

‘Pressure players’ or ‘choke artists’? How do Zulu simultaneous interpreters handle the pressure of interpreting in a legislative context?

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Abstract

How do Zulu interpreters handle the pressure of simultaneous interpreting? In this article I examine the interpretations of four competent experienced Zulu interpreters in order to determine how they handled instances of increased on-line attentional resource consumption when interpreting under difficult circumstances, namely during sittings of the Gauteng Provincial Legislature, South Africa. I found evidence to suggest that the use of loan words is a strategy which indicates increased cognitive load for competent Zulu interpreters, who would normally attempt to avoid using loan words wherever possible for stylistic reasons, and who succeeded in interpreting the source segment without using a loan word on several other occasions. In other words, interpretation failures do **not** generally occur because the interpreters are not familiar with a term or concept in the source or target language. This is contrary to expectations, particularly since Zulu has an underdeveloped technical register in comparison to English. The fact that the interpreters use loan words only when under pressure supports Gile's (1999) ‘tightrope hypothesis’. A second indicator of increased on-line attentional resource consumption during interpreting is the use of the enclitic *-ke* in Zulu. The highly marked incidence of *-ke* in the interpretations of both sittings could partly be ascribed to its use as a spoken discourse marker, but also to the fact that it plays an important role in assisting Zulu interpreters in managing both their attentional resources and their output. My findings are based on the analysis of a parallel corpus derived from transcriptions of dual-track recordings of the floor language and interpretations during two sittings of the Gauteng Legislature.

Introduction

In general sports parlance, someone who is able to perform at his or her highest level during the critical important moments of a game is often labelled a ‘pressure player’, while those who fail were traditionally called ‘choke artists’. Soccer terminology is even more specific, using the term ‘pressure player’ to refer to the person closest to the ball when an attacker from the opposite team is trying to score a goal. In this situation the first defender or pressure player should automatically step in to put delaying pressure on the ball. The importance of immediate pressure on the ball cannot be overstated, since the more time the attacker has to make decisions, the better decisions he will make. And the less time one gives one’s teammates to get back to cover the goal, the worse are one’s chances of successfully stopping the attack. So, immediate pressure is applied to force errors by the attackers, slow down their attack, give one’s own teammates time to provide support, and, hopefully, to give one’s team the opportunity to try to regain the ball. There are obvious parallels with simultaneous interpreting, where the simultaneous mode imposes a number of constraints on interpreting performance: divided attention (the interpreter’s attention is divided four ways at least: between listening, remembering, speaking and monitoring); time pressure (the speaker controls the pace at which a speech is delivered, which can place the interpreter under time pressure if the speaker is speaking very fast); lack of access to the entire ‘text’ (the simultaneous interpreter only has access to a few words of the source language speech as they are spoken before starting to interpret), and continuous response (the simultaneous interpreter must keep the attention of his or her listeners by keeping on talking, thereby maintaining continuous response). Added to this is the fact that simultaneous interpreting requires high levels of concentration, and is therefore very stressful. These general constraints on performance are compounded in a legislative context, which is characterised by technical, fast-paced speeches, mainly read aloud.

In this article I aim to determine whether four professional Zulu interpreters (A, B, C and D)¹ interpreting at two sittings of the Gauteng Provincial Legislature are indeed ‘pressure players’

in terms of their interpreting performance: how do they handle the pressure of interpreting simultaneously between two syntactically different languages in a legislative context characterised by complex terminology and fast pace? Research has shown that interpreting between syntactically different languages involves more transformations and lexical searches than interpreting between cognate languages, and will therefore increase the processing capacity needed for the task (Cartellieri 1983; Gile 1991). So how do English-Zulu interpreters manage their own output under stress, and is there any way of identifying cognitive load or overload in Zulu interpretations? And can programmes such as WordSmith Tools and ParaConc, which have successfully been used to analyse translated texts, be used productively to analyse a raw, machine-readable corpus of simultaneously interpreted texts in Zulu?

The difficulty of corpus-based simultaneous interpreting research

In comparison to the relatively organised environment of corpus-based translation studies (CTS), with its substantial methodological unity and utilisation of natural language processing (NLP) software, corpus-based interpreting studies (CIS) is still what Robin Setton (forthcoming) terms a ‘cottage industry’. One of the reasons for this is that the conditions of production for interpreting differ substantially from the conditions of production for translation, which makes it far more difficult to establish corpora for interpreting than it is to establish corpora for translation. Setton (forthcoming) explains as follows:

In interpreting, speech processing is critical, and consequently, so is whatever can be mobilised to support it from immediate context and prior knowledge. This means that unlike in most corpus linguistics and corpus-based translation studies corpora, no sense can be made of an interpreting corpus without reference not only to these specific processing constraints – errors, for example, may be due not only to misunderstandings or wrong strategic choices, but also to attention or memory overload – [and] also to the immediate context of production, requiring access to all kinds of complementary supporting data.

The processing constraints involved in simultaneous interpreting are admirably described by Gile (1995), who devised a set of models called ‘effort models’ to account for errors and omissions in interpreting performance which could not easily be attributed to deficient linguistic abilities, insufficient extra-linguistic knowledge or poor conditions in the delivery of the source text (Gile 1999:154).² According to Gile (1995; 1997; 1999), there are three main efforts involved in the simultaneous interpreting process, just as there are for consecutive interpreting, namely the listening and analysis effort (L), the short-term memory effort (M), and the production effort (P) or interpreting output. Each of these efforts takes up part of a limited supply of processing capacity. Added to these three main efforts is a fourth effort, unique to simultaneous interpreting, called the coordination effort (C). The coordination effort is required to coordinate the three other efforts (Gile 1995:169). In simultaneous interpreting (unlike in consecutive interpreting where the three main efforts occur in two distinct phases: the listening and analysis phase and the speech production phase) the efforts cannot be divided into distinctive phases. At any point in time, one, two or three of the efforts are active simultaneously, since simultaneous interpreters have to speak and listen at the same time for at least part of the time (Gile 1995:170). So, not only must the interpreter have the total capacity to be able to interpret well, but he or she must also be able to manage that capacity in such a way that there is enough capacity available for listening and analysis, memory and production. If too much capacity is used up on only one effort, the

other efforts will suffer. In light of the fact that there is only a limited amount of capacity available, it is important to carefully manage the capacity requirements for each effort.

Gile's model has three major operational assumptions (Gile 1999:156-159): first, that each of the three efforts has non-automatic components, and therefore all three efforts require attentional resources; second, the 'competition hypothesis', namely that the three efforts are at least partly in competition, meaning that even if they share resources and are somewhat cooperative, the net result of their coexistence will usually be an increase in processing capacity requirements. The third operational assumption is termed the 'tightrope hypothesis', and refers to the idea that for most of the time, interpreters work near saturation level. This means that any increase in processing capacity requirements and any instance of mismanagement of cognitive resources by the interpreter can bring about overload or local attentional deficit (in one of the efforts) and will result in a deterioration in the interpreter's output. This 'tightrope hypothesis' is crucial in explaining the high frequency of errors and omissions that can be observed in interpreting even when no particular technical or other difficulties can be identified in the source speech (Gile 1999). If it were true that interpreters worked well below saturation level, errors and omissions should occur only when significant difficulties were present in the source speech, and this is not the case.

The Gauteng Provincial Legislature corpus

This brings me to my own corpus-based research. In Gauteng, the economic heartland of South Africa, and also the most multilingual province, the Gauteng Provincial Legislature makes provision for simultaneous interpreting services from any of the eleven official languages into the four regional languages (English, Afrikaans, Zulu and Sepedi) for sittings of the House. English is the pivot language and use is made of relay where necessary. I have set up a parallel corpus called the Gauteng Legislature Corpus, consisting of the *Hansards* (mainly in English) plus the simultaneously interpreted proceedings of House sittings of the Gauteng Provincial Legislature in Afrikaans (ca. 50 hours recorded), Zulu (ca 50 hours recorded) and Sepedi (approximately 10 hours recorded) between March 2000 and June 2002. For the purposes of this article I have used the transcriptions of the floor language (mainly English, transcribed as the *Hansard*) and interpretation into Zulu by four different interpreters during two sittings of the House, 20 March 2000 and 16 October 2001 (each approximately three hours long). The audio recordings were copied to dual track audio tapes where the original speaker input occupies one channel, and the interpretation the other. I also created a separate header file for each sitting which contains information on the date and duration of the sitting, the original speakers, the topics covered, the interpreters for each language combination and their profiles, the availability of speeches beforehand, as well as information on the transcriber of the interpretation. All the documentation given to the interpreters at each sitting is also kept.

My analyses are based on the transcribed material, and the original recordings were used for control purposes. I worked with a raw machine-readable corpus with no annotations or tags added to identify syntactic or prosodic features. For the analysis of my corpus I used two of the tools in WordSmith Tools, namely WordList and Concord. The WordList tool generates word lists in alphabetical and frequency order and provides statistics such as the total number of words, length of words and number of sentences, as well as type/token ratio, which measures the lexical complexity of a text. I could not use the alphabetical list for Zulu analyses because Zulu is an agglutinating language, but the frequency list was very helpful. The Concord Tool creates KWIC (Key Words in Context) concordances. Using the Kleene

star (*) wildcard before a search word sorts out problems with Zulu prefixes and suffixes, since it allows any characters to the left of the search word to be included in the concordance, so *hhovisi will pick up both the singular and plural forms of *office* (*amahhovisi* and *ihhovisi*). Using the Kleene star on either side of a search word, e.g. *bhajethi* allows for any characters on either side of the search word to be included in the concordance (i.e. *ibhajethi*, *ngebhajethi*, *bhajethi*, *kwamabhajethi*, *ibhajethi-ke*).

Once the search term had been identified using WordSmith Tools, ParaConc, a parallel concordancer developed by Michael Barlow (1995) was then used to extract the source language (SL) and target language (TL) segments from the corpus. ParaConc for Windows is designed to work with parallel texts, i.e. two or more texts in two or more languages which are versions/ translations of each other. The programme also has an alignment option which allows for texts to be aligned according to key terms, headings, paragraphs etc. This basic alignment can then be checked and improved manually, and therefore can easily account for the lack of one-to-one correspondence between words in pairs of languages, a very important feature indeed when analysing a text and one or many translations or interpretations of that text. ParaConc can also be used for a two-way analysis, from language A to language B, but also from language B to language A. For this search I used the Sentence format in the Concord menu of ParaConc in order to organise the search results into sentences rather than into KWIC format, thus enabling a more careful analysis of interpreting strategies.

Table 1 below provides the statistics for the four texts I analyse in this article (text 1 is the *Hansard* for 16 October 2001, text 2 is the Zulu interpretation by interpreters C and D for the sitting on 16 October 2001; text 3 is the *Hansard* for 20 March 2000 and text 4 is the Zulu interpretation by interpreters A and B for the sitting on 20 March 2000). Both sittings are typical of a South African legislative context, which means that they are technical and fast-paced, and therefore difficult to interpret. The speakers at the Gauteng Legislature use primarily legislative discourse, the stylistic range of which includes prepared speeches and semi-rehearsed speech, along with complex legislative propositions and spontaneous discussion. Members' speeches have a strict time limit (usually 5 minutes), which means that speeches are usually prepared beforehand, read aloud and delivered at a very fast pace.

Table 1: *Hansard* for 16 October 2001 (text 1) and Zulu simultaneous interpretation (text 2), *Hansard* for 20 March 2000 (text 3) and Zulu simultaneous interpretation (text 4)

N	0	1	2	3	4
text file	overall	16.10.01H	16.10.01Ztn&mt	20.3H	20.3.Znm&bm
file size	1,068,989	134,293	74,791	139,358	56,060
tokens (running wds) in text	163,902	22,547	8,428	22,897	6,264
tokens used for word list	163,902	22,547	8,428	22,897	6,264
types (distinct words)	0	3,273	3,896	3,687	3,264
type/token ratio	.00	14.52	46.23	16.10	52.11
standardised type/token ratio	46.30	38.07	62.39	41.90	65.30
standardised type/token basis	1,000	1,000	1,000	1,000	1,000
mean word length (in characters)	5.29	4.70	7.48	4.90	7.65
sentences	7,920	1,016	643	997	419
mean (in words)	20.69	22.19	13.11	22.97	14.95
std.dev.	31.60	19.02	10.12	15.92	9.06
paragraphs	10	1	1	1	1
mean (in words)	16,390.20	22,547.00	8,428.00	22,897.00	6,264.00
std.dev.	17,557.21	.00	.00	.00	.00

In this corpus, unlike many simultaneous interpreting corpora, it is possible to estimate the degree of preparation on the part of the interpreters. By the time the recordings were made, interpreters A, B and C had all been interpreting at the Gauteng Legislature since 1997 (i.e. for at least four years), and interpreter D had been interpreting for approximately two years. Approximately 40 sittings are held per year, so three of the interpreters had interpreted during at least 120 sittings, and one interpreter had at least 60 sittings under her belt. All of the interpreters are therefore familiar with the broad context and terminology requirements of the legislature. However, it is important to mention that the interpreters are given very little time to prepare for individual sittings. No information is available, not even the length of the sitting, before the interpreters arrive at the booths. Thereafter, interpreters have about fifteen minutes before the sitting starts to read through the Order Paper for the day (the agenda), the Question Paper (which details the questions to be asked), the Speaking List (which contains the names of those who are scheduled to speak under each item, their party affiliations and the duration of the speaking turns) as well as the Announcements, Tablings and Committee Reports paper, which contains any motions tabled, plus Bills and Committee Reports. Interpreters do therefore have some idea beforehand as to the topics to be discussed. However, only a fraction of the actual speeches read out in the House are given to the interpreters beforehand, because of the fear that the speeches might be leaked to the press. Topics discussed in reports on committee work during sittings range from housing, welfare, agriculture, arts and culture to finance. The topics discussed during the sitting on 16 October 2001 vary considerably and consist of interpellations and questions for oral reply on the following topics: Provincial Safety and Liaison; Public Transport, Roads and Works; Education; Development Planning and Local Government, and Social Services and Population Development. In addition, the following motions were considered: the Public Transport, Roads and Works Committee Report on the National Land Transport Transition Amendment Bill; the Petitions and Public Participation Committee Report; a motion on the utilisation of the report of the Standing Committee on Public Safety and Security in the drafting of national legislation, and a motion on supporting South Africa's national sports teams. The large number of interpellations and questions for oral reply increase the spontaneity of this sitting, since after the question is read out from the Question Paper, the answers are generally in the form of semi-rehearsed and spontaneous speech.

The sitting on 20 March 2000 consists of the Committee Report on the Provincial Appropriation Bill [G001-2000], the consideration of the Bill by members of various political parties, and finally, the approval of the Bill. The discussion included debate (sometimes heated) on the following: how the budget impacts on education; increasing and maintaining the skills base; reduction in crime; monitoring/ oversight; the Spatial Development Initiative; division of revenue; regional spending; performance goals; economic growth and job creation; fiscal discipline, and the Public Finance Management Act. The topics discussed are therefore less varied than those discussed on 16 October, but contain more complex terminology, and although there was substantial spontaneous debate, most of the speakers' formal speeches were read at a fast pace. The interpreters had access to the Committee Report and to the speeches of the Democratic Alliance (the official opposition), but not to any of the speeches of the ruling African National Congress.

As is apparent from Table 1, the two sittings are approximately the same length (text 1 consists of 22,547 words and text 3 consists of 22,897 words), with approximately the same mean sentence length (22.19 and 22.97 for texts 1 and 3 respectively). However, the standardised type/token ratios, which measure lexical variation or diversity in the two texts,

do differ (38.07 and 41.90 for texts 1 and 3 respectively).² The higher the ratio, the more varied or complex the vocabulary, which implies that there is little repetition. Shakespeare's *Merchant of Venice* (1964/1985) (a drama text, written to be spoken aloud, as in the legislature, and therefore comparable) has a standardised type-token ratio of 40,93 (Kruger 2000:329), which shows that Shakespeare's vocabulary is varied and complex. The standardised type/token ratios for both sittings are in about the same range – the standardised type/token ratio for the sitting on 16 October 2001 is slightly lower than that of the *Merchant of Venice*, and that for the sitting on 20 March 2000 is slightly higher, which is to be expected, as the main topic of discussion is the provincial budget. (Other budget sittings have very similar type/token ratios – cf. Addendum A.) (Cf. also Wallmach 2000 for reading ease scores of sittings of the House).

If one compares the *Hansards* to their Zulu interpretations, it is immediately clear that the source and target languages differ substantially from each other (there is a significant difference in mean word length (4.70 and 4.90 for the *Hansards* and 7.48 and 7.65 for the Zulu interpretations) as well as in mean sentence length between the texts (22.19 and 22.17 for the *Hansards* and 13.11 and 14.95 for the Zulu interpretations respectively). The first explanation for these differences is that Zulu is an agglutinating language, which means that the majority of words consist of more than one morpheme and grammatical information is conveyed by attaching prefixes and suffixes to roots and stems (*-bonga* is a stem meaning 'to give thanks' in the example below). This means that several words in English may be expressed as one word in Zulu, as follows:

Ngiyabonga Mhlonishwa, ngiyabonga ngemibuzo yakho (5 words; 17 syllables).

(lit. 'I am thankful, Speaker, I am thankful for question your')

Translation: Thank you, Speaker, thank you for your question (8 words; 10 syllables).

The agglutinative nature of Zulu therefore accounts for the differences in mean word length as well as for the difference in mean sentence length between the texts. Of course, the difference in word length is not a factor in a spoken corpus, but the number of syllables is certainly important in determining whether or not the interpreter will be placed under time pressure. Clearly, the interpreter will be under more time pressure when interpreting from English into Zulu than when interpreting from Zulu into English.

As in other African languages of Southern Africa, Zulu is characterised by two basic morphological systems, namely the *noun classification system* and the ensuing system of *concordial agreement*. Nouns in Zulu are categorised by noun prefixes, which together with the noun stem, constitute the noun. Nouns are divided into noun classes according to their noun prefixes (there are eighteen noun classes in all) (Pretorius & Bosch 2003:268). The example below indicates singular and plural class prefixes in bold, as well as illustrating that the meaning of a stem such as *-thetho* (derived from the verb root *-thetha* in the sense of *ukuthetha amacala* 'to try a law case') differs according to the class prefix used:

um*thetho* (lit. 'law, custom, rule'), plural **im***ithetho*

is*ithetho* (lit. 'decision'), plural **iz***ithetho*

Adjectives are placed after the noun, as in Romance languages, and adjectives, possessive pronouns and demonstratives also agree in class and number with the noun they modify, so for example *White Paper* is expressed as *iphepha elimhlope* (lit. paper white). Interpreting from a head-final language such as English, where modifiers precede the noun, into a head-

initial language such as French or Zulu, where the noun comes first, means that interpreters have to store each set of modifiers in working memory until the noun is uttered by the speaker, and only then produce the target-language equivalent. (Shlesinger 1999).

English and Zulu differ in terms of syntactic structure. Both languages follow the Subject-Verb-Object pattern (S-V-O), but according to the system of concordial agreement in Zulu, verbs, adjectives and other sentence constituents must all agree with the subject noun of the sentence in class and number. Any adjectives relating to the object noun must agree with the object noun. Verbs in Zulu are complex - a system of affixes marks various grammatical relations, such as subject, object, tense, aspect and mood. Suffixes on verbs are used to derive, for example, passive, causative, reciprocal and prepositional verb forms.

The implications of lexical and syntactic dissimilarity between source and target languages are far-reaching. If languages are syntactically similar (i.e. their sentence structure is similar) there is less risk involved in anticipation, and in shadowing the syntactic structures of the SL speech quite closely. Close shadowing carries with it the extra risk of linguistic interference, but in critical cases, such as extreme speed or informational density, it may become appropriate (Gile 1995:235). If languages are syntactically dissimilar, this increases the processing capacity requirements for listening and analysis or for short-term memory. An inexperienced interpreter who is not used to interpreting simultaneously in a specific language combination might find that syntactic dissimilarity also affects the production effort (He or she might therefore hesitate or backtrack before finding the right sentence structure in the TL). A similar deterioration in production might occur when an experienced interpreter experiences increased cognitive load.

Handling technicality and pace: Some hypotheses

I began my analyses by comparing wordlists from the Zulu transcripts for the two sittings in order to identify words which occur frequently, less frequently or not at all on the two lists. Given that the sitting on 20 March 2000 in particular was a difficult sitting in which the provincial budget was discussed by means of technically complex prepared speeches read aloud (the source text had a standardised type/token ratio of 41.90 and mean word length of 4.90), I expected to find evidence that the Zulu interpreters had been placed under time pressure for both sittings, perhaps more for the sitting on 20 March. My initial hypothesis was therefore that Zulu interpreters would make *more use of loan words* in their interpretation when confronted with very technical speeches. Using loan words as a coping tactic rather than coining new terms or paraphrasing has the advantage that the original source language word used is the same as the loan word and this makes it possible for the interpreter to retrieve this word with very little listening and analysis effort. The disadvantage of this strategy is that it affects target language production negatively - most Zulu-speaking listeners would not appreciate an interpretation that contained many English loan words, since this is not considered to be good style.

However, I found little evidence to substantiate the hypothesis that the interpreters would use more loan words for technical speeches. For the sitting on 20 March 2000 (the more technical of the two sittings) the only instances of loan words or indigenised loan words used by interpreters A and B which could be considered to be at all significant in terms of frequency were *ibhajethi* (budget) (61 instances in total; frequency of 0.974) and a frequency of 0.0014 for the word *million/miliyoni* (million) (9 instances). However, these instances and the vast majority of other occurrences of loan words were indigenised loan words which have been

accepted into the Zulu lexicon, and did not reflect a strategy under pressure. As regards numbers, the convention in Zulu is to use the English forms for numbers higher than 10 even in normal speech, since the Zulu versions are far too long-winded (proper names were excluded from my search). This was confirmed by concordance searches (see for example the concordance search for *million* in Figure 1 below.)

Figure 1: Concordances for loan words not produced under pressure e.g. “million” (20 March 2000 Zulu)

N	Concordance	Word No.	%
1	uteng nayona-ke ngebhajethi yayo ka 1.9 million yona-ke ya-wabona ukuthi-ke yona	724	12
2	zothatha u-hundred and fif- forty seven million emalini engu 160 million ekhona	1,878	30
3	f- forty seven million emalini engu 160 million ekhona kulo nyaka. Uma sibheka	1,882	31
4	anti u750 hund-thousand kanye-ke no 1.5 million ukuthi bangaletsa imali lapha-ke	2,523	41
5	goba kwashiwo abakwa-Econometrics. U 5 million owachithwa, odingekayo ngaphezu	4,185	68
6	owachithwa, odingekayo ngaphezu kwa 32 million abantu abafikayo lapha-ke	4,191	68
7	iswa kwabantu abafikayo. Cishe bangu 4 million abantu abafikayo lapha-ke	4,572	74
8	eNingizimu Afrika. Udle imali engu 150 million , okuyimali ebeyizosetshenziselwa	5,958	97
1	izimali ezingaphezu kuka 750 000 kubhili miliyoni kanti u750 hund-thousand kanye-	2,516	41

However, there were *isolated instances* where the use of loan words could have been produced under pressure, since a well-known Zulu word would normally have been used and not a loan word, and the mistakes made would not have been made under normal circumstances (Figure 2).

Figure 2: Concordances for loan words produced under pressure (20 March 2000)

N	Concordance	Word No.	%
1	ayo ibona ukuthi uma ngabe ufuna ukuthi iSouth Africa ingabi yizwe- ibe yizwe el	2,659	43
2	uthi kube nesifunda sonke jikelele. Is iSouth Africa yonke jikelele ilesi sifun	4,488	73
1	kule ndawo yethu enesikhulu ikakhulu-ke ama- highway lawo-ke. Uma ngabe-ke ubhe	4,774	77
1	izindawo zomphakathi, amapaki, amadamu, amaposi-hhovisa , amakheshi, amahhotela n	3,278	53
1	engoBritheni, Australia, Canada, Eastern Country-ke nase-US. Kuphinde futhi kwab	2,420	39
1	nalawo ma- kuqhathaniswa lawo- mangabe kungasolve - ngokuqhathanisa kanti noma e	4,653	76
1	wini njengokuthiwa, njengokuthiwa kwaku- investwa ngabo-ke ukuth- abona-ke baba n	2,462	40
1	Econometrics Sponsor yaTea-Gel Commission ne Community njengoba nizibona kanye nalabo		

The use of *iSouth Africa* instead of *iNingizimu Afrika* (South Africa) in Figure 2 indicates that the interpreter was under pressure, since she used the correct term on other occasions during the sitting, and the rest of the segment was interpreted accurately. The same occurred with the use of *kungasolve* (can solve), where the interpreter used the loan word instead of the accepted word *xazulula* (solve). In the case of *investwa* (was invested), the interpreter tried to think of the correct word while repeating the filler phrase *njengokuthiwa* (what was said), and then gave up, using the loan word because she needed to save time. The correct term would have been *kwakutshalwe izimali* (money was planted), but this term takes a long time to say, and therefore the use of the loan word made sense. The use of *highway* is another indicator of pressure, since the accepted term is *umgwaqo omkhulu* (large road) (used elsewhere in the sitting several times).

Also in Figure 2, in the case of *amaposi-hhovisa* (lit. post offices office), the accepted loan word is *amaposi* (post offices), but the interpreter has simply literally transposed the English *post offices* into Zulu, a processing error which could be ascribed to cognitive load, since the source segment contains a list of six items. The interpreter managed to mention all six items, but perhaps did not monitor output sufficiently towards the end of the segment. The same applies to the use of the loan word *Country*. The interpreter was required to list the names of

five countries in one segment. She managed four of them, but missed one and therefore simply reproduced what she heard/misheard, i.e. *Eastern Country*. If she had been paying more attention, she would have been able firstly to change the word order to typical Zulu word order (i.e. head-initial) and then interpret the phrase into Zulu, as it was not at all difficult.

The use of the loan word *Community* is also a clear predictor of cognitive load. The segment in question contains references to a sequence of six names of agencies, companies or commissions, mentioned by the speaker as she read aloud the Committee Report on the Provincial Appropriation Bill, namely ‘... *Econometrix, COSATU, the Gender Commission, the Community Agency for Social Enquiry, Merrill Lynch and the Gauteng Associated Chambers of Commerce and Industry*’. Member Fubbs, an English-speaking South African, reads her speeches at a very fast pace, which was also the case in this instance. The complexity of the financial topic is compounded by her accent, which is unusual in the context of the legislature, where most members are non-mother tongue speakers of English. The interpreter (who had access to the written speech) managed to interpret *Econometrix* almost correctly, missed the reference to *COSATU*, and misheard *Gender Commission* as *Tea-Gel Commission*. Then she began interpreting the item *Community Agency for Social Enquiry*, but had shortened her lag time to compensate for the difficulty of the text and therefore ran into trouble with the Zulu syntax, starting with the adjective *Community* rather than paraphrasing as *Agency for the Community*, i.e. starting with the Zulu word for *Agency*.

The same pattern as regards loan words was found for interpreters C and D, who interpreted at the sitting on 16 October 2001. In general, the only significant use of loan words consisted of loan words which are part of the Zulu lexicon, such as *imali* (money), *Septhemba* (September) *ikomiti* (committee), *amaphoyisa* (police), *ihhovisi* (office), *iphalamende* (Parliament) and *uhulumeni* (government). Words which could be said to be accepted in the context of the legislature are *usection* (section as in section 1.1 paragraph 1); *uMEC* (MEC, Member of the Executive Council), *ikhansela* (councillor in a local government context). Less acceptable is the repeated use of *ireport* (report) (11 instances) instead of *umbiko* (2 instances), but the use of *ireport* seemed to be a deliberate word choice rather than the result of time pressure, given that it was used so repeatedly. But again, some loan words would seem to have been produced under pressure in isolated instances (indicated in Figure 3 below).

Figure 3: Concordances for loan words produced under pressure (16 October 2001)

N	Concordance	Word No.	%
1	hi-ke okwesithathu eh, iyiphi-ke i-e- amacontractors angasebenza kanjani kulo- ku	184	2
1	mandleni akhe ukuthi eh, abantu abangamateroristi eh, kuwo wonke umhlaba eh,	3,646	44
1	ngiyabonga. Eh, sicela ukuthi eh, uSecreta- u-unobhala asifundele iorder yo	3,806	45
1	yakho, awufanelanga-ke uhlale eduze kwe- Boss yakho. Eh, ukupanisha-ke abantu	5,215	62
1	kathi-ke ngifanele ngibambe iqhaza-ke kudibethi noma kungxoxo-mpikiswano-ke	5,403	64
1	a kahle igama lami. Ngiyabonga. Eh, Order . Sizokhuphula laphayana isiphakam	8,229	98

The case of *uSecreta u-unobhala* (third concordance line in Figure 3) is a classic illustration of Gile’s tightrope hypothesis at work. The interpreter begins by using the English loan word *Secretary* and then corrects that to the standard Zulu term for secretary, *unobhala*, making it apparent that she knows the correct word to use, but uses the word which takes the least effort initially. One reason for this might be that the interpreter was focussing on and preparing herself for the next speech segment, which would be known to require increased processing capacity, and thus was paying too little attention to this segment. As is standard practice at

the legislature, the Speaker asks *Would the Secretary please read the next order*. This segment is very easy to interpret, but the next segment, when the Secretary actually reads the order, is difficult, consisting of a very fast-paced lexically dense enumeration read aloud, often containing the name of a committee and devoid of low-density connective segments. The interpreter has access to these orders beforehand and can sight interpret, but the segment nevertheless requires increased processing capacity.

The use of the word *amacontractors* (contractors with double plural) (first concordance line in Figure 3) is also a clear indicator of cognitive load. It is certainly conceivable that the interpreter did not know the Zulu word for *contractor*, since this is an unusual word in the context of the legislature. However, if that were the case, the interpreter would have used the word in its correct form, i.e. *amacontractor* (contractors), with the plural form indicated with the prefix *ama-* in front of the noun, and removed the plural *s* from the English word *contractors*. Forgetting to remove the English plural indicator is an error which indicates shallow linguistic processing as a result of cognitive load which would not occur under normal circumstances.

The loan word *dibetha* (debate) occurs only once (fifth line, Figure 3), whereas *ukuphikisana* (debate) occurs four times during the sitting. *Dibetha* is not really acceptable (it appears in Doke *et al* (1990) marked as an incorrect form), and it seems that the interpreter realises this, since she effects a rather neat repair with the phrase *kudibethi noma kungxoxo-mpikiswano-ke* (debate or even a debating discussion), incorporating her correction smoothly into the rest of her delivery.

The use of *order* (order) (1 instance) (sixth line, Figure 3) instead of *ukuthula* (to be quiet) (which occurred 7 times elsewhere in the corpus) indicates that the interpreter was under pressure. In this instance there was some fiery debate, with members of the different parties insulting each other and using emotional speech. The Speaker shouted *Order!* and the interpreter simply repeated this. The rest of her delivery was unaffected.

The analysis of the use of loan words under pressure proves one very important point – that interpretation failures during these sittings do *not* generally occur because the interpreters are not familiar with a term or concept in the source or target language. This is contrary to expectations, particularly for a language such as Zulu, which has an underdeveloped technical register in comparison to English, and where the average Zulu speaker would not have the terminology to discuss many of the issues raised at the Legislature, let alone interpret them in the simultaneous mode under time pressure. The lack of standardised terminology in Zulu makes it seem reasonable to assume that interpreters would use loan words as their default strategy to interpret English terms for which there is no actual equivalent into Zulu, for other strategies such as paraphrase or coinage would require substantial mental effort on the part of the interpreters, and increase time pressure. But of course, as familiarity with the terminology increases, the effort required to produce a target language equivalent decreases, irrespective of which strategy is used (Wallmach 2000:208). As mentioned previously, this study involves four competent interpreters with extensive experience in a legislative context, and thus the analysis of loan words used under pressure simply proves that the interpreters are under increased cognitive load, since under normal circumstances they would certainly not make these kinds of errors (and in fact, even during the same sitting, they have succeeded several times in avoiding using the loan word in favour of the standard Zulu term.)

But is the use of loan words the only possible strategy used to cope with cognitive load? Let us return to the frequency lists for the Zulu interpretations of the two sittings. As is normally the case, the most common types in the corpus are ‘function words’ (also known as ‘grammatical words’), which can be distinguished from ‘content words’ or ‘lexical words’, which include most nouns, verbs, adjectives and adverbs (Kenny 2001:39). Function words include most determiners, pronouns, conjunctions etc., which in an English wordlist would mean that words such as *a, the, and, but, if, he, she*, etc. would normally be the most frequent words, and possibly only one or two content words might make the top twenty most frequent words. Zulu wordlists present quite a different picture. Since Zulu is agglutinative, any pronominal agreement markers, definiteness markers and other such nominal and verbal subcategories (except demonstratives such as *lapha* (there) or *lo* (this) and absolute pronouns such as *mina* (me)) would automatically be joined to the relevant content word, and would not occur independently in a wordlist, so conjunctions are the main function words to make the top twenty words, since they occur in isolation. The top ten words for the sitting on 20 March are *ukuthi* (that) *futhi* (moreover) *uma* (if/ when) *ukuthi-ke* (that, well ...) *kanti* (whereas; after all; notwithstanding) *abantu* (people) *kanti-ke* (whereas, well ...) *kube* (ought; perhaps; even though) *lapha* (when/where, here) *kufanele* (it is fitting, it is incumbent). The top ten words for 16 October 2001 are: *eh* (uh) *ukuthi* (that) *ukuthi-ke* (that, well ...) *kanti-ke* (whereas, well ...) *abantu* (people) *laphayana* (over there) *kufanele* (it is fitting, it is incumbent) *ngiyabonga* (I thank you) *uma* (if/when) *futhi* (moreover).

As expected, for both sittings most of the words are conjunctions. But what is interesting and unexpected about both wordlists is the frequency of incidence of the enclitic *ke* in *ukuthi-ke* and *kanti-ke*. *-Ke* in Zulu can mean ‘then’, ‘well’, ‘now’, ‘so’, ‘very well’ (Doke et al. 1990) and is defined in Doke et al. (1990) as an enclitic drawing stress forward, usually affixed to the first word of a sentence carried on, e.g. *Gijima-ke* (Run then!), but may be affixed to a later word. *-Ke* is not a common word at all in written Zulu - the 5 million word University of Pretoria Zulu corpus (a written corpus) registers only 41 instances (frequency of 0,0000082). I could not consult a spoken corpus of Zulu, since none exists to date. However, Zulu first-language speakers have confirmed that *-ke* is an accepted feature of spoken Zulu discourse, and that it could be used in the sense of *well* in the following sentence: ‘*Well, Mr Speaker, I am of the opinion that...*’.

But how does spoken Zulu compare to interpreted Zulu? In the sitting on 20 March 2000, there were 703 instances of *-ke* (i.e. frequency of 0.11), and for the interpretation of the sitting on 16 Oct 2001 there were 1719 instances of *-ke* (i.e. a frequency of 0.20). Thus, one can conclude that *-ke* is used substantially more often during the sitting on 16 October 2001 than during the sitting on 20 March 2000, and it is used in both sittings substantially more than it would be for a written corpus. The highly marked incidence of the word *-ke* in the interpretations of both sittings can therefore partly be ascribed to its use as a spoken discourse marker. The fact that there were substantially more instances of *-ke* during the Zulu interpretation of the sitting on 16 October 2001 than for 20 March 2000 is understandable, since the sitting on 16 October involved a great deal of spontaneous debate as well as questions and replies, and was far more representative of spoken discourse than the sitting on 20 March, which consisted largely of reports read aloud. Below are some concordances for *-ke* where *-ke* would seem to have been used as a spoken discourse marker. Each of these instances occur at the beginning of the sentence, where the dual track tape confirms that the interpreter mirrors the original speaker’s pause for thought, as follows:

Figure 4: Instances of *-ke* as spoken discourse marker during 20 March sitting

N	Concordance	Word No.	%
28	kuthi zozisetshenzwa kanjani. Ngizocela- ke kusoMlomo lapha ukuthi ngingeze-ke n	257	4
36	wa-ke lesi- lombiko wezezimali. Mawukhona- ke wabuye yiyo lezi. I-Econometrics Spon	292	225
	ke la sifun' ukuba khona. Ngiyavumelana- ke nodokotela uJohn Gesin othi, ingqina	1,736	28
226	e nokuthula, nesimo sokuthula. Umsebenzi- ke lo okungewona okahulumeni kuphela, k	1,952	32
227	embise izinto esingenakuzifeza. Iyonanto- ke eliphuzu elibalulekile naloku esinak	2,030	33
229	oM- sam, SphathaMlomo. Ngiyakukwamukela- ke kulokho kuncoma kulokho-ke	2,072	34
264	iphumela emihle-ke kumatikuletsheni wazo-ke. Kanti- ke nokuthi-ke ziyaphela-ke l	2,214	36
271	zesayensi kanye nezezibalo-ke. Njengoba- ke sizimisele ukuthi nathi sibale njeng	2,229	36
292	. Nokuthi- ke okubalulekile ukuthi thina-ke kufanele ukuthi sithuthukise lolu hl	2,304	37
298	ono azo-ke. Kodwa- ke kufanele sibe naso-ke isimo som- esisibhekayo sokuthi laba	2,333	38
299	imo som- esisibhekayo sokuthi laba Bantu- ke bafuna ukuphila yiphi impilo.	2,339	38
430	e umnotho waseGauteng. Uma ngidlula- ke uMnumzane,uNgqongqshe um- uManuel,	3,955	64
431	eng, ngiyaxolisa abanamsebenzi. Baningi- ke la bantu. Yize noma iz- imisukela	3,985	65
686	iwa ko-kwezimali okusha. Ngiyabonga- ke , soMlomo. Okucacayo ukuthi uMhlonis	5,670	92

But the use of *-ke* as a spoken language marker alone is not enough to justify why it is so marked in both interpretations, and it seems plausible that *-ke* might indeed be a choice-related own communication management feature, used when the interpreter is under pressure. In 20 March sitting, the most frequent collocates for *-ke* were as follows (similarly to the collocates for *-ke* for the sitting on 16 October 2001):

Figure 5: Most frequent collocates with *-ke* in sitting of 20 March 2000

Word	Total	Tot. Left	Tot. Rt	L4	L3	L2	L1	Centre	R1	R2	R3	R4
UKUTHI	169	71	98	5	19	18	29	0	18	27	35	18
UKUTHI-KE	96	42	54	3	11	19	9	0	9	21	17	7
UMA	76	39	36	3	7	8	21	1	17	7	8	4
FUTHI	63	39	24	6	6	16	11	0	8	7	3	6
KANTI	59	39	20	4	13	13	9	0	8	0	9	3
KANTI-KE	45	32	13	0	7	16	9	0	5	2	4	2
LAPHA	41	16	25	4	6	3	3	0	8	6	8	3
LAPHA-KE	39	16	23	2	4	4	6	0	7	9	7	0

The fact that the most frequent collocates with *-ke* in the corpus are conjunctions which introduce subordinate constructions strengthens the argument that *-ke* is being used by the interpreters as a way of managing their output, perhaps as part of the coordination effort in Gile's (1995) effort model. In other words, *-ke* could be considered to be a predictor of increased online attentional resource consumption. Gile's model makes it possible to postulate hypotheses about effort in simultaneous interpreting, but it is not easy to use the model for fine-grained analysis of how interpreters put in effort 'on-line'. For that we need a tool which provides more insight into the coordination effort, allowing us to make assumptions about how the management of own communication can be voiced in spoken discourse. Allwood's (1995) discussion of how spoken discourse is managed can provide some insight here.

Own communication management

Allwood (1995:9) argues that

management is necessary to ensure optimal on-line organisation of **communication** under changeable circumstances in the service of an underlying activity, where both communication per se and the underlying activity are under certain rational and ethical constraints. The systematic verbal and bodily means for management which exist in spoken dialogue serve to uphold physical, physiological, functional (rational) and ethical

requirements on communication. They also give interlocutors flexibility so that they can handle “on-line” any unforeseen changing circumstances. This, in turn, has the consequence that normal (spoken) dialogue is a remarkably robust system of communication [emphases the author’s].

(Allwood uses the term *management* rather than *regulation* or *control* because management is less authoritarian and allows, but does not require, intentional control.) Simply put, Allwood (1995:2) is of the view that a number of different phenomena in spoken dialogue (such as self-correction, hesitation, feedback and turn-taking) exist primarily in order to enable management of dialogue. He proposes a framework for the description of spoken interaction which takes into account both management-related parts and main message-related parts. He illustrates this by means of the following example:

A (ice cream salesman): *ice cream* (accompanied by rising intonation)
B (customer): *yes vanilla eh no chocolate*

Except for the rising intonation, which could be seen as a management-related feature with an interactive function, the management features in A’s interaction are largely implicit. A relies on the main message and the obvious role and activity expectations of the situation (he is a salesman selling ice-cream) to put sufficient interactive pressure on B to respond. But B’s response is more interesting. Allwood (1995:3) states that the word *yes* can be classed as a positive feedback giver with a clear *interactive communicative management* function (cf. Allwood, Nivre & Ahlsén 1992), which affirms part or all of the evocative intentions of the preceding utterance. How much is affirmed depends on what follows *yes*. In this case, the word *vanilla* following *yes* turns the positive reaction into an acceptance of the offer and a specification of the type of service wanted (i.e. a sort of request). The next two words *eh no* relate to what is called *own communication management* (cf. Allwood, Nivre & Ahlsén 1990). The word *eh* expresses hesitation and choice and the word *no* expresses cancellation and change. The use of the word *chocolate* at the end of the utterance gives a new main message specification to replace *vanilla*, which has been cancelled (Allwood 1995:2-3). And thus there are two main kinds of management in spoken interaction which work together to make speech and gestures efficient and flexible instruments for the communication of information in differing contexts and under different interpersonal conditions, namely, own communication management and interactive communication management.

Interactive communication management provides mechanisms which allow a speaker (and to some extent a listener) to structure the flow of interaction as regards sequencing (with regard to sub-activities, topics, speech acts, etc.); turn-taking (yielding, holding, giving, taking and assigning turns); feedback (with regard to contact, perception, understanding and reactions to evocative intentions) and rhythm and spatial positioning (Allwood 1995:4). Own communication management provides mechanisms which allow a speaker to manage his or her own communication with regard to processing, choice (including hesitation, etc.) and change (including cancellation) (Allwood 1995:4). If an own communication management feature is *change-related*, this means that the feature helps the speaker to change already produced content, structure or expression. In the example below, taken from 20 March 2001, the interpreter had problems expressing *the efficiency and effectiveness of service delivery* in Zulu. She started to say *nokuse-*, realised this was incorrect and changed it to *nokunikezelwa* (delivery). The interpreter uses the technique of self-interruption to repair the utterance:

SL: Some of the issues that were interrogated by the committee were the following: the

efficiency and effectiveness of service delivery.

TL: *Ezinye-ke izinto ezaqhamuka lapha-ke ngale sikhathi kuxoxiswa yile likomiti kwakuyilezi ezilandelayo-ke: ukusebenza kahle-ke no- noku- **nokuse- nokunikezelwa kwezinsiza.*** (lit. some, well.. of things that came out there, well.. at this time were discussed by this committee it was following, then...: working well, then.. of de- del- **dele- delivery** of services.)

Note that the above utterance is perfectly grammatical in Zulu – Zulu lacks a definite article, which is reflected in the gloss. Examining own communication management features in Zulu is particularly fruitful because concordial agreement occurs at the beginning of a word, and thus the agglutinative nature of the language makes it much more obvious if an interpreter changes his or her mind, uttering a change-related own communication management unit.

But if an own communication management feature is *choice-related*, the feature helps the speaker gain time for processes concerning continuing choice of content and types of structural expressions. In the following example, also taken from 20 March, the interpreter has used *-ke* in two ways: as an interactive communication management tool which helps the interpreter to hold the turn (maintain continuous response) and for rhythm and spatial positioning, but also as an own communication management tool to help him/her gain time and manage processing capacity and to segment the speech into natural-sounding chunks. Note that the utterance below is perfectly grammatical in Zulu, with the lack of a definite article being reflected in the gloss.

SL: Honourable Speaker, the Standing Committee on Finance and Economic Affairs has deliberated on the principle of the Provincial Appropriation Bill 2000/2001.

TL: *Mhlonishwa-ke soMlomo, Komidi elimileyo-ke lezezimali kanye nezomnotho-ke lixoxisane-ke ngemithethomgomo yokwabiwa kwezimali zesifunda-ke zonyaka ka 2001* (lit. respected uh Speaker, committee permanent, then... for finance and economy has, well... discussed Bill for allocation of money of district, then... of year 2001.)

Of course, my findings need to be examined against the backdrop of the interpreting norms at play, since these norms clearly influence the use of certain strategies in preference to others. It is generally accepted that the prevailing norm in conference interpreting emphasises fluency of output and the primacy of meaning over form, as well as the idea that not all elements of the source text need necessarily be reproduced as such (Shlesinger 2000:7). But in a legislative context, the interpreters are also very aware of the accuracy requirement, which tends to compete with the fluency norm, and complying with both norms, particularly when interpreting between lexically and syntactically dissimilar languages, increases the processing capacity required, since retention of every minute detail places heavy demands on verbal memory. The findings regarding the avoidance of loan words except under instances of extreme pressure and the use of *-ke* by Zulu interpreters as a spoken discourse marker, a way to hold the turn, as well as a way to manage the attentional requirements of the interpreting process are all in line with the established norms of interpreting in a legislative context. Accuracy is of primary importance, but so is fluency and continuous response. The prevalence of the fluency norm in conjunction with continuous response would explain why some of the interpreters did not use more loan words, but used other own communication management strategies.

Conclusion

In this article I examined the interpretations of four competent Zulu interpreters with experience in a legislative context in South Africa in order to determine how the interpreters handled instances of increased on-line attentional resource consumption when interpreting under pressure both of pace and complexity. High information density in the source language clearly increases processing capacity requirements, because more information must be processed per unit of time, and this difficulty is compounded when interpreting between syntactically dissimilar languages such as English and Zulu. I found evidence to suggest that the use of loan words indicates increased cognitive load for these interpreters, who would normally attempt to avoid using loan words wherever possible for stylistic reasons, and who succeeded in interpreting the source segment without using a loan word on several other occasions. In other words, interpretation failures during the sittings analysed did *not* generally occur because the interpreters are not familiar with a term or concept in the source or target language. This is contrary to expectations, particularly since Zulu has an underdeveloped technical register in comparison to English. The fact that Zulu interpreters use loan words only when under pressure supports Gile's (1999) tightrope hypothesis, namely that interpreters work at close to saturation level, so any increase in processing capacity requirements and any instance of mismanagement of cognitive resources by the interpreter can bring about overload or local attentional deficit (in one of the efforts) and will result in a deterioration of the interpreter's output. A second indicator of increased on-line attentional resource consumption during interpreting is the use of the enclitic *-ke*. The highly marked incidence of the word *-ke* in the interpretations of both sittings could partly be ascribed to its use as a spoken discourse marker, but also to the fact that *-ke* plays an important role in assisting Zulu interpreters in managing both their attentional resources and their output.

Endnotes

1. The names of the interpreters have been withheld to preserve anonymity.
2. Gile (1999:154) explains that although the models have deliberately been designed at a holistic level without going into fine-grained architectural analysis, they are based on cognitive concepts (in particular the concept of limited attentional resources and the assumption of a strong correlation between task difficulty and task-implementation duration).
3. I did not use the type/token ratio, since it varies widely according to the length of text studied. However, WordSmith Tools takes care of this by standardising the type/token ratio per 1000 words. A running average is then computed, which means that an average type/token ratio based on consecutive 1000-word chunks of text is obtained. The number shown is a percentage of new types for every *n* tokens, allowing one to compare type-token ratios across texts of differing lengths.

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Addendum A

Figure 6: Comparing two budget sittings for similarity of type/token ratio

N	0	1	2
text file	overall	Hansard20 march2000	Hansard23May2000
file size	308,185	139,358	168,827
tokens (running words) in text	50,483	22,897	27,586
tokens used for word list	50,483	22,897	27,586
types (distinct words)	5,626	3,687	3,744
type/token ratio	11.14	16.10	13.57
standardised type/token ratio	40.94	41.90	40.19
standardised type/token basis	1,000	1,000	1,000
mean word length (in characters)	4.91	4.90	4.92
sentences	2,168	997	1,171
mean (in words)	23.29	22.97	23.56
std.dev.	17.03	15.92	17.92
paragraphs	2	1	1
mean (in words)	25,241.50	22,897.00	27,586.00
std.dev.	3,315.62	.00	.00