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Although I can see the words, there seems to be no connection between them. Let me concentrate now. Well. I've understood that there are time zones within the flight. It must be a long flight to the U.S. or Australia, where time changes. At this crossing point . . . er . . . we sort of go back in time, which causes the jet lag. At this point I would say, I've somehow solved the problem. The change of time while going against the sun. That's it. Jet lag — is the fatigue after the flight, which is probably caused by the fact that one loses a night's sleep during that long flight. You arrive at your destination . . . as if you have missed a night in your life. Time zone must be the crossing point.

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Second Language Learners' Reports on the Interpretive Process: Talk-aloud Protocols of Translation

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There is in the field of language research a new interest in the use of introspective data to examine human processing of complex language tasks. Although we may never know exactly what goes on inside the mind of the language user, the kinds of information revealed simply by asking the user what s/he is doing when performing a language task can provide us with a rich source of data to add to our already established research techniques. The usual methods of behavior observation and product assessment inevitably require inference on the part of the researcher, since the underlying processes which produced a language outcome cannot be seen, but only deduced. This reliance on researcher inference leaves considerable room for error and uncertainty. In the field of second language research, the limitations of these techniques are clearly illustrated by Kenyeres and Kenyeres' (1938) study of seven year old Eva's learning of French as a second language. When little Eva said *je fera*, instead of *je ferai*, it was impossible for an observer to infer the source of her error. Had she not spontaneously explained that, in her view, it "had" to be *je fera* because she was a "la" (feminine), observers would never have known the organizing principle which produced the erroneous utterance.

The use of introspective techniques in second language research is thus founded on a mentalistic view of man, for it assumes that the language user is actively interacting with her language and her world, and that the cognitive processes underlying her linguistic behavior can best be accessed through self reports elicited directly from the user. To date, introspective data have been acquired via various methods, including language learner diary studies and subject interviews (e.g. Rivers, 1983; Papalia, 1977). These techniques necessarily rely upon subjects' relatively long-term recall of their language processing, since the data are usually obtained some time after the subject has engaged in a specific language task (i.e. an hour or more later), or they focus on more general learning strategies used in language acquisition. They are therefore inadequate for the researcher interested in an immediate identification of specific processes as they occur. Additional available methods include the collecting of retrospective protocols, which require users to report on their internal processes immediately upon completion of a lan-

guage task; and concurrent processing techniques, which collect "talk aloud" protocols of subjects describing exactly what they are doing while performing a language task. Retrospective techniques appear to allow more room for subject distortion than do concurrent data collection methods since what subjects read in later portions of a text may affect recall and interpretation of prior information.

In view of these limitations, the pilot study on which this paper reports used concurrent "talk aloud" protocols in a beginning attempt to examine second language learner processes of text analysis, as revealed in their performance of a written translation task. A translation task was chosen because other research has shown translation to be effective in eliciting retrieval strategies of second language learners (Swain, Naiman and Dumas, 1978), and because prior piloting had revealed that strategies of analysis, editing, and inference for purposes of both comprehension and production can be elicited by such a task as well. (In this paper *comprehension* refers to subjects' understanding of the intended meaning of the text; *production* refers to their renditions of the text into their native language.) Written rather than oral translations were elicited in order to facilitate eventual cross-subject product comparisons and to allow a more adequate assessment of the effect of process on product. (The word *product* is used here to mean anything written down by the subjects. All other data are considered to be *process*.)

Although the data one can obtain with this method do depend upon subjects' ability to access their linguistic strategies, this pilot study demonstrates that even sketchy accounts provide an informative glimpse at learner processes of translation, including both comprehension and production components. Although undoubtedly incomplete, concurrent protocols offer an immediate ongoing account of internal language processing as it is actually happening.

Purpose

The purpose of this exploratory work, then, has been to:

- 1) develop a methodology for researching learner processes of second language translation via the use of concurrent protocols;
- 2) develop a way of coding the data which is comprehensive, reliable, generalizable to other categories of learners and to other foreign language processing tasks, and which can be used to compare learner processing both across and within subjects;
- 3) identify some of the kinds of questions which may be illuminated by an examination of language processing protocols, as well as the sorts of inter- and intra-subject comparisons which may be made.

Long term plans are to use the coding system to examine the translation processes of various types of second language learners, competent bilinguals, and professional translators. This "working paper" demonstrates uses and coding of the protocols, presenting data from two learners for purposes of illustration and comparison.

Design

Five intermediate-level university students studying French as a second language were instructed to translate, in writing, a short excerpt from a French language text. The text contained portions of varying difficulty in order to provide some indication of possible text effects on learner strategies. Subjects were individually presented the French language text (see Appendix) and asked to say aloud exactly what they were doing while they were doing it. Subjects did not receive prior training in producing talk aloud protocols. Consequently, some required prompting. If they fell silent for too long, the experimenter asked what they had just been doing during the silence. Unlike some other studies (e.g. Dechert and Sandrock, 1984), no dictionary use was allowed, as it was believed that the absence of working aids would elicit more strategies for coding, thus enabling development of a more complete coding scheme.

Coding

Thus far, two types of coding have been developed; one for identifying the unit of analysis in translation and another for categorizing the text processing strategies of language learners. These have proved useful for comparing language translation processes within and across subjects. The coding systems devised for each area of analysis will be discussed separately below.

Unit of Analysis

Some researchers have suggested that the unit of text analysis in reading or translation may be different for good vs. poor second language learners (e.g. Hosenfeld, 1977) and for professional vs. nonprofessional translators (e.g. Tirkkonen-Condit, 1985). An accurate identification of these differences could potentially advance not only language research, but language pedagogy as well. Yet the difficulty of determining a subject's unit of text analysis (e.g. word, phrase, sentence) is clear. Analysis of product alone or the use of interviews and retrospective protocols necessarily rely upon either subject recall or researcher inference. The concurrent protocols collected in this study demonstrate that the units of analysis used in translation can be coded from subjects' own reports of their processing. Although not absolutely precise, this method affords more accurate identification of the units

than was previously possible. Additionally, the coding system devised allows comparison within and across subjects regarding the units of analysis most frequently employed and the patterns of variation used across unit level.

The coding scheme identifies five levels of analysis: morpheme, word, group, clause, and sentence, as shown in figure 1.

Unit of Analysis Coding

Level 1 – morphemic or phonemic analysis (M)

Breakdown or expansion of a word into phoneme or morpheme units, e.g. *re*, *reportent*, *porter*, or *reporter*; or treating *ne* and *pas* as separate units;

Level 2 – word unit analysis (W)

Treatment of a word as a complete unit. Articles in front of nouns, and verb units containing all their constituent morphemes are coded as one unit; e.g. *Les Américains*, *Américains*, *mauvaise*, and *se sont mis* are each single word-units when grouped by a subject in the manner indicated.

Level 3 – group unit analysis (G)

Breakdown of a sentence into clusters of words larger than one word-unit but smaller than a complete clause; or grouping of words into units larger than a clause, but not large enough to include a second clause or a complete sentence. Examples: *sur les autres*, *de mauvaise*, *les Américains*, *s'ils sont*, and *s'ils sont de mauvaise humeur*, *ne la reportent*.

Level 4 – clause unit analysis (C)

Processing of words in complete clause units including subject, verb, and full complements. Examples: *s'ils sont de mauvaise humeur*, *Les Américains ne la reportent pas sur les autres*. The following are not coded as clause-units: *Les Américains ne la reportent pas*, *ne la reportent pas sur les autres*, and *ils sont*.

Level 5 – sentence unit analysis (S)

Processing a complete sentence as an entire unit, without breaking it down into smaller units of analysis; e.g. *Les Américains*, *s'ils sont de mauvaise humeur*, *ne la reportent pas sur les autres*.

Figure 1. Showing the method used in coding subjects' units of text analysis.

Units larger than the sentence were not included in the coding system, since these subjects appeared not to be working with larger units. It is likely that a larger study will necessitate inclusion of categories for larger units. All units at all levels were coded according to language used; that is, as having been carried out in either French (the source language) or English (the target language). Only text-specific comments were used to determine the unit of analysis so that, for example, general comments about something that occurred previously in the text were not coded as specific units of text analysis. Because reliable records were not kept during data collection as to when the translations were being written down as opposed to when they were simply being processed verbally, no accurate data are available regarding the units of analysis used in the written product. Consequently, product codings are mixed in with process codings in the data presented in this paper. In the larger study, product and process units will be separated.

By portioning the translation text into individual sentences and writing in the relevant verbalizations from subjects' protocols, the units of analysis used by individual subjects are visible (see figure 2), revealing differences between the subjects.

Unit of Analysis Coding

French text: Le Comportement des Américains

Subject A: 1st try:

Subject B: 1st try: Le Comportement des Américains (Group/French)
2nd try: The deportment of Americans (Group/English)

French text: Les Américains vivent mieux en société que les Français.

Subject A: 1st try: The Americans live better (Group/English)
The American society lives better than the French (Sentence/English)

Subject B: 1st try: Des Américains vivent mieux en société (Clause/French)
they have a better (Group/English)
a better society (Group/English)
en société, standard of living (Group/French, English)
que les Français. (Group/French)

2nd try: Américains (Word/French)
Americans live better in society (Clause/English)
live better in society than French (Group/English)
I mean the French (Word/English)

3rd try: they live better in society than the French (Sentence/English)
Americans live better (Group/English)
vivent mieux en société que les Français (Group/English)
in society (Group/English)

Figure 2. Sample unit of analysis coding.

Subject A ignores the title; Subject B reads it through in French without translating, then goes on to the rest of the text. By the time he returns for an edit check, after having worked through the entire text, he knows what the title means and processes it as an entire group, in English. On the first sentence, A works steadily through it in English, processing first in English, at the group level, and then moving directly on to the sentence level, again in English. She works on the sentence as a whole unit only once and does not return later for an edit check. In contrast, B begins just as he began his processing of the title: by reading a group of words first in French. He builds up to the sentence level unit only gradually – moving from a group read in French to a group processed in English, to a slightly different English grouping, and then to a smaller group which he processes first in French and then in English. He finishes off the sentence with another French

group. The result is an entire sentence processed in pieces, partly in French and partly in English. He then goes back to try again, this time moving from a word-unit to a clause-unit to group-unit to a different word-unit and then again to the sentence as a whole unit. When he returns later for editing, he moves from an English group to a French group, and back to a small problematic group which he translates into English, making his editing processing noticeably smoother than his first times through the sentence. Both subjects continue along the patterns evidenced here throughout their protocols. Final figures for the amount of processing done by each subject at the various unit of analysis levels appear in figure 3.

Unit of Analysis Numerical Profiles				
Unit of Analysis	Subject A		Subject B	
	#	%	#	%
Morpheme:	1	3	4	2
Word:	6	15	52	25
Group:	23	59	117	56
Clause:	4	10	19	9
Sentence:	5	13	18	9
Total:	39	100	210	101
Language Used	Subject A		Subject B	
	#	%	#	%
French:	8	21	52	25
English:	21	54	110	52
Both:	10	26	48	23
Total:	39	101	210	100

Figure 3. Shows total number and percentage of units processed at each level of analysis and in which language processing occurred. Percentages are rounded to nearest whole number.

From this kind of coding we can determine the following information:

- 1) the text-specific units of analysis used (e.g. the particular word clusters constituting a group);
- 2) the changes in the subjects' units of analysis, including the direction of movement from one level of analysis to another (e.g. word to group to clause);
- 3) the amount and percentage of processing done in each language;
- 4) the amount and percentage of processing done in both languages at each level of analysis;
- 5) the total amount of processing carried out.

Thus, these subjects differed along a number of dimensions. B did considerably more total text processing than A, making more total use of both

French and English, and carrying out a slightly higher percentage of this processing in French. He tended to begin his processing with moderate sized groups, breaking sentences down into smaller units and varying both unit size and level. In this way he built up gradually to the larger sentence unit. His edit checks were processed in larger chunks, except for those difficult areas of text which needed more small-unit work. Like B, A does most of her processing in English, with most of it occurring at the group-unit level. In contrast to B, who did 25% of his processing at the word-unit level, A processes only 15% of the total in word units. This figure is explained by the fact that she showed very little repetition or backtracking for purposes of editing while working through the text; and she did not go back to check either the source text or her written product once her translation was completed. This fact also accounts for the higher percentage of whole-sentence units processed by A as compared with B. Her total number of sentences processed as complete units was actually less than B's.

Another useful way to display the unit of analysis data is as it is shown in figure 4 (next page). This mode of display gives an immediate view of the subjects' general pattern of movement through the text and highlights differences in movement patterns across subjects. Subject A progresses in a fairly continuous line of forward movement through the text, with few backtrackings; whereas B progresses steadily through the text, but makes short and frequent backtrackings in the process. Additionally, the diagrams are useful for immediate visual identification of the effect of text on the unit of analysis. A, for example, processes primarily in English, using relatively large units of analysis. She forges steadily onward until she hits difficult portions, at which time she seems to be forced into smaller and repeated units of processing, increasing the amount of processing done in French. A similar pattern is evident in B's diagram, particularly during the last portion of the text, with the unknown expressions *en smoking* and *éplucher le maïs*, which he encounters for a second time during his edit check (fig. 5, page 245).

These methods of coding and display of subjects' units of analysis make it possible to construct subject profiles expressed in qualitative terms for easy cross subject comparisons (fig. 6, page 245). In the future, by carefully distinguishing between product writing times and times of process verbalization during performance of the task, the units of analysis used while writing the product may also be given.

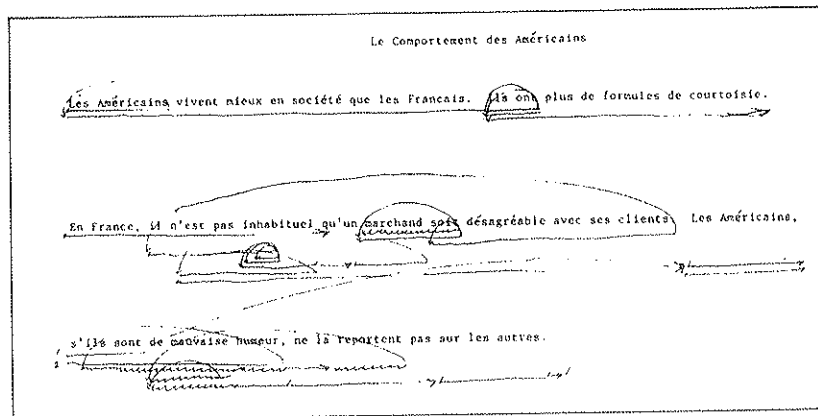


Figure 4. Diagram of Subject A's units of analysis, showing pattern of movement through this portion of the text.
 _____ = English language processing, ~~~~~ = French language processing.

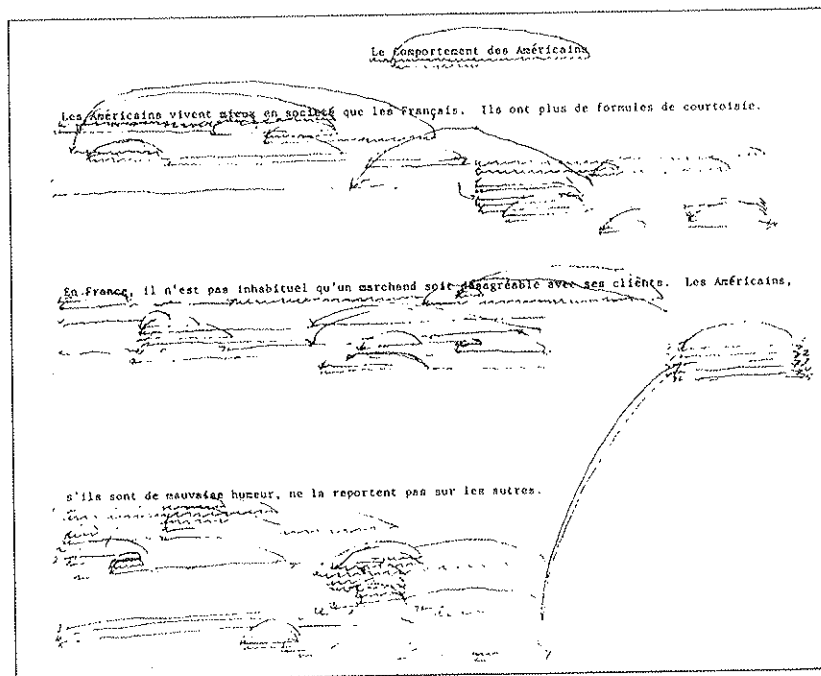


Figure 4. Diagram of Subject B's units of analysis, showing pattern of movement through this portion of the text.
 _____ = English language processing, ~~~~~ = French language processing.

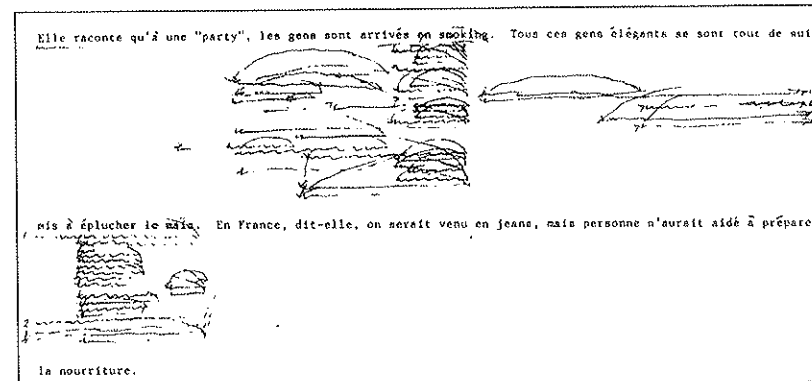


Figure 5: Diagram of Subject B's units of analysis used during an edit check, showing his pattern of movement through this portion of the text.
 _____ = English language, ~~~~~ = French language processing.

Unit of Analysis Qualitative Profiles

Total number of units processed:

<i>Subject A</i> few (39)	<i>Subject B</i> a lot (210)
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Unit level at which most processing occurred:

<i>Subject A</i> Group level	<i>Subject B</i> Group level
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Language in which most units were processed:

<i>Subject A</i> English (target language)	<i>Subject B</i> English (target language)
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Editing posture:

<i>Subject A</i> No later editing; does not go back over text or written product, even with experimenter prompting	<i>Subject B</i> Lots of later editing; goes back over entire source text a second time, more times over difficult text portions; does not reread own written product
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Pattern of movement through text:

<i>Subject A</i> "linear"-progresses steadily through the text with few repetitions or backtrackings	<i>Subject B</i> "curvilinear"-progresses in a steady forward movement through the text, but with frequent repetitions and short backtrackings
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Figure 6. Showing qualitative comparisons made from subject's unit of analysis codings.

Text Processing Strategies

Further information about the subjects' translation processing patterns may be obtained by coding their protocols for text processing strategies. Added to the unit of analysis profiles, these provide a wealth of information about individual subjects' preferred modes of operation and their back-up strategies for problem resolution. For the purposes of this study text processing strategies were considered to be any metalinguistic or metacognitive comments made or specific problem-solving behaviors effected, during the decoding and rendering of the translation text. Because the unit of analysis coding provides a profile of a subject's general approach to the text, the text processing coding was designed to highlight those strategies which subjects use when they encounter problems with the text. This problem-solving emphasis is reflected in the categories devised and in my use of the word *strategies*. Both grow out of an information theory model of text processing which emphasizes subject interaction with the written text.

Coding categories and subcategories appear in figure 7 (next page). At the present time, they are still being refined, subject to verification with a larger sample. Any effort to identify or solve a comprehension or production problem was coded under one of the first seven category headings. The eighth category, which included what were termed "nonstrategic" comments or behaviors was developed to provide a general indication of subjects' level of personal involvement with the text and their degree of task performance monitoring and self-assessment. Subcategories were created whenever a strategy was used at least once by more than one learner or repeatedly by one subject. All strategies identified are potentially applicable to either comprehension or production goals.¹ The distinction between comprehension versus production goals in strategy use is an important one since the subjects in this study seemed to work almost exclusively with comprehension goals in mind, whereas preliminary data from competent translators suggest that they place much more emphasis on production goals.

¹ For example, the congruity assessment strategy may be used for either comprehension or production purposes. This strategy used in the service of comprehension might attempt to verify whether a particular word choice "fits" in the context given and seemed to make sense to the subject herself. Used in the service of production, the subject might be checking to see whether her particular word choice conveyed the meaning to a potential reader precisely as it had been understood by the subject.

Text-Processing Strategies (Categories and Subcategories)

- I. **Problem Identification (PI)**
 1. *Identification of a sub-problem*
e.g. identifies word as unknown
 2. *Identification of an error, possible error, or source of error*
e.g. identifies current difficulty as being due to a mistranslated word from the previous paragraph
- II. **Linguistic Analysis (LA)**
 1. *Syntactic analysis*
e.g. comments on syntactic structure, looks for a word referent, or states a general rule of syntax
 2. *Grammatical analysis*
e.g. identifies a part of speech or states a rule of grammar
 3. *Lexical analysis*
e.g. divides a word into phonemes or morphemes; generates a related word form, such as a verb stem
 4. *Analogy to English*
e.g. makes analogy to already-known English or French linguistic unit
- III. **Storage and Retrieval (SR)**
 1. *Memory search*
e.g. searches memory for English or French equivalent, identifies a word as remembered or never seen before, or waits for word "to emerge into consciousness"
 2. *Dictionary use*
either says would use a dictionary at this point (when no dictionary is available) or uses one — searches dictionary for English equivalent, for English or French synonyms
- IV. **General Search and Selection (SS)**
 1. *Repeats pronunciation of linguistic unit in French, in English, or alternating French and English*
 2. *Generates synonyms*
or elaborates word meaning
 3. *Generates alternative meanings*
e.g. suggests words with nonsynonymous meanings as possible translations
 4. *States tentative or general meaning*
either gives vaguely defined meanings for an unknown word or phrase or states a guess about a lexical unit's meaning
 5. *Uses a filler word(s) or skips an unknown item*
either skips an unknown item or fills it in with, e.g. "blah blah blah," "or whatever"
 6. *Compares French and English*
compares the two languages as language systems or compares own word choice with optimal English
- V. **Inferencing and Reasoning Strategies (IR)**
 1. *Uses general world knowledge*
to a) question the text, b) hypothesize a meaning, or c) to state or verify a hypothesized meaning
 2. *Uses personal experience knowledge*
calls upon own experience to question, hypothesize, or declare a meaning

Figure 7. Text Processing coding, with categories and subcategories. (continued)

Text Inferencing and Reasoning Strategies (continued)

3. *Refers to author intent or author's usage of a term*
to question, hypothesize or state a meaning
4. *Constructs explanatory context*
"explains" the text, having constructed an interpretation from use of other contexts
5. *Uses text structure*
uses the logical structure of the text to predict, hypothesize, question, or declare meanings

VI. Text Contextualization (TC)

1. *Restates prior information obtained from text*
or summarizes information
2. *Uses sentence context*
either searches the rest of the sentence for "context clues" or uses sentence context to infer meaning
3. *Uses paragraph context*
searches same paragraph for clues to meaning of unknown lexical item or infers meaning from surrounding paragraph
4. *Uses larger context*
searches text beyond the paragraph for clues to meaning or infers meaning from text beyond the paragraph level

VII. Editing (E)

1. *Immediate correction or alteration/selection of meaning choices generated*
self-correction before writing
2. *Congruity assessment*
checks to see if translation makes sense; may be before writing product or after
3. *Punctuation check*
checks or comments on punctuation in either source text or own translation text
4. *Product quality assessment*
makes overt reference to quality of own product (e.g. good, bad, literal)
5. *Changes written product*
makes additions, deletions, substitutions, transpositions, etc. to written product

VIII. Extratextual (ET) or Language Use- and Task Monitoring

1. *Eureka or discovery comment*
2. *Laughs*
3. *Offers personal opinion* on information in the text
4. *Certitude comment*
declares own degree of certainty about product
5. *Comments on self as a learner*
e.g. "I always do that wrong."
6. *Engages in self-coaching*
gives self instructions re: what to do next, e.g. "now all I have to do is figure that out"
7. *Refers to or addresses experimenter directly*
brings experimenter into situation by addressing her directly, with comments about the situation or text

Figure 7. Text Processing coding, with categories and subcategories.

By coding subjects' protocols according to this taxonomy and displaying their strategies in various ways, it is possible to determine a) the order of strategies used, b) the pattern and frequency of strategy change, c) individual subjects' preferred strategies, and d) the effects of text on strategy choice. The number of strategies A and B used from each category and subcategory appear in fig. 8, along with the percentage of total strategy use comprised by each category.²

Immediately apparent is the enormous difference between the two subjects in total amount of strategy use (37 instances for A, compared to 100 for B). A's dominant strategic method is to search the text for context clues (text contextualization), whereas B's dominant strategies fall under the heading of general search and selection, followed by lots of immediate editing and correction. Interestingly, neither subject used many strategies of linguistic analysis, whereas others in the study did. A's search and selection strategies consisted primarily of hypothesizing word meanings or generalized definitions, and of skipping words she did not know. In contrast, B's search and selection strategies included little skipping over of words, but made considerable use of repeated pronunciation of linguistic units. (From the protocol it appears that this strategy may have functioned as an immediate editing device, while at the same time helping to create for him a continuous sense of context. Both functions facilitated comprehension.)

Other kinds of analyses can be made by determining which strategies were most often used as a first or a later strategy in problem solving. B most often used search and selection strategies in his initial attempts at problem resolution, using inference strategies only after other methods failed. For A, text contextualization strategies were most often used first, with strategies of linguistic analysis and general search and selection used later. Additionally, by looking at specific problems encountered by the subjects in the text, it is possible to gain an idea of text effect on strategy use and variability within individual subjects. In this task, the word group *épilucher le maïs* was a problem for both subjects, as neither knew what it meant. A uses only two problem solving strategies to decode it and her efforts are not successful. B calls upon numerous strategies, including some he had not used previously. He uses substrategies of one category in clusters of two or three, then changes to a cluster of substrategies from another category, finishing by correctly decoding the word group.

This text-strategy coding system is thus useful for making comparisons both within and across subjects regarding order of strategy use, strategy preference,

² For these figures, extratextual and task monitoring comments were not computed; nor were problem identification strategies, since I wanted a measure of problem solving strategies only.

Strategy Use Numerical Profiles

Strategies Used	Subject A		Subject B	
	#	%	#	%
Linguistic Analysis	5	14	3	3
syntactic analysis	0		0	
grammatical analysis	1		0	
lexical analysis	1		1	
analogy to English	3		2	
Storage & Retrieval	6	16	5	5
memory search	4		5	
dictionary use	2		0	
General Search & Selection	9	24	49	49
repeat linguistic unit	0		19	
generate synonyms	2		9	
give alternative meanings	1		3	
tentative meaning	3		14	
filler words, skip item	3		4	
compare French & English	0		0	
Inference & Reasoning	0	0	7	7
world knowledge	0		3	
personal experience	0		0	
refer to author intent	0		1	
construct explanatory context	0		3	
text structure	0		0	
Text Contextualization	10	27	13	13
restate prior info.	1		3	
sentence context	8		7	
paragraph context	0		3	
larger context	1		0	
Editing	7	19	23	23
immediate correction	6		19	
congruity assessment	1		2	
punctuation check	0		0	
product quality assessment	0		0	
Total	37	100	100	100
Problem Identification	8	15 of total	12	7 of total
Extratextual	7	13 of total	54	33 of total

Figure 8. Showing number and percentage of strategies used by each subject from each category, and number used from each subcategory. Percentage points rounded to nearest whole number.

strategy change, and text effects on strategy choice. Additional information regarding subjects' relationship to text and task can be obtained by examining subject scores in the Extratextual category. B, for example, evidenced high involvement with the task, whereas A did not — as indicated by their Extratextual category scores of 60 and 6, respectively. As before, a brief written profile can be constructed to facilitate cross-subject comparisons:

Strategy Use Qualitative Profiles

Total number of strategies used: (Problem Solving only)

Subject A	Subject B
few (37)	a lot (100)

Number of strategy categories used (Problem Solving only)

Subject A	Subject B
5 out of 6	All 6
uses no Inference and Reasoning strategies	

Preferred strategies:

Subject A	Subject B
<i>Text Contextualization</i> — searches for text context at the sentence level	<i>General Search and Selection</i> — repeatedly pronounces words, hypothesizes meanings, generates synonyms.
<i>General Search and Selection</i> — offers tentative word meanings and skips over unknown words	<i>Editing</i> — considerable immediate editing

Strategy change and persistence:

Subject A	Subject B
few attempts per problem; usually changes strategy after one unsuccessful attempt	many attempts per problem; often more than one attempt per strategy

Text effects on strategy choice:

Subject A	Subject B
difficult portions prompt little to no difference in strategy choice	difficult portions prompt use of additional strategies, mainly Inference and Reasoning

Level of involvement:

Subject A	Subject B
low personal involvement with text or experimental situation	high personal involvement with text and experimental situation

Figure 9. Showing qualitative comparisons made from subjects' text processing strategy codings.

Conclusion

Combined with the unit of analysis coding, the taxonomy for text processing strategies affords a fairly complete picture of subjects' overall approach to text analysis and their use of specific problem-solving strategies. Eventually, I hope to be able to identify clear relationships between subject processes and their translation product as well. At this point, it is sufficient to observe that subject protocols provide plausible hypotheses for the relative communicative success or failure of a given translation product. The codings discussed here suggest, for example, that B's success with particular problem passages may have been related to his heavy reliance on world-knowledge based inferences, the sheer volume of processing done, his high level of personal involvement with the text, and his steady and continual efforts at accurate comprehension. In contrast, A's small amount of text processing, her low level of involvement with the text, and her reliance on a few standard strategies resulted in a less coherent translation. These hypothesized relationships of course will need to be further explored in a larger study. This paper suggests that these types of process-product relationships are researchable via concurrent language processing protocols. The coding methods presented here for assessing subjects' units of analysis and their text processing strategies are a small start in that direction. With continued development they promise to be a powerful tool for researching language user processes of translation, including both comprehension and production components, within and across various categories of language users.

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Appendix

French language source text

~Le Comportement des Américains

Les Américains vivent mieux en société que les Français. Ils ont plus de formules de courtoisie. En France, il n'est pas inhabituel qu'un marchand soit désagréable avec ses clients. Les Américains, s'ils sont de mauvaise humeur, ne la reportent pas sur les autres.

En revanche, il semble y avoir des contradictions dans le comportement des Américains. Ils ont les formules de courtoisie mais mettent les pieds sur la table -- ce qui choque les Français.

Un exemple de différence de comportement entre Américains et Français a frappé Colette. Elle raconte qu'à une "party," les gens sont arrivés en smoking. Tous ces gens élégants se sont tout de suite mis à éplucher le maïs. En France, dit-elle, on serait venu en jeans, mais personne n'aurait aidé à préparer la nourriture.

from "Le Comportement des Américains"
by Marie Galanti, in *Le Journal Français d'Amérique*, septembre 1982

English translation as rendered by a competent bilingual

Polite Behavior of Americans

Americans act better in company than the French do. Courtesy is more a matter of course. In France, it is not unusual for a merchant to be unpleasant to his clients. If an American is out of sorts, he does not burden other people with it.

On the other hand, there seem to be contradictions in the polite behavior of Americans. They take courtesy for granted, but they put their feet on the table -- a shocking sight to the French.

Colette was struck by one particular example of the differences. She describes a party at which everyone arrived in formal attire; and then, elegant as they were, they set about husking corn. In France, she says, people would have come in jeans, but no one would have helped prepare the food.

English translation as rendered by Subject A

The American society lives better than the French. There are more formulas of courtesy. A merchant isn't usually disagreeable with his clients. If Americans have a bad sense of humor _____ on the other.

In reflection it seems that there are contradictions in the behavior (manners) of Americans. There are formulas/rules of courtesy but putting feet on the table -- this would shock the French.

An example of the different of behavior between Americans and French hit Colette. She encountered this at a party when people were smoking. All the elegant people _____ . In France, she said, one can come in jeans, but no one helps to prepare the meal.

English translation is rendered by Subject B

Deportement of Americans

Americans live better in society than the French. They have more courtesy. In France it is not unusual for a shopkeeper to be disagreeable with his customers. Americans, if they are in bad humour, they will not take it out on their customers.

In reflection, it seems there are some contradictions in the deportement of Americans. They have courtesy, but put their feet on the table — this shocks the French.

An example of difference between the deportement of Americans and French struck Colette. She recalls that at a party the people arrived while the meal was being prepared. All these elegant people quickly put themselves husking corn. In France, she says, people would come in jeans, but no one would help prepare the meal.

Excerpts from Subject Protocols

I = Interviewer

... denotes pauses

??? denotes inaudible utterance

Subject A

- A: uhm ... she ... (sigh)raconte ...
- I: Now what are you doing?
- A: I don't know ... uhm ... she ... saw this ... er ... she saw the realized this at a party ... where the people ... uhm ... arrives ... uhm ...
- I: What are you doing now?
- A: Tryin' to figure out what arrives ... en ... smoking ... uhm ...
- I: How are you doing this?
- A: uhm ... just putting a few words together tryin' to figure out what it means ... I just said that people were ... uhm ... were smoking ... uhm ... she encountered ... this ... at a party ... when ... uhm ... All the elegant people ... se sont tout de suite ... uhm ... tryin' to figure out ... tout de suite ... uhm ... and ...
- I: And ... how are you doing this?

- A: Looking back at the f ... the beginning of the sentence ... and what's happened ... at the party ... what she saw at the party ... and ... uhm ...
- I: And what?
- A: I can't figure out what it means
- I: Tout de suite?
- A: um hmmm ... uhm
- I: So now what are you looking at?
- A: I'm just ... still tryin' to figure out what the rest of the sentence ... what it means ... All I can think of is ... all of a sudden and I know that's not it ... 'cause it's ... tout a coup ...
- I: So what are you thinking of while you're doing this— How are you ... trying to remember what it means or figure out what it means?
- A: I know I've seen it, I'm just trying to think of where I've seen it and what context it was used in ... and I'm looking at the rest of the sentence and I don't understand that either so ... it's not being a help ... uhm ... éplucher ... le maïs ... I don't know what any of that means ... I've never seen ... éplucher le maïs ... so I do ... and I can't figure it out from the rest of the sentence 'cause I don't understand that either ... So shall I just skip that?
- I: If that's what you want to do, that's O.K.
- A: uhm ... in France, she says ... on one can ... come in jeans ... but ... no one ... helps ... to prepare the meal ... (writing) ... O.K. that's the end of that.

Subject B

- B: she ... raconte ... she ... recalls ... that ... at a party ... the ... people ... who ... were smoking ... arrive ... they came ... en smoking? ... who happened ... what? ... they're using, like, English ... smoking ... les gens ... happened ... somebody ... arrived ... smoking ... I guess ... uh ... she recalls ... she ... (writes) recalls that at ... a party ... at a party des ... people ... les gens ... people arrived ... smoking ... Interesting. (laughs) There's more to come, I'm sure. Tous ces gens élégants ... Allthese people ... all these elegant people ... Tout de suite ... uhm ... se ... sont ... tout de suite ... émplu ... le maïs ... maïs?
- I: When you're reading the words in French it would help if you would say them so I can tell what you're reading.

B: Oh ... I'm just ... uh ... tous ces gens élégants ... all that ... all these elegant ... people ... se sont tout de suite mis ... à ... éplucher ... le maïs ... maïs is a funny word ... uhm ... all these ... like ... put out ... éplucher ??? ... uhm ... all these elegant people ... quickly ... put ... éplucher le maïs ... a ... I think it ... éplucher ... didn't we have that as to ... put out? ... like to ... extinguish ... en France ... dit-elle ... on serait venu ... en jeans ... mais personne n'aurait aide à préparer la nourriture ... But no one ... would come ... in jeans but ... no one ... would help ... to prepare ... the meal. Oh! I see, I see ... but ... to put ... ho, maïs is *corn*! I'm sure. Le maïs. That should be corn, I think ... All these elegant ... quickly put ... a ... maybe they helped to husk corn, I think ... All these elegant ... quickly put ... a ... maybe they helped to husk th corn or something ... I don't know ... All ... these elegant ... people ... put ... quickly (writing) ... put ... a ... plucher ... plucher ... éplucher, éplucher ... le maïs ... éplucher ... I'm just gonna say prepare, I don't really know. They put ... éplucher le maïs ... maïs is corn ... ??????? sounds like they helped cook the dinner ... they helped do something with the dinner, what did they do? ... put uhm ... they put ... se sont ... mis ... se sont mis ... they put ... put themselves ... hmm ... put themselves ... put themselves ... hmm ... they put ... ????? In France ... she said ... she says ... she says ... elle dit ... she says ... people ... would arrive ... would come in jeans ... would come in jeans ... in ... jeans ... but ... shoot ... but ... no one ... would help ... prepare the meal ... uhm ... la nourriture ... uhm ... O.K. ... let's go back and check ... (laughs)

Translation Problems and Translation Strategies of Advanced German Learners of French (L2)

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1. Investigating the Translation Process

In his recent work Gideon Toury (1984a; 1984b) has argued that the majority of current translation studies, especially those restricted to a mere linguistic account of the phenomena, do not meet the needs of translation teaching. Partly in response to this observation he subsequently put forward the notion of the "native translator" as a new conceptual framework for future research in both areas: translation studies and translation teaching. One cannot but agree with Toury that research in this field should more systematically focus on questions related to the acquisition of Translation Competence (TC), such as: to what degree do different types of bilingualism (co-ordinate – compound, balanced – unbalanced etc.) imply TC? To what degree is TC enhanced by foreign language learning? What type of experience and external feedback is necessary to fully develop TC? What are the effects of formal translation teaching on the TC acquisition process? How do individual differences affect the acquisition process, and to what degree do they determine the level of competence eventually reached by the individual? Translation studies researchers may have been inspired to ask these questions owing to the bulk of analogous questions dealt with successfully in the field of second-language acquisition research. The only model explicitly trying to account for developmental stages in acquiring TC, i.e. that proposed by Harris (1977; 1978; Harris and Sherwood 1978) is largely unsatisfactory for various reasons:

- It is too much concerned with translating as an "innate skill" and is therefore unable to account for the external factors and individual differences influencing significantly the actual performance of bilinguals at translational tasks.
- It relies too heavily on examples of very simple translation furnished by young children (down to the age of two!).
- The extensive use of translation of simple utterances as data material evades the problem of equivalence raised by more sophisticated translational tasks (Note that translation is considered by most researchers a *t e x t*-bound phenomenon).