stems of agreeing targets, to be in grade I. The noun for ‘manioc’ in example (23b), however, although also prefixed with the noun class affix *ma-*, triggers grade III onsets on the noun stem and agreeing targets. The differing mutation grade, crucially, mirrors the semantic difference between these items.

23. a)	<i>ma-yet</i>	<i>ma-lad-r-oo</i>	b)	<i>ma-ndeko</i>	<i>ma-ndad-roo</i>
	CL.ma.I-saliva	AGR.ma.I-all-CONN-3SG		CL.ma.III-manioc	AGR.ma.III-all-CONN-3SG
	‘all the saliva’			‘all the manioc’	
	Kobiana (Voisin 2015a: 360)				

The noun class and agreement prefix *a-* in Kobiana shows a great proliferation of singular/plural combinations, as well as combinations involving different degrees of consonant mutation. Again, the difference in mutation degree reflects semantic and morphological differences between nouns in otherwise identical paradigms.

Table (48) Agreement, paradigms and mutation grades of nouns prefixed with *a-* in Kobiana (Voisin 2015a)

NC singular	NC agreement singular	NC plural	NC agreement plural	Semantics
<i>a.I</i>	<i>a.I-</i>	<i>ge.I-</i>	<i>ge.I-</i>	term for animal
\emptyset -	<i>a.I-</i>	\emptyset - <i>-a</i>	<i>ge.I-</i>	prefixless nouns, among which are many animals
<i>a.II</i>	<i>a.II</i>	<i>ge.I-</i>	<i>ge.I</i>	many body parts and fruits

As shown in Table (48) the prefixes *a-* and *ge-* occur in a variety of nominal and agreement noun class paradigms in Kobiana, some only differentiated by mutation grade. The paradigm *a.I-/ge.I-* contains only the two prefixed nouns ‘animal’ (24) and ‘estuary’. These two nouns share the agreement pattern *a.I-/ge.I-* with all prefixless nouns that form their plurals by suffixing *-a* to the stem (25). Many of these prefixless nouns denote animals or are loans. The noun class and agreement pattern *a.II-/ge.I-*, on the other hand, constitutes a large paradigm containing names of fruits and body parts, among other items. Again, the only difference is the grade of the prefix *a-*, both on the nominal stem and on the stem of agreeing targets.

24. a) *a-ro* *a-heena* b) *ge-ro* *ga-lad-roo*
 CL.a.I-animal AGR.a.I-one CL.ge-animal AGR.ge.I-all-CONN-3SG
 ‘one animal’ ‘all the animals’
 Kobiana (Voisin 2015a: 360)

25. a) *jimukoor* *a-heena* b) *jimukoor-a* *ge-ke*
 lion AGR.a.I-one lion-PL AGR.ge.I-DEM
 ‘one lion’ ‘those lions’
 Kobiana (Voisin 2015a: 367)

26. a) *a-bbaaz* *a-ttena* b) *ga-βaz* *ga-heh*
 CL.a.II-baobab.fruit AGR.a.II-ONE CL.ge-baobab fruit AGR.ge.I-three
 'one baobab fruit' 'three baobab fruits'
- Kobiana (Voisin 2015a: 353)

The situation in the Fula varieties regarding consonant mutation is even more intricate. Not only do the noun stems display alternations in the onset depending on the alternation grade of their noun class, but the noun class suffixes themselves also have allomorphs with grade-based alternations (Breedveld 1995b: 258ff). Four grades have been identified for Maasina Fulfulde, here shown in the example of the diminutive singular suffix *-ngel* (27). Roughly speaking, grade A has a vocalic onset (as in example 27a), grade B a continuant (glide, liquid or palatal approximant (27b)), grade C a plosive onset (27c), and grade D a prenasalised onset (27d) – although not all suffixes differentiate all four grades.

27. a) *taal-el* b) *hoo-re-wel* c) *tum^mb-u-gel* d) *daw-a-ⁿgel*
 story-CL.ngel chief-CL.ngel recipient- CL.ngel dog- CL.ngel
 'litte story' 'little chief' 'little recipient' 'little dog'
- Maasina Fulfulde (Breedveld 1995b: 258)

Breedveld puts forth the claim that the suffix grades have a semantic component, which becomes obvious in derivation. Table (49) shows various derivations of the root *mod'* 'swallow', each with a different suffix grade.

Table (49) The semantics of suffix grades in Maasina Fulfulde (Breedveld 1995b: 278)

Grade	Semantics	Example	Gloss	Form
A	objective	<i>mod-ere</i>	'pill'	NDE class, noun
B	associative	<i>mod-ɔ-re</i>	'swallower'	NDE class, agentive derivation
C	circumstantial	<i>mod-u-de</i>	'to swallow'	NDE class, infinitive
D	subjective	<i>mod-u-de</i>	'which has swallowed'	NDE class, participle

6.3 Animacy agreement

Many noun class languages have types of agreement which cross-cut the formal agreement with the noun class of the head noun by triggering agreement with a semantic feature of the noun. When these semantic features relate to the status of the referent as inanimate, animate, or human, this type of agreement is known as animacy agreement (see Schadeberg 2001 on animacy agreement in Swahili/Bantu). The extent to which a language allows animacy agreement varies, and may range from a subset of humans, to all human beings including supernatural beings like gods, spirits, and demons, or may subsume all animates, including animals.

Since all Atlantic languages with noun classes have one paradigm with a high concentration of human beings – if not one reserved exclusively for human beings – human agreement is quite common. More extended types of animacy agreement have been described in some detail for Balant (Fudeman 1999; N'diaye-Corréard 1970; Biaye and Creissels 2015) and Bāinounk Guñun (Quint 2015), and this type of agreement is also attested for Bāinounk Gujāher (Lüpke, this volume and personal communication), as well as for several of the South Atlantic languages (Childs 1983). Interestingly, the two Bāinounk languages which have animacy agreement, and the only distantly-related Balant Ganja, are spoken in close proximity to each other in an area east of Ziguinchor and south of the river Casamance. It is at this point unclear whether this is an areal feature, and if so, which language it originated in.

Jóola Eegimaa (Sagna 2008; Bassène 2006) has animacy agreement only for human nouns. The regular human noun class paradigm is *a-/gu-*, as is the human agreement, although some agreement targets have *bug-* as a plural agreement prefix for humans. The prefix *bug-* also occurs on the plural of the noun for ‘person’ *bug-an*. Table (50) shows that even nouns whose plural is morphologically marked by prefixes of other classes have *gu-/bug-* as an agreement marker on most targets, although Sagna (2008: 191) shows that human nouns with their plurals in classes *e-* and *u-* have alliterative agreement on their determiners and demonstratives, i.e. with *e-* and *u-* respectively, instead of with the human class.

Table (50) Agreement of human nouns in Jóola Eegimaa (Sagna 2008; Bassène 2006)

	Noun singular	NC agreement singular	Noun plural	NC agreement on adjectives	NC agreement on other targets
‘person’	<i>Ø -an</i>	<i>a-</i>	<i>bug-an</i>	<i>gu-</i>	<i>gu-, bug-</i>
‘old person’	<i>a-ffan</i>	<i>a-</i>	<i>u-ffan</i>	<i>gu-</i>	<i>gu-, bug-, u-</i>
‘aunt’	<i>Ø -jaay</i>	<i>a-</i>	<i>si-jaay</i>	<i>gu-</i>	<i>gu-, bug-</i>
‘child’	<i>a-ññil</i>	<i>a-</i>	<i>gu-ññil</i>	<i>gu-</i>	<i>gu-, bug-</i>
‘toubab’	<i>a-lullum</i>	<i>a-</i>	<i>e-lullum</i>	<i>gu-</i>	<i>gu-, bug-, e-</i>

Balant Ganja (N’diaye-Corréard 1975; Fudeman 1990; Biaye and Creissels 2015; Creissels this volume b) is the Atlantic language with the most elaborate system of animacy agreement described so far, both in terms of scope and of obligatoriness.

Table (51) Noun class agreement in Balant Ganja (N'diaye-Corréard 1971)

Singular			Plural			Semantics
NC prefix	NC agreement	Pronoun	NC prefix	NC agreement	Pronoun	
<i>ha-</i>	<i>ha-</i>	<i>hi</i>	<i>bə-</i>	<i>bə-</i>	<i>baa</i>	human non-kin
∅	<i>u-/ha-</i>	<i>hi</i>	<i>g-</i>	<i>bə-</i>	<i>baa</i>	animates, human kin
∅	<i>u-</i>	<i>wi</i>	<i>g-</i>	<i>g-</i>	<i>gi</i>	inanimates

For human kinship terms and all animal terms, agreement in Balant Ganja is non-alliterative, exhibiting prefixes on the noun from an inanimate paradigm but agreement from the human paradigm. In (28), *fàafá*, the noun for ‘father’, has the zero prefix of noun class *u-*, but *ha-*agreement of the singular of the human paradigm; the noun *ɲmbùutá* ‘child’ is morphologically marked as belonging to noun class *g-* but has the agreement *bi-* of the plural of the human paradigm.

28. ∅-Fàafá à-mfáná -'h- ɾ.
 CL.u-father CL.ha-nice -CL.ha-ID
 ‘It is a nice father.’
 Balant Ganja (Biaye and Creissels 2015: 30)

29. ɲ-mbùutá bì-dìndìmi -bá
 CL.g-child CL.bi-stubborn -CL.bi.ID
 ‘These are stubborn children.’
 Balant Ganja (Biaye and Creissels 2015: 33)

In the two Bānɔnk languages Gujaher and Guñun, animacy has extended beyond human agreement, but only for a morphological subset of animal nouns, those with suffixed plurals. These nouns, attested in all Nyun-Buy languages so far, do not use noun class prefixes to

convey the singular-plural distinction, but rather an inflectional suffix (see Cobbinah and Lüpke 2014).

The situation in Baïnouk Guñun (mainly spoken in the village of Djifanghor) is described by Quint (2015). In addition to semantic agreement for human nouns (2015: 450), Guñun applies semantic agreement to nouns that denote animals, too. Animate agreement for animal-denoting nouns in Guñun is *a-* for singular and *in-* for plurals (30). As is typical for Baïnouk languages, the agreement prefix *in-* is also used in the agreement for plural nouns denoting humans. Only nouns with plural suffixes are eligible for animacy agreement, and even among those there are subsets of nouns with morphological agreement, mixed semantic and morphological agreement, or other types of variation. Quint (2015: 453) hypothesises that animacy agreement in Guñun is an innovation and is spreading, replacing morphological agreement paradigms.

30. a) *dégga amma* b) *dégga-yoŋ immi*
pelican AGR.a:DEM pelican-PL AGR.in-two
'this pelican' 'two pelicans'
Baïnouk Guñun (Quint 2015: 452)

The situation in Baïnouk Gujajer is similar. Speakers have two options in their choice of agreement for the plurals of animate nouns. They can either use human agreement prefixed with *in-/ɛn-*, or resort to *a*-agreement, which is also the agreement used for prefixless nouns in Gujajer and other Baïnouk languages. The preference of individual speakers for animate or *a*-agreement is described by Lüpke (this volume) as being conditioned by geographical parameters. Speakers of Gujajer living in Agnack Grand prefer *in*-agreement while speakers of Gujajer residing in Agnack Petit have a preference for *a*-agreement. As in Baïnouk Guñun, animacy agreement in Gujajer is only applied to nouns that use a suffix for pluralisation, as opposed to those which pluralise with noun class prefixes. The high levels of variation, as well as the fact that only a subset of nouns is affected, suggest that animacy is a new development and that Gujajer is currently undergoing language change.

Table (52) Animacy agreement in Bainouk Gujaher (Friederike Lüpke, field notes)

Agreement type	Gloss	Noun	Adjective ‘short’	Numeral ‘two’
human	‘women’	<i>ën-dikaam</i>	<i>ën-dox-liini</i>	<i>i-nak</i>
animate/human	‘goats’	<i>fëebi-ëŋ</i>	<i>a-doxliini-ëŋ</i> <i>ën-doxliini</i>	<i>a-nak-ëŋ</i> <i>i-nak</i>
morphological/human	‘chickens’	<i>bë-kër-ëŋ</i>	<i>ba-doxliini-ëŋ</i>	<i>ba-nak-ëŋ</i> <i>i-nak</i>
morphological	‘lizards’	<i>i-latra</i>	<i>i-doxliini</i>	<i>i-nak</i>

Animacy agreement is also well developed in languages of the Mel family and is cited as one of the factors relevant for the development of noun class suffixes in this subphylum (see Childs 1983). Animacy is also believed to be a factor in the development of suffixed plurals in the Nyun languages, including the Bainouk varieties and Kobiana (see Cobbinah submitted; Voisin 2015b). Apart from human agreement, some Mel languages also exhibit semantic agreement for animals. This is the case in Mani for animals in the animal paradigm *wɔ/si* (see Table (10), whose agreement is with the human paradigm *wɔ/ŋa*. The item *sì-sú* ‘birds’ in example (31) is agreeing semantically with the plural of the human class *ŋa*, prefixed with *a-* on agreeing targets, and not morphologically with class *sa-*.

31. *sì-sú* *à-dìntè* *à-cəŋ* *à-ce*
 CL.sa-bird AGR.ŋa-white AGR.ŋa-two AGR.ŋa-DEF
 ‘the two white birds’
 Mani (Childs 2011: 126)

A similar pattern can be observed in Temne, where all animate nouns trigger agreement formally identical to that of the human classes no matter what class prefix they bear (Kamarah 2007; Yillah 2011: 52, 56). The noun ‘fish’ *kaɔp* triggers human agreement with *ɔ-* instead of with class *ka-*.

32. *ka-lop ɔwe u-fino*
 CL.KA-fish CL.ɔ.DEM CL.ɔ-fine
 'This fish is fine'

Temne (Kamarah 2007: 64) [glosses added]

According to Seidel (this volume b), the limited agreement in Nalu functions largely on the basis of semantic grounds for all items. Agreement is only marked on demonstratives. The two singular noun classes share a single agreement pattern, whereas for the plural classes the one containing mostly inanimate items governs one type of agreement and the three plural classes containing most of the animate items share another agreement pattern.

Table (53) Animacy agreement in Nalu (Seidel this volume b)

	NC affixes	NC agreement type	Agreeing demonstrative
Singular classes	<i>m</i>	Agreement class 1	<i>mɔ</i>
	<i>ma</i>		
Plural classes animate	<i>bɛ-</i>	Agreement class 2	<i>bɛ</i>
	<i>bɛ-ye</i>		
	<i>-ye</i>		
Plural animate	<i>a-</i>	Agreement class 3	<i>wa</i>

So far, animacy agreement seems to be concentrated in the Mel languages and in some Casamance languages. Animacy is potentially a powerful driver of the reorganisation of noun class systems and is thought to have been involved in the development of noun class and number suffixes in the Atlantic family (Childs 1983; Cobbinah 2010, submitted; Voisin 2015b). It would therefore be desirable to have more data on this phenomenon from languages which have been only a little described or not at all, as well as from better-known languages of the group, for which data on agreement is limited.

7 Noun class semantics in contact

As a result of a long history conditioned by migration, fluid concepts of identity, and strong political and economic alliances between ethnic and linguistic groups (see Baum 1999; Hawthorne 2003; Brooks 1993; Mark 2002), language contact is a pervasive feature in the area where Atlantic languages are spoken, i.e. along the West African coast from northern Senegal down to Guinea Conakry, usually referred to as either Senegambia or the Upper Guinea Coast. Loan integration, both from languages with noun classes (usually other Atlantic languages) and without noun classes (French, Portuguese Creole, Mande languages), can have noticeable effects on a noun class system as a whole, as well as on the semantic connotations of the noun classes within that system.

For the integration of a loan into the noun class system of the receiving language, several strategies are available, which have different repercussions for the system and the semantic associations between noun class morphology and the nouns they form. *Semantic assignment* of loans, i.e. respecting the semantic connotations of noun classes of the receiving language, is the least disruptive choice for the semantic cohesion of a noun class system. Borrowed stems are assigned to a noun class or noun class paradigm that contains semantically similar native items, reflecting the semantic criteria of the receiving language. Another option is the assignment of borrowed stems into a *default noun class*, which accommodates all loans irrespective of their semantics. Default classes for loans can be either exclusive to loans, or can also classify established native nouns. Either way, the assignment of loans to a default class, especially when the number of borrowed items is high, can have systemic effects on the noun class system of the receiving language. The default class not only becomes larger in relation to other noun classes, but it also changes with regard to its semantic composition, as the loans are semantically heterogeneous and are not necessarily in line with the original semantic criteria valid for that specific noun class. In *phonological assignment*, the onset of a noun is reanalysed as a prefix, or its coda as a suffix, depending on how noun class morphology manifests in that language. This process can be limited to the reanalysis of parts of a borrowed item as pre-existing noun class morphology, and again, semantic

compatibility of the noun with the assigned noun class of the receiving language can be a prerequisite, in which case the semantic cohesion of the noun class system is preserved. In cases where semantics is not a criterion, this would of course change the semantics of the accommodating class. Phonological integration that leads to the creation of new noun classes in the receiving languages is a typologically extremely rare phenomenon known as literal alliterative agreement (see Dobrin 1995, 2012), proposed to be active in Baga Mandori (Seidel this volume a) and Landuma (Nina Sumbatova, personal communication).

In *morphological assignment* a noun is borrowed wholesale, i.e. the stem as well as the noun class prefix is integrated into the receiving language. The borrowed prefix is treated in the same way as a regular prefix of the receiving language. If the noun class affix of the borrowed item is a noun class affix in the receiving language, this practice leads to significant changes in the semantics of the accommodating classes. Alternatively, the noun class inventory of the receiving language is enlarged through borrowing of hitherto unattested noun class morphology. If semantics is a factor in this process, the noun class morphology of the donor language can only be maintained under the condition that the semantics of the borrowed items does not clash with the semantics of nouns already in that class, keeping the semantic make-up of the receiving language's noun class systems intact.

In the course of its history, a language can of course change its preference for one or another of these strategies, or apply different strategies to loans from different languages. Loan integration can either undermine or strengthen the semantic coherence of a noun class system, depending on the strategy that is productive at the time of borrowing. This diachronic dimension to loan accommodation is clearly one of the relevant factors in why noun class systems are semantically incoherent to some extent on the synchronic level – and why they might have never been strictly coherent semantically at all in a proto-language (see also McLaughlin 1997). The following sections consist of case studies of languages, with a focus on the effect of borrowing on their noun class systems.

7.1 Loan integration and noun class semantics in Wolof

In Wolof, several strategies of loan incorporation have been applied, at some times co-occurring in a historical phase of the language, while at other times clear preferences for specific strategies can be discerned. Certain noun classes and paradigms in Wolof do have a clear semantic basis, e.g. class *k* and agreement for persons in the singular, class *ñ* and agreement for humans in the plural, class *m* with liquids, class *g* for trees with the class *b* for corresponding fruits, and the class *j* for family members and abstract nouns (Mc Laughlin 1997: 10). Borrowed items like fruits and trees are thus very likely to be integrated into the paradigms covering the relevant semantic domains.

The strong correlations between the initial stem consonant of the noun and the consonant of the noun class marker across the Wolof lexicon indicates that phonological integration might also have been productive at some previous stage in the history of Wolof (Mc Laughlin 1997: 14f). Other authors (see Pozdniakov and Robert 2015: 573 for a discussion) suggest that the homophony between noun onset and noun class might more probably be due to fused prefixes from a previous stage at which Wolof still had noun class affixes. Pozdniakov (1993) and Pozdniakov and Robert (2015) analyse the evidence to show that a now defunct system of consonant mutation was influential in changing the initial consonant of noun stems. Synchronically, however, a large number of loans are indeed integrated into the noun class system of Wolof on the basis of the noun stem onset (Pozdniakov and Robert 2015: 643). Phonological borrowing in Wolof has not led to the creation of new classes though, and not all classes are equally available for the phonological integration of loans (Pozdniakov and Robert 2015: 643). Recent loans are integrated on a default basis into class *b* (Mc Laughlin 1997: 14f), a tendency that has spread in urban and regional varieties of Wolof, with large numbers of second language speakers. Nouns that are found in other classes in more conservative varieties of Wolof have shifted to class *b* in the usage of these speakers. A frequently used noun such as *goor* ‘man’, in class *g* in conservative Wolof, is used by some urban speakers with class *b* morphology (Mc Laughlin 1997: 19).

Table (54) Different strategies of loan integration in Wolof (Mc Laughlin 1997)

Singular noun	NC	Gloss	Integration strategy	Source of loan
<i>malaka</i>	<i>m</i>	'angel'	phonological	<i>Arabic</i>
<i>galaas</i>	<i>g</i>	'ice'	phonological	<i>French</i>
<i>warga</i>	<i>w</i>	'tea'	phonological	<i>Arabic</i>
<i>seytaane</i>	<i>s</i>	'devil'	phonological	<i>Arabic</i>
<i>guyaab</i>	<i>b</i>	'guava fruit'	semantic ¹³	<i>Portuguese/French</i>
<i>guyaab</i>	<i>g</i>	'guava tree'	semantic	<i>Portuguese/French</i>
<i>kookaa</i>	<i>b</i>	'Coca Cola'	default	<i>French</i>

This historical layering of loan integration strategies explains why it is relatively difficult to assign semantic domains to noun classes in Wolof. The most recent trend of default assignment to class *b*, and the large amount of loans, especially from French, are having a profound effect on the relative size of noun classes with respect to each other. This process not only diminishes the semantic coherence of class *b*, but, by triggering a shift of nouns traditionally belonging to other classes to class *b*, the size and the overall semantic relationships between noun classes and nouns are weakened.

7.2 Loan integration and semantics in the noun class system of Fuuta Jaloo Pular

Several of these above mentioned strategies for loan integration are reported by Diallo (2010) for Fuuta Jaloo Pular, henceforth referred to as 'Pular'. This variety of Fula has been in close and prolonged contact with Mande languages spoken in the area (Soso, Jalonke, Maninka, Bambara, Garanke, Jaxanka, etc.) and has acquired a large number of loans from these languages. It is crucial to note that Mande languages, unlike Pular, do not have noun classes. As described by Diallo (2010), the majority of loans have been integrated into Pular without any changes and attributed to the *-dɔ* class, which is also the class of singular human terms, but without any added morphological class marking on the noun indicating class membership, which means that loans remain prefixless but trigger agreement of

¹³ As a reminder, class *b* in Wolof is the fruit class, *g* is the tree class. The matching of noun class *g* with the onset of the noun *guyaab* is coincidental here.

class *-dó*. Like other noun class languages, Pular has a zero-marked allomorph for the human noun class. Even though there is a semantic clash between the human semantics of this noun class and the miscellaneous semantics of the borrowed items, this is of course a convenient choice for the integration of loans, as they can be integrated without any changes to their form (Pozdniakov, personal communication). In the plural, these nouns are assigned to one of the two plural classes available for nouns denoting non-humans. The nouns *méli* ‘poison’, from Soso, and *nákó* ‘garden’, from Maninka, have been borrowed into Pular as *eli* and *naakoo* respectively (Diallo 2010: 75). Both nouns trigger agreement of the human class *-dó*, but do not display class morphology on the noun itself. As a consequence of large-scale borrowing, *-dó* class membership and agreement has shifted from being exclusively reserved for human nouns to accommodating nouns from all sorts of semantic domains.

A subset of nouns is integrated into Pular on phonological grounds, in cases where the coda of the borrowed noun resembles a Pular noun class suffix. This is the case for *janfa* ‘betrayal’, from Soso, which has entered class *-kal*, which has *-a* as an allomorph of its noun class suffix, and *kafu* ‘contribution payment’ from Jaxanka, which has entered class *-ku*, which has *-u* as an allomorph of one of its noun class suffixes (both examples are from Diallo 2010: 76). The last segment of these borrowed nouns has thus been reanalysed as having Pular noun class morphology, and the noun has been attributed to the relevant class. This option is only available, however, if the semantics of the borrowed noun does not clash with the semantics of that particular noun class. For example, the loans *suntu* ‘orchard’ from Soso and *mbuuru* from Jaxanka would be eligible by their phonetic shape to be integrated into class *ngu*, one of whose noun class allomorphs is the suffix *-u*. As Diallo (2010: 78) argues, this option is not realised because of semantic constraints, as the *ngu* class is associated with animals, objects, and abstracts. Other nouns are simply affixed with a semantically matching noun class suffix, such as the nouns *gooki* ‘baboon’ and *dunngé* ‘beehive’, both borrowed from Soso, which have become *gookii-ru* and *dunngé-re* in Pular, assigned to classes *-ndu* and *-nde* respectively (Diallo 2010: 79).

As pointed out by Diallo (2010: 80), the influx of loanwords into Pular has systemic consequences. Large-scale loan integration inflates those classes which accommodate the most loanwords. In the case of Pular, the default class for loanwords is *-dó*, which takes more than 40% of all loans (Diallo 2010: 80) and is prefixless, increasing the number of words which do not have suffixes, i.e. which consist of only a stem. Heavy borrowing has also changed the semantic uniformity of class *-dó*, as well as adding a new singular plural paradigm, given that loans in *-dó* pluralise in classes *-nde* or *-ndi*, whereas human nouns pluralise in class *-be*.

7.3 Contact induced effects on noun class semantics in Jóola and Bãinounk languages

Research on syntactic calquing and parallel structures in the noun class systems of various varieties of Bãinounk and Jóola is ongoing, and although conclusive evidence is still being developed, preliminary data suggests that contact effects are a factor in shaping the noun class systems of these languages. The languages discussed in this section are Bãinounk Gubëeher, Jóola Kujireray, and Jóola Eegimaa, all of which have their highest concentration of speakers in adjacent areas to the west of Ziguinchor. Many people living in the area are fluent in more than one of these languages.

In Bãinounk Gubëeher, several strategies for noun class assignments of borrowed items are available; these depend to some extent on the provenance of the borrowed noun. The semantic assignment of loans into prefixing noun class paradigms according to shape-based semantic criteria is attested. The item *bu-balog* ‘ball’, from French *ballon* ‘ball’, is integrated into the *bu-/i-* paradigm, which already contains many round items; the loan *gu-furset* ‘fork’, from French *fourchette* ‘fork’, is integrated into the paradigm *gu-/ha-*, which contains other long and hard items (cf. section 3.3.1). The semantic coherence of these noun class paradigms is therefore reinforced by these loans. In the Bãinounk languages, the majority of loans from languages that do not have noun class prefixes (Wolof, French, Creole, Mandinka) have been assigned to a default agreement class prefixed with *a-*, and

using an inflectional suffix for plural marking, both in agreement and on the noun itself. The default assignment of loans into Gubëeher inflates the number of prefixless nouns and of nouns with *a*-agreement, thus changing the character of the noun class system from a predominantly prefixing system, in which plurality is marked by change of prefix, to a mixed system where plurality is marked by a suffix, which falls outside the scope of prefixed nominal classification.

Table (55) Loans from classless languages into Bâinounk Gubëeher

Singular noun	Plural noun	NC agreement	Strategy of integration	Source and Gloss
<i>koloŋ</i>	<i>koloŋ-oŋ</i>	<i>a-/a- -ŋ</i>	default	<i>koloŋ</i> ‘well’ (Mandinka)
<i>caabi</i>	<i>caabi-eŋ</i>	<i>a-/a- -ŋ</i>	default	<i>caabi</i> ‘key’ (Kriolu)
<i>bu-baloŋ</i>	<i>i-baloŋ</i>	<i>bu-/i-</i>	semantic	<i>ballon</i> ‘ball’ (French)
<i>gu-fūrset</i>	<i>ha-fūrset</i>	<i>gu-/ha-</i>	semantic	<i>fourchette</i> ‘fork’ (French)
<i>kaleron</i>	<i>ña-leron</i>	<i>kan-/ñan-</i>	phonological	<i>kaleron</i> ‘cooking pot’ (Kriolu)

It has been hypothesised (see Cobbinah 2010, submitted) that the large influx of loans from these languages has expanded the plural suffixing agreement class (labelled as default in Table (55) to the extent that in some varieties of Bâinounk, such as Gujaher, it is spreading across non-borrowed vocabulary and replacing other types of agreement in the process.

More relevant for noun class semantics is loan integration according to morphological-semantic criteria. This strategy is most likely to be applied in settings where contact is between languages that have noun class systems, such as languages of the Jóola and the Bâinounk families, which both have noun class prefixes of the shape V- and CV-. Even in cases where the phonological shape of the borrowed items has an equivalent in the receiving language, the semantics associated with this class do not usually cover the same domains. Some items, whose membership in a particular noun class is inexplicable in terms of semantics, might have been assigned to that noun class on phonological grounds. To give some examples, the noun *ji-gaj* ‘panther’ in Jóola Eegimaa is in class *ji-*, which is otherwise the class of diminutives and some other inherently small items. To find the noun for panther

in this class is puzzling, and either goes against the semantic composition of this noun class, or can only be explained (as done by Sagna 2008) by interpreting the diminutive semantics as a strategy to mitigate the threatening force of the panther by associating it with smallness. A phonologically related form of the noun for panther, *jigaaɟ*, can also be found in many of the languages of the Bainouk and the genetically related Kobiana, eg. *ji-gaaɟ* in Gubéeher. In these languages there is no semantic mismatch with other members of this class as, in Gubéeher, class *ji-* hosts a large number of animals of various kinds. Considering this, and the fact that other Jóola languages use an unrelated form for the panther (e.g. *esaamay* in Jóola Fogy), it is plausible that the item has been borrowed from a Bainouk language into Eegimaa – and indeed, the areas where Gubéeher and Eegimaa have their highest concentration of speakers are directly adjacent to each other.

Although the direction of borrowing is difficult to establish in the light of lack of historical data, the borrowing of complete nouns including their noun classes undoubtedly has an effect on the semantic extension of that class in the receiving language. The prefix *ba-* is involved in another case of noun class borrowing between Gubéeher and a Jóola language, in this case Jóola Kujireray. Watson (2015: 263) explains the Kujireray rare noun class paradigm *ba-/si-* through language contact with Gubéeher. The only item using this paradigm in Kujireray is the noun for ‘girl’, *ba-sungutu/si-sungutu*, the stem being borrowed from Mandinka *sunkutoo* ‘girl’, and the singular prefix from Gubéeher, where the term for ‘girl’ is *bě-jíd/bějíd-éŋ*. Other nouns that suggest wholesale borrowing are presented in Table (56).

Table (56) Wholesale borrowings between Gubéeher and Kujireray

Jóola Kujireray		Bainouk Gubéeher	
<i>ba-kec</i>	‘write’	<i>ba-keec</i>	‘write’
<i>ba-laj</i>	‘be nasty’	<i>ba-laaj</i>	‘be evil’
<i>ba-poc</i>	‘chicken pox’	<i>ba-poc</i>	‘scabies’
<i>ba-wuc</i>	‘wind’	<i>ba-wuc</i>	‘wind’
<i>ba-pucen</i>	‘lemon juice’	<i>ba-pusun</i>	‘lemon juice’

On the whole, the prefix *ba-* in Kujireray has a similar semantic extension to the same suffix in Bāinounk Gubēcher, serving, for example, as a collective plural for smallish items. Ongoing borrowing between the two languages may have had an effect on streamlining the semantics of the noun class systems of these languages.

8 Conclusion

The rich and complex noun class systems attested in Atlantic languages have much to contribute to the study of noun classification in general, as well as to historical and typological research on nominal classification in Niger-Congo languages. As outlined in this paper, research on semantic aspects of these classification systems also offers a wealth of topics for further research. Some of these topics concern all Atlantic languages; some may be restricted to certain geographic areas or subgroups of Atlantic languages.

Because of the need to provide first descriptions of Atlantic languages, many of the available grammars cannot delve very deeply into the complex and specific questions and intricacies of noun class semantics. Nevertheless, evidence pointing to semantic principles governing nominal classification can be gleaned from the data presented in existing descriptions, even where semantics is not addressed explicitly. With only a little more effort, even very basic grammatical descriptions and sketches could be made more rewarding for researchers interested in semantics through the choice of examples and the organisation of the material. Higher usability of descriptions and grammars could be achieved by always presenting always in their complete paradigms, i.e. providing singular and plural forms for all nouns which have plural forms, including the relevant agreement information. For those nouns whose roots are compatible with various noun class paradigms, a complete presentation of these interconnected paradigms (or paradigmatic networks) would be immensely helpful for the identification of the semantic principles underlying noun class morphology. The same is true for the absolute use of noun classes,

which seems to be a feature of many Atlantic languages, and which also allows direct insights into the semantic value attached to the paradigms involved.

In order to gain a better understanding of the relevance of the genetic versus areal factors that shape these languages, a better understanding of contact-induced change is necessary. In the research area of noun class semantics this primarily concerns the integration of loans in terms of nominal classification. Loan integration can have considerable effects on the semantic cohesion of a noun class system. For this purpose, diachronic and synchronic patterns of language contact and multilingualism must be documented and researched.

Detailed ethnobotanical and ethnobiological surveys that would bring to light the important role of noun classification in these domains are waiting to be conducted. Even the scraps of data available at present promise fascinating insights into the semantics of nominal classification and the relationship between roots and noun class morphology, as this is one of the areas notorious for roots being compatible with several noun class paradigms, thereby enabling the creation of vocabulary for plant parts and a concomitant predictable change in nominal semantics. Other semantic domains also offer a fair number of roots that can be inserted into more than one noun class paradigm. The intricacies of the consonant mutation systems of languages from the Tenda, Cangin and Nyun-Buy groups, as well as from Fula and Sereer – including their semantic load – has not yet been fully explored. A feature that is potentially areal, but might be found to have a wider distribution once more data are available, are the triadic paradigms so far attested for Bak and Nyun-Buy languages. The place of these so-called collective or uncountable plural forms within the noun class systems, as well as their interactions with the roots and their exact semantic contributions to the nouns they occur with, is still unclear. As conventional conceptions of noun class systems are based on binary singular-plural distinctions, forms such as these are easy to overlook.

Abbreviations used in the glosses:

I,II,III	consonant mutation grade
1,2,3	person
ACC	accusative
AGR	agreement
ASP	aspect
C	consonant
CL	(noun) class
COMP	complement
CONN	connective
COP	copula
DEF	definite
DEM	demonstrative
DF	default
FOC	focus
ID	identification
LOC	locative
MK	marked
NAR	narrative
NC	noun class
NEG	negation
NEUT	neutral
OBJ	object
PASS	passive
PL	plural
PRG	progressive
PRO	pronoun
PROX	proximal
QNT	quantizer
REL	relative
SG	singular
SUBJ	subject
TOT	(gloss not provided by authors)
V	verb
V	vowel
VEN	venitive

Table (57) Atlantic languages referred to in this paper

Language	Branch	Group	Literature cited
Temne	Mel	Temne-Baga	Kamarah (2007), Yillah (2011)
Baga Mandori	Mel	Temne-Baga	Seidel (this volume a)
Gola	Mel	Gola	Koroma (1997)
Mani	Mel	Bullom Kisi	Childs (2011)
Kisi	Mel	Bullom Kisi	Childs (1995, this volume)
Nalu	Bak	unclear	Seidel (this volume b)
Balant Ganja	Bak	Balant	N'diaye Corréard (1970), Biaye and Creissels (2015), Creissels (this volume b)
Jóola Kerak	Bak	Jóola	Segerer (2015a), Robert and Segerer (this volume)
Jóola Eegimaa/ Banjal	Bak	Jóola	Sagna (2008), Bassène (2006)
Jóola Fogny	Bak	Jóola	Sapir (1969)
Jóola Kuwaatay	Bak	Jóola	Coly (2011)
Jóola Kujireray	Bak	Jóola	Watson (2015, this volume a and b)
Manjaku	Bak	Manjaku-Mancagne-Pepel	Segerer (2015b)
Mancagne	Bak	Manjalu-Mancagne-Pepel	Trifković (1969)
Bijogo	Bak	Bijogo	Segerer (2002)
Bainouk Gubëcher	North Atlantic	Nyun-Buy	Cobbinah (2013)
Bainouk Gujaher	North Atlantic	Nyun-Buy	Lüpke (this volume)
Bainouk Guñaamolo	North Atlantic	Nyun-Buy	Bao-Diop (2013, 2015)
Bainouk Guñun	North Atlantic	Nyun-Buy	Quint (2015)
Kobiana	North Atlantic	Nyun-Buy	Doneux (1990), Voisin (2015a, 2015b)
Konyagi	North Atlantic	Tenda	Santos (1996)
Basari	North Atlantic	Tenda	Perrin (2015, this volume)
Wolof	North Atlantic	Wolof	Pozdniakov and Robert (2015), McLaughlin (1997)
Sereer	North Atlantic	Fula Sereer	Renaudier (2015), McLaughlin (1992-1994)

Laalaa	North Atlantic	Fula Sereer	Dieye (2015)
Fula	North Atlantic	Fula Sereer	Paradis (1992), Arnott (1970), Mohamadou (1994), Diallo (2010), Caudill and Diallo (2000), Breedveld (1995a, 1995b).

References

- Aikhenvald, Alexandra Y. 2000. Unusual Classifiers in Tariana. In *Systems of Nominal Classification*, ed. Gunter Senft, 93–113. Cambridge: Cambridge University Press.
- Aikhenvald, Alexandra Y. 2003. *Classifiers. A typology of noun categorization devices*. Oxford/New York: Oxford University Press.
- Arnott, David W. 1970. *The nominal and verbal systems of Fula*. Oxford: Oxford University Press.
- Bao-Diop, Sokhna. 2013. Description du baynunk guñaamolo, langue minoritaire du Sénégal. Analyse phonologique, morphologique et syntaxique. PhD thesis. INALCO, Paris.
- BaoDiop, Sokhna. 2015. Les classes nominales du nyun gunyamolo. In *Les classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 384–420. Köln: Rüdiger Köppe Verlag.
- Bassène, Alain Christian. 2006. Description du Jola Banjal (Sénégal). PhD thesis. Université Lyon 2.
- Bassène, Alain-Christian. 2015. Les classes nominales du biafada. In *Les classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 460–485. Köln: Rüdiger Köppe Verlag.
- Baum, Robert M. 1999. *Shrines of the slave trade: Diola religion and society in precolonial Senegambia*. New York: Oxford University Press.
- Berlin, Brent. 1977. Speculations of the Growth of Ethnobotanical Nomenclature. In *Sociocultural Dimensions of Language Change*, edited by Benjamin Blount and Mary Sanches, 63–102. New York: Academic Press.
- Biaye, Seckou, and Denis Creissels. 2015. Les classes nominales du balant ganja. In *Les classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 215–268. Köln: Rüdiger Köppe Verlag.
- Bondéelle, Olivier. 2015. Polysémie et structuration du lexique. Le cas du Wolof. PhD thesis. University of Leiden.

- Breedveld, Johanna O. 1995a. The Semantic Basis of Noun Class Systems. The Case of the Ki and Nge Classes in Fulfulde. *Journal of West African Languages* 25(2): 63–74.
- Breedveld, Johanna O. 1995b. *Form and meaning in Fulfulde. A Morphological Study of Maasinankoore*. Leiden: Research School CNWS.
- Brooks, George B. 1993. *Landlords and strangers. Ecology, society, and trade in Western Africa, 1000-1630*. Boulder/San Francisco/Oxford: Westview Press.
- Caudill, Herbert, and Ousmane Besseko Diallo. 2000. *Mido waawi pular, Learner's guide to Pular (Fuuta Jallon)*. Conakry: Peace Corps.
- Childs, Tucker. 1983. Noun class affix renewal in South West Atlantic. In *Current approaches to African linguistics II*, edited by Jonathan D. Kaye, Hilda Koopman, Dominique Sportiche, and Andre Dugas, 17–29. Dordrecht: Mouton de Gruyter; Foris Publications.
- Childs, Tucker. 1995. *A grammar of Kisi*. Berlin/New York: Mouton De Gruyter.
- Childs, Tucker. 2011. *A grammar of Mani*. Berlin/Boston: De Gruyter Mouton.
- Cobbinah, Alexander. 2010. Casamance as an area of intense language contact. In *Journal of language contact* (THEMA 3): 175–201.
- Cobbinah, Alexander. 2013. Nominal classification and verbal nouns in Baïnounk Gubëeher. PhD thesis. SOAS, London
- Cobbinah, Alexander, and Friederike Lüpke. 2014. When number meets classification. The linguistic expression of number in Baïnounk languages. In *Number – Constructions and Semantics. Case studies from Africa, Amazonia, India and Oceania*, edited by Gerrit Dimmendaal and Anne Storch, 199–220. Amsterdam/Philadelphia: John Benjamins.
- Cobbinah, Alexander. In press. Agreement of nouns with suffixed plurals in Nyun from a historical and areal perspective. In: *Journal of African Languages and Linguistics*.
- Cobbinah, Alexander. Manuscript. A dictionary of Baïnounk Gubëeher.
- Coly, Jules Jacques. 2010. Morphosyntaxe du Kuwaatay (Sénégal). PhD thesis. University of Cologne.
- Contini-Morava, Ellen. 1994. Noun Classification in Swahili. PhD thesis. University of Virginia, Charlottesville.
- Contini-Morava, Ellen. 1996. Things' in a noun-class language. Semantic functions of agreement in Swahili. In *Toward a calculus of meaning. Studies in markedness, distinctive features and deixis*, edited by Edna Andrews and Yishai Tobin, 251–290. Amsterdam/Philadelphia: John Benjamins.

- Contini-Morava, Ellen. 1997. Noun classification in Swahili. A cognitive-semantic analysis using a computer database. In *African Linguistics at the Crossroads. Papers from Kwaluseni*, edited by Robert K. Herbert, 599–628. Köln: Rüdiger Köppe Verlag.
- Contini-Morava, Ellen. 2000. Noun Class as Number in Swahili. In *Between Grammar and Lexicon*, ed. Ellen Contini-Morava and Yishai Tobin, 3-30. Amsterdam/Philadelphia: John Benjamins.
- Contini-Morava, Ellen, and Marcin Kilariski. 2013. Functions of nominal classification. In *Language Sciences* 40: 263–299.
- Corbett, Greville. 1991. *Gender*. Cambridge: Cambridge University Press.
- Craig, Colette (ed.). 1986. *Noun Classes and Categorization*. Amsterdam/Philadelphia: John Benjamins.
- Creider, Chet A. 1975. The Semantic System of Noun Classes in Proto-Bantu. In *Anthropological Linguistics*, 17(3): 127–138.
- Creissels, Denis 2001. Le système des classes nominales des langues Niger-Congo: prototype et variations. In *LINX* 45: 157-166.
- Creissels, Denis 2015. Typologie des systèmes des classes atlantiques. In *Les classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 6-57. Cologne: Rüdiger Köppe Verlag.
- Creissels, Denis. This volume a. Noun class systems in Atlantic languages. In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Creissels, Denis. This volume b. A sketch of Ganja (Balant). In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Crisma, Paola, Lutz Marten, and Rint Sybesma. 2011. The Point of Bantu, Chinese and Romance Nominal Classification. *Italian Journal of Linguistics* 23(2): 251–299.
- Demuth, Katherine. 2000. Bantu noun class systems. Loanwords and acquisition evidence of semantic productivity. In *Systems of Nominal Classification.*, edited by Gunter Senft, 270–202. Cambridge: Cambridge University Press.
- Demuth, Katherine, Nicolas Faraclas, and Lynell Marchese. 1985. Niger-Congo noun class and agreement systems in historical and acquisition perspective. *Studies in African Linguistics* (Supplement): 78–82.
- Demuth, Katherine, Nicolas Faraclas, and Lynell Marchese. 1986. Niger-Congo noun class and agreement systems in language acquisition and historical change. In *Noun Classes and Categorization*, edited by Colette Craig, 453–472. Amsterdam/Philadelphia: John Benjamins.

- Denny, Peter J., and Chet A. Creider. 1986. The Semantics of Noun Classes in Proto Bantu. In *Noun Classes and Categorization*, edited by Colette Craig, 217–240. Amsterdam/Philadelphia: John Benjamins.
- Diagne, Anna Marie. 2015. Le palor et le ndut. Deux langues atlantiques sans classes nominales. In *Les classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 269–299. Cologne: Rüdiger Köppe Verlag.
- Diallo, Abdourahmane. 2010. Morphological consequences of Mande borrowings in Fula: The case of Pular, Fuuta-Jaloo. *Journal of language contact* (THEMA 3): 71–85.
- Dieye, El Hadji. 2015. Les classes nominales en laalaa (léhar). In *Les classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 300–326. Cologne: Rüdiger Köppe Verlag.
- Dingemans, Mark. 2006. The semantics of Bantu noun classification. A review and comparison of three approaches. MA essay. Leiden University.
- Dobrin, Lise. 1995. Theoretical consequences of literal alliterative concord. *Chicago Linguistic Society (Regional Meeting)* 31(1): 127–142.
- Dobrin, Lise. 1998. The morphosyntactic reality of phonological form. In *Yearbook of Morphology*, edited by Geert Booij and Jaap Van Marle, 59–81. Dordrecht: Kluwer Academic Publisher.
- Dobrin, Lise. 2012. *Concreteness in Grammar. The Noun Class Systems of the Arapesh languages*. Stanford: CSLI Publications.
- Doneux, Jean Léonce. 1975. Hypothèse pour la comparative des langues Atlantiques. *Africana Linguistica* 6: 41–130.
- Doneux, Jean Léonce. 1990. La place de la langue buy dans le groupe Atlantique de la famille Kongo-kordofan. PhD thesis. Université Libre de Bruxelles.
- Fudeman, Kirsten A. 1999. *Topics in the morphology and syntax of Balanta, an Atlantic language of Senegal*. Cornell University.
- Geeraerts, Dirk. 2006. Prototype Theory. In *Cognitive Linguistics. Basic Readings*, edited by Dirk Geeraerts, 141–165. Berlin/New York: Mouton de Gruyter.
- Goldberg, Adele E. 1995. *Constructions. A Construction Grammar Approach to Argument Structure*. Chicago/London: University of Chicago Press.
- Greenberg, Joseph. 1963. *The languages of Africa*. Bloomington: Indiana University Press.
- Greenberg, Joseph. H. 1978. How does a language acquire gender markers? . In Joseph H. Greenberg (ed.), *Universals of human language* 3: 47-82. Stanford: Stanford University Press.

- Grinevald, Colette. 2000. A morphosyntactic typology of classifiers. In *Systems of nominal classification*, edited by Gunter Senft, 50–92. Cambridge: Cambridge University Press.
- Grinevald, Colette, and Frank Seifart. 2004. Noun classes in African and Amazonian languages. Towards a comparison. *Linguistic Typology* 8(2): 243–287.
- Hawthorne, Walter. 2003. *Planting rice and harvesting slaves. Transformations along the Guinea-Bissau coast, 1400-1900*. Portsmouth, NH: Heinemann.
- Heider, Eleanor R. 1972. Universals in Color Naming and Memory. *Journal of Experimental Psychology* 93: 10-20.
- Heine, Bernd. 1982. African Noun Class Systems. In *Apprehension. Das sprachliche Erfassen von Gegenständen. Part I: Bereich und Ordnung der Phänomene*, edited by Hansjakob Seiler and Christian Lehmann, 189–216. Tübingen: Gunter Narr.
- Hendrikse, Andries Petrus. 2001. Systemic Polysemy in the Southern Bantu Noun Class System. In *Polysemy in Cognitive Linguistics*, ed. Hubert Cuyckens and Britta Zawada, 185–212. Amsterdam/Philadelphia: John Benjamins.
- Idiata, Daniel Franck. 2005. *What Bantu child speech data tells us about the controversial semantics of Bantu noun class systems*. München: Lincom.
- Kamarah, Sheikh Umar. 2007. *A descriptive grammar of KaThemne (Temne)*. München: Lincom.
- Katamba, Francis. 2003. Bantu nominal morphology. In *The Bantu languages*, edited by Derek Nurse and Gérard Philippson, 103–120. London: Routledge.
- Kihm, Alain. 2000. *Noun class, gender, and the lexicon-syntax-morphology interfaces. A comparative study of Niger-Congo and Romance languages* (ms.).
- Koroma, Reginé. 1994. *Die Morphosyntax des Gola* (Afrikanistische Monographien Band 4). Köln: Institut für Afrikanistik.
- Lakoff, George. 1987. *Women, fire, and dangerous things. What categories reveal about the human mind*. Chicago/London: Chicago University Press.
- Langacker, Ronald W. 1987. *Foundations of cognitive grammar*. Stanford: Stanford University Press.
- Langacker, Ronald W. 1991. *Concept, Image, and Symbol. The cognitive basis of grammar*. Berlin/New York: Mouton de Gruyter.
- Lüpke, Friederike. This volume. Bainouk Gujaher. In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Maho, Jouni Filip. 1999. *A Comparative Study of Bantu Noun Classes*. PhD thesis. University of Göteborg.

- Mark, Peter. 2002. *'Portuguese' style and Luso-African identity. Precolonial Senegambia, sixteenth - nineteenth centuries*. Bloomington/Indianapolis: Indiana University Press
- Mc Laughlin, Fiona. 1992-1994. Consonant mutation in Sereer-Siin. In *Studies in African Linguistics* 233(3): 279–313.
- Mc Laughlin, Fiona. 1997. Noun classification in Wolof. When affixes are not renewed. In *Studies in African Linguistics* 26(1): 1–28.
- Mc Laughlin, Fiona. This volume. Consonant mutation. In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Mervis, Carolyn B., and Eleanor H. Rosch. 1981. Categorization of Natural Objects. *Annual Review of Psychology* 32: 89-115.
- Mohamadou, Aliou. 1994. *Classificateurs et représentation des propriétés lexicales en peul. Parlers de l'Aadamaawa*. Paris: Association Linguistique Africaine.
- Moxley, Jeri. 1998. Semantic Structure of Swahili Noun Classes. In *Language, history and linguistic description in Africa*, edited by Ian Maddison and Thomas J. Hinnebusch, 229–238. Trenton (NJ)/Asmara: Africa World Press.
- Ndao, Dame. 2014. *Phonologie, morphologie et structures syntaxiques du Pepel*. PhD thesis. UCAD, Dakar / INALCO Paris.
- N'diaye-Corréard, Geneviève. 1970. *Etudes fca ou balante (dialecte ganja)*. Paris: SELAF.
- Palmer, Gary B. and Claudia Woodman. 2000. Ontological classifiers as polycentric categories as seen in Shona class 3 nouns. In *Explorations in linguistic relativity*, edited by Martin Pütz and Marjolijn H. Verspoor, 225–249. Amsterdam/Philadelphia: John Benjamins.
- Paradis, Carole. 1992. *Lexical Phonology and morphology. The nominal classes in Fula*. New York/London: Garland Publishing.
- Perrin, Loïc-Michel. This volume. Basari. In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Perrin, Loïc-Michel. 2015. Les classes nominales en Basari. In *Les classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 518–563. Köln: Rüdiger Köppe Verlag.
- Pozdniakov, Konstantin Igorevich. 1993. *Sravnitel'naja grammatika atlanticeskix jazykov: imennye klassy i fono-morfologija* [A comparative grammar of the Atlantic languages: noun classes and morphophonology]. Moskva: Nauka.
- Pozdniakov, Konstantin Igorevich. 2009. La classification nominale: à la croisée des paradigmes. In *Essais de Typologie et de Linguistique Générale. Mélanges Offerts à Denis Creissels*, 87–105. Paris: ENS Editions.

- Pozdniakov, Konstantin Igorevich. 2015. Diachronie des classes nominales atlantiques. Morphophonologie, morphologie, sémantique. In *Les classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 58–106. Köln: Rüdiger Köppe Verlag.
- Pozdniakov, Konstantin, and Stéphane Robert. 2015. Les classes nominales en wolof fonctionnalités et singularités d'un système restreint. In *Les classes classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 567–655. Köln: Rüdiger Köppe Verlag.
- Pozdniakov, Konstantin, and Guillaume Segerer. This volume. Genealogical classification of Atlantic languages. In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Quint, Nicolas. 2015. Le système des classes nominales en nyun de Djifanghor. In *Les classes classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 421–459. Köln: Rüdiger Köppe Verlag.
- Renaudier, Marie. 2015. Les classes nominales en sereer. In *Les classes classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Poniakov, 486–520. Köln: Rüdiger Köppe Verlag.
- Richardson, Irvine. 1967. Linguistic Evolution and Bantu Noun Class Systems. In *La Classification Nominale Dans Les Langues Négro- Africaines*, ed. Gabriel Manessy and André Martinet, 373-390. Aix-en-Provence: Éditions du Centre National de la Recherche Scientifique.
- Robert, Stéphane, and Guillaume Segerer. This volume. Jóola Keeraak. A grammatical introduction. In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Rosch, Eleanor H. 1973. Natural categories. *Cognitive Psychology* 4: 328–350.
- Rosch, Eleanor H. 1978. Principles of categorization. In *Cognition and categorization*, edited by Barbara B. Lloyd and Eleanor H. Rosch, 27–48. Hillsdale (NJ): Lawrence Erlbaum Associates.
- Rosch, Eleanor H., and Carolyn B. Mervis. 1975. Family resemblances. Studies in the internal structure of categories. *Cognitive Psychology* 7: 573–605.
- Rosch, Eleanor H., Carolyn B. Mervis, Wayne D. Gray, David M. Johnson, and Penny Boyes-Braem. 1976. Basic objects in natural categories. *Cognitive Psychology* 8: 382–439.
- Sagna, Serge. 2008. Formal and Semantic Properties of the Gújjolaay Eegimaa. PhD thesis. SOAS, London.
- Sagna, Serge. 2010. Issues in noun classification and noun class assignment in Gújjolay Eegimaa (Banjal) and other Jóola languages. *Studies in African Linguistics* 39(1): 1–33.

- Sagna, Serge. This volume. A typological overview of Gújjolaay Eegimaa (Banjal). In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Santos, Rosine. 1996. *Le mey. Langue Ouest-Atlantique de Guinée*. PhD thesis. Université Paris III.
- Sapir, J. David. 1969. *A Grammar of Diola-Fogny: A language spoken in the Basse-Casamance region o Senegal*. Cambridge: Cambridge University Press.
- Sapir, J. David. 1971. West Atlantic: An Inventory. In *Current Trends in Linguistics 7*, edited by T. Sebeok, 45–112. Den Haag/Paris: Mouton.
- Sauvageot, Serge. 1967. Note sur la classification nominale en bainouk. In *La classification nominale dans les langues négro-africaines*, edited by Gabriel Manessy, 225–136. Aix-en-Provence: Éditions du Centre National de la Recherche Scientifique.
- Sauvageot, Serge. 1987. La linguistique en tant que témoignage historique. Le cas du baynunk. In *Contributions à l'histoire du Sénégal*, edited by Jean Boulègue, 17–22. Cahiers du C.R.A.
- Schadeberg, Thilo C. 2001. Number in Swahili grammar. *Afrikanistische Arbeitspapiere* 68: 7–16.
- Segerer, Guillaume. 2002. *La langue bijogo de Bubaque (Guinée Bissau)*. Louvain/Paris: Peeters.
- Segerer, Guillaume. 2015a. Keerak. In *Les classes classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 107–153. Köln: Rüdiger Köppe Verlag.
- Segerer, Guillaume. 2015b. Manjaku. In *Les classes classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 189–214. Köln: Rüdiger Köppe Verlag.
- Seidel, Frank. This volume a. Baga Mandori. In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Seidel, Frank. This volume b. Nalu. In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Selvik, Kari-Anne. 2001. When a dance resembles a tree. A polysemy analysis of three Setswana noun classes. In *Polysemy in cognitive linguistics*, edited by Hubert Cuyckens and Britta Zawada, 161–184. Amsterdam/Philadelphia: John Benjamins.
- Senft, Gunter (ed.). 2000. *Systems of Nominal Classification*. Cambridge: Cambridge University Press.

- Spitulnik, Debra. 1988. Levels of Semantic Structuring in Bantu Noun Classification. In *Current approaches to African linguistics, Volume 5*, edited by Paul Newman and Robert D. Botne, 207–220. Dordrecht: Foris.
- Taylor, John R. 1995. *Linguistic Categorization*. Oxford: Oxford University Press.
- Trifković, Mirjana. 1969. *Le Mancagne. Étude phonologique et morphologique*. Dakar: IFAN.
- Voisin, Sylvie. 2015a. Les classes nominales en kobiana. In *Les classes classes nominales dans les langues Atlantiques*, edited by Denis Creissels and Konstantin Pozdniakov, 327–383. Köln: Rüdiger Köppe Verlag.
- Voisin, Sylvie. 2015b. Sur l'origine du suffixe du pluriel dans le groupe ñuñ-buy. *LLA*, 1(1): 13–42.
- Watson, Rachel. 2015. Noun classification and verbal nouns in Kujireray. PhD thesis. SOAS, London.
- Watson, Rachel. This volume a. A sketch of Kujireray. In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Watson, Rachel. This volume b. Verbal nouns in Atlantic languages. In *The Oxford guide to the Atlantic languages of West Africa*, edited by Friederike Lüpke. Oxford University Press: Oxford.
- Williamson, Kay. 1989. Niger-Congo Overview. In *The Niger-Congo Languages*, edited by J. Bendor-Samuel, 3–45. Lanham: University Press of America.
- Williamson, Kay, and Roger Blench. 2000. Niger-Congo. In *African languages. An introduction*, edited by Bernd Heine and Derek Nurse, 11–42. Cambridge: Cambridge University Press.
- Wilson, William André. 1965. A reconstruction of the Pajade mutation system. *Journal of West African languages* 2: 15–20.
- Wilson, William A. 2007. *Guinea Languages of the Atlantic Group. Description and Internal Classification*. Frankfurt am Main: Peter Lang.
- Wittgenstein, Ludwig. 1953. *Philosophische Untersuchungen*. Oxford: Blackwell.
- Yillah, Sorie. 2011. *Temne phonology and morphology*. München Lincom.
- Zawada, Britta, and Mtholeni N. Ngcobo. 2008. A cognitive and corpus-linguistic re-analysis of the acquisition of the Zulu noun class system. *Language matters. Studies in the languages of Africa* 39(2): 316–331.