PREDICTABLE SENTENCE ENDINGS IN JAPANESE AND CONFERENCE INTERPRETATION

By

Daniel Gile

INALCO et CEEI (ISIT), Paris

Summary

In the context of conference interpreting, Predictable Sentence Endings may provide processing capacity requirement relief and thus facilitate processing and help avoid errors and quality degradation. This paper reports preliminary results of an ongoing study of 'Predictable Sentence Endings' (PSEs) in Japanese. PSEs were studied in Japanese conference speeches and found to be both frequent and long. No attempt was made to conduct a fine quantitative analysis of this distribution, but it appeared clearly in the sample that PSE length increased as a function of personal reference and involvement of the speaker and/or the listeners in the sentences concerned. Functions of PSEs and identifier categories are described. Speeches in English, French and German were found to have few predictable sentence endings and their function distribution was very different from Japanese endings. PSEs can be hypothesized to be a potentially significant language-specific difference in interpretation difficulty, but no experimental evidence is available as yet to assess their importance.

INTRODUCTION: IS INTERPRETATION LANGUAGE-SPECIFIC?

Authors of conference interpretation literature have stressed that interpreting consists of a "triangular process": the interpreter extracts the meaning from a source language speech and then reformulates this "message" in the target language - he does not "transcode" directly from source language to target language. In the context of interpreter training, this view is widely considered by interpreting instructors to have several important advantages. In particular, it guides students towards analysis and intelligent interpretation and away from word to word translation. Furthermore, it helps identify alleged "translation problems" as the result of insufficient language skills in the source and/or target language.

Some authors and instructors have followed this direction to the extent that they tend to deny linguistic parameters any influence in interpretation (see Ilg's comments on this attitude - 1978). The premise is that if languages are mastered, interpretation processes are identical whatever the source and target languages involved. This in particular is the opinion often voiced by members of the ESIT group in Paris.

Other authors have taken a different view. European interpreters have focused on interpretation from German into French and English. Ilg (1978) compares general characteristics of German to features of French in communication uses. Wilss (1978) mentions syntactic constraints in interpretation from German to English. Fukuii and Asano (1961) and Kunihiro, Nishiyama and Kanayama (1969) refer to linguistic differences between Japanese and English in the context of simultaneous interpretation.

Opinions expressed in this respect tend to be holistic and it appears no systematic study of language-specific interpreting problems has been undertaken to date, though some studies on syntactic and other transformations in interpretation from source language to target language have been published lately with some comments on the difficulties generated by mandatory transformations (see for instance Fusco 1990, Giambagli 1990, Russo 1990). This paper rephrases the language-specificity issue in the conceptual framework of 'Effort Models' of interpretation, discusses the case of Japanese in this respect, and presents some results of beginning empirical research.

A CONCEPTUAL FRAMEWORK: THE EFFORT MODELS

The "triangular model" presented above does not take into consideration psycholinguistic and environmental constraints placed on the interpretation process. To account for these, Effort Models of interpretation have been developed.

The simultaneous interpretation Effort Model decomposes simultaneous interpretation (SI) into three components called 'Efforts':

- L, the Listening component, which includes all stages of speech perception, recognition and up to complex decisions on the 'meaning' of the speech segment involved, its significance in the speech as a whole, in the conference environment as a whole, etc.
- M, the Memory component, consisting of storage and retrieval operations on semantic units (after recognition) which become necessary when incoming semantic units cannot be reformulated in the target language right away.
- P, the speech Production component, consisting of all speech planning and implementation operations, including complex conference-environment based decisions on informational, stylistic and pragmatic levels.

At each point in time, each 'Effort' is assigned to tasks associated with a particular speech segment or a collection of speech segments. In order to accomplish their respective tasks, the three Efforts require certain amounts of processing capacity (PC). The 'sum' of these individual requirements should not exceed total available processing capacity. Actually, it is well possible that some resources are shared, so that PC requirements of Efforts in isolation are higher than when they are simultaneously at work, but since each Effort at work adds a PC increment, the word 'sum' and the '+' signs are used though they do not necessarily take their strictly arithmetical meaning:

(1) L requ. + M req. = P requ. < total avail. PC

Two points are particularly important in the exploitation of this Model:

- Total PC requirements appear to be generally very close to the total available capacity and occasionally exceed it, which explains many cases of interpretation errors and quality deterioration phenomena. In fact, any increase in PC requirements for an Effort carries such a risk. A rather extensive discussion of this point can be found in Gile 1989.
- The time element is particularly important in the Model. On the one hand, speech unfolds over time. On the other, there is a direct relation between the amount of processing and processing time. If speech is fast, there is more material to process in the same time-frame, hence an increase in processing capacity requirements. Furthermore, there is a time-dependence between the 3 Efforts, as an incoming speech segment has to be processed by the L component before being stored or reformulated in the target language. Therefore, any lag in L may result in increased M and P requirements, and any lag in P may lead to an overloading of M, to quote two frequent sources of SI difficulties (Gile 1989).

A similar model can be constructed for sight translation and simultaneous interpretation with a text (the speaker reads a written paper and the interpreter translates while listening to the speaker and reading the same paper). In both case, the L component can be called 'R' for 'receiving' ('reading' in the case of sight translation), but the equations are basically the same.

In the Effort Model of consecutive interpretation (CI) (Gile 1990), two stages are described. Stage One is devoted to listening and

note-taking. Its structure is similar to that of the SI Effort Model, with note-taking N taking the place of P:

(2) **Stage One** in CI: L + M + N

During Stage one, problems are similar to those found in simultaneous interpretation, with the differences associated with the transition from speech production to note-taking.

Stage Two is devoted to reformulation of the speech. Its Efforts are R (note-reading), M (recalling the information) and P:

(3) **Stage Two** in CI: R + M + P

Among proficient interpreters, there appear to be no chronic PC related problems in Stage Two, mostly because during this stage, the interpreter is not submitted to time constraints imposed by the speaker and has control over his time parameters, which gives him the possibility of allocating his PC in such a way that minimum requirements are always met.

PREDICTABLE SENTENCE ENDINGS IN JAPANESE

An interesting and rather striking feature of Japanese discourse is the presence, at the end of many sentences, of words or groups of words that apparently contribute little or no information: *wake desu* ('this is the reason for') *to iu koto ni narimasu* ('it becomes such that'), *dewa nai ka to omoimasu* ('I think it is not that'), etc. Though they may provide some additional information regarding the state of mind of the speaker or the social relationship between the speaker and his listeners, the weight of this additional information in the message is very low, the more so since these sentence endings can be predicted with a high degree of accuracy. If such sentence endings are frequent enough and long enough, they are tantamount to informational 'pauses' which may affect interpretation: by their nil or quasi-nil information content at the end of the sentence, which is a natural information unit, they lower L requirements and leave more PC free for the M and P components in simultaneous and the M and N components in consecutive. In particular, since, during the time segment they occupy, no new information is added, this time segment can be used to unload short term memory content or to catch up on production or note-taking lag (see Appendix). If the frequency and length of such predictable sentence endings in other languages are lower, this may be one significant difference in the processing mode of Japanese vs. other source languages in simultaneous and consecutive interpretation.

There are, therefore, two questions to be answered:

1. Are predictable sentence endings (PSE) in Japanese frequent and long enough to be significant in interpretation?

2. Is there a significant difference between Japanese and other languages in this respect?

QUANTITATIVE ANALYSIS

Twenty-three authentic Japanese speeches were studied, 19 as texts (when they were provided to the interpreters prior to the conference and read by the speaker) and 4 as audio-cassette recordings, when they could be recorded during a conference. Recordings and texts were obtained in actual conference situations. The speeches covered technological, financial, political, sociological and cultural topics. Their length varied from 9 to 93 sentences, with 16 (close to 70%) in the 25 to 40 sentence bracket. At this exploratory stage of the study, in which only clear confirmation of phenomena is sought, no attempt was made to obtain a well-balanced sample of speeches representative of all categories and situations. Speeches were studied sentence by sentence, PSEs were identified, listed and analyzed.

An important point in the discussion of the significance of PSEs in interpretation is the following: the fact that PSEs have a low information content does not necessarily mean a lowering of processing capacity requirements for the L component and a correspondingly higher PC availablity for the other interpreting Efforts. The reason is that speech recognition and analysis of the sentence ending eventually leading to the conclusion that it contains little or no information may take up as much processing capacity as for a segment containing more information, depending on its linguistic structure, clarity, environmental noise, etc. It therefore seems that the only case

to the listening Effort and more to the other Efforts is the case in which he KNOWS the speaker is entering or has entered a PSE. Consequently, the significant length of PSEs is not necessarily their total length, but their length from the point the interpreter recognizes them for what they are. PSEs were therefore defined operationally as the part of predictable sentence endings beginning after an element (the 'identifier') making it possible to identify the rest of the sentence as containing very little or no information.

When in doubt as to the location of the beginning of a PSE, verification was conducted by reading or playing the sentence to a Japanese informer up to the supposed beginning of the PSE and asking him/her to complete it. In no case were informers unable to complete the sentence using the same words or informationally equivalent words to the PSE defined by the speaker: minor stylistic changes such as replacing *to zonjimasu* by *to omoimasu* were observed and confirmed by the Japanese informers to be informationally non-significant. It may therefore be assumed that the PSEs assessed length is either accurate or conservative (informers might have been able to anticipate before the cut-off point determined by the experimenter).

'Sentences' were defined as either full sentences (up to a *maru*, the Japanese equivalent of a 'period' marking the end of a sentence in Western languages), or independent clauses in such full sentences, as each independent clause could stand alone as an independent sentence.

PSE lengths were counted in syllables rather than in words, as the syllable pronunciation rates seemed less variable than word lengths. Syllables as pronounced ('phonetic syllables') were counted, rather than syllables appearing in transcription in *romaji* or *kana* ('transcription syllables'), the reason being that some transcription syllables tend not to be pronounced: *desu* was counted as a 1-syllable rather than as a 2-syllable PSE.

Counting agreement was tested on 10 PSEs with 5 assessors and was found good (discrepancy of one syllable by 2 assessors vs. 3 in count of 3 PSEs and of two syllables by 1 assessor in count of 1 PSE). However, the agreement pertains to theoretical length. In practice, PSE length may vary depending on individual pronunciation: *to omoimasu* was counted as a 5-syllable PSE, but in actual pronunciation, the *o* of *to* may be merged with the first *o* of omoimasu, and the *o* and *i* of *omoimasu* may be pronounced as a single syllable *oi*, which would give this PSE a 3-syllable length. While 'theoretical length' was selected for the primary analysis because of its invariance, pronunciation variability should be taken into account in the assessment of actual PSE length in time.

If the 'politeness' suffixes *desu* and *masu* are counted, close to 100% of the sentences in the speeches studied were found to have PSEs. Such one syllable endings, however, probably have no practical implications for interpretation because of their very brief duration. For the moment, no attempt at direct measurement of the effect of such PSEs depending on their length was made (see the discussion at the end of this paper). However, for illustration purposes, it may be worthwhile noting that the author of this paper is aware of very significant stress relief in his own work with PSEs having a length of 5 or more phonetic syllables, especially in consecutive interpretation (during its first phase, the production component, namely note-taking, is only information-oriented and is therefore probably less PC demanding than the speech production component in simultaneous, in which linguistic quality is also important; stress relief may, therefore, reasonably be hypothesized to be more easily perceived in consecutive).

In the sample of speeches under study, 46% of the sentences had PSEs of 5 or more phonetic syllables. The proportion of sentences having PSEs of eight and more phonetic syllables in the sample remains non negligible (9%).

It would therefore appear from the sample that the PC relief potentially afforded by PSEs is by no means a statistically rare occurrence.

QUALITATIVE ANALYSIS

PSE length vs. personal involvement and politeness

PSE syllable length was highly variable, and the sample is still too small for a fine analysis. Nevertheless, on the whole, PSE length in Japanese can be characterized as a monotonic function of a 3-level nominal classification of sentences:

- Sentences involving no personal implication on the part of the speaker ('objective' sentences not referring to the speaker or his organization nor to the listeners or their organizations) tended to have the shortest PSEs. This is particularly true of sentences containing quantitative assessments:

"...1977 nen irai no tsuusankaagokazu wa 1500 wo koe/ mashita" (the slash indicates the beginning of the PSE) - 2 syllable PSE

- Sentences involving personal implication on the part of the speaker or his listeners, and, in particular, sentences expressing his opinions, tended to be longer:

"...juuyou de/ aru to kangaemasu" - 7 syllable PSE

- Sentences referring to the relationship between the speaker and the listeners, and in particular sentences expressing requests, formal or sincere, tended to be longest:

"*...ni tsuite/ mooshinobetai to zonjimasu*" - 9 syllable PSE

This finding is not surprising, as polite and attenuation forms in a formal setting tend to become longer and more important as verbal communication between the speaker and his listener(s) refer more directly to their personal relationship. In fact, observation shows that polite forms account for a large part of the lengthening of PSEs.

A TYPOLOGY OF PSEs

Types of PSE functions

Five types of PSE functions were identified in the sample:

1. Politeness

Some PSEs were associated with polite formulas, such as the formal (and standard) request for cooperation: "*...he no gorikai wo fukamete itadaki/ masuyou onegai moshiagemasu*".

In this particular case, the 'politeness' function is clear because a grammatically correct sentence could have ended with *itadaki/tai* (familiar), or *itadaki/tai to omoimasu* (intermediate politeness level). In other cases, politeness may be incorporated into standard grammatical structures and thus become difficult to distinguish from the grammatical function (see below).

2. Attenuation

Some PSEs were found to have an attenuation role, in keeping with the Japanese tendency to avoid categorical assertions. In particular, many of the *to omoimasu*, the non-questioning question *dewa nai ka to omoimasu* and their variations belong to this category. It can be argued that this attenuation function is akin to the politeness function, but in the present classification, a distinction is made between 'attenuation', considered as a general cultural behaviour feature, and 'politeness', which refers to behaviour in a specific situation beyond the general cultural pattern.

3. Grammar function

Some PSEs exist because, in Japanese, certain rules of grammar enable total prediction of information up to the end of a sentence from a certain point onwards. In particular, since the main verb of a sentence generally comes at its end, the *tai* suffix is a predictor for *to omoimasu, to zonjimasu* or a variation thereof at the end of the sentence and its factitive form *asete* announces *itadakimasu* or a variation thereof. Therefore, listeners can anticipate an ending as

soon as they identify certain grammar structures.

4. Morphological endings

Another type of PSE arises from the existence of invariant formulas or groups of words: the standard self-introduction "*Fujitsu no Tanaka/ degozaimasu*", as a first sentence in a speech, *gokyouryoku/ onegai shimasu* at the end of a self-presentation, *goseichou/ arigatou gozaimasu*, the Japanese equivalent of "Thank you for your attention" at the end of a speech. Such sentence endings are called 'morphological' because they are identified by the listener by means of the beginning of their form.

5. Hesitation pause fillers

The four PSE types described above occur both in written discourse and in *impromptu* speech. Hesitation pause fillers differ from these in that they occur only in *impromptu* speeches. They indicate the end of an idea and a hesitation on the part of the speaker as to the continuation of the sentence. Sometimes they simply end the sentence: *to iu koto ni narimasu.* At other times, they connect a sentence to the next *...to iu koto desu ga...*, a process through which both sentences become independent clauses in a larger sentence.

IDENTIFIERS

As explained in a previous section of this paper, identifiers are defined as the particular speech segments that indicate to the interpreter that he is in a position to anticipate the rest of the sentence with a very high probability of being right (a slight probability of an ending turning out to be different from the anticipated PSE cannot be totally ruled out).

It is interesting to note in this context that Japanese interpreters sometimes refer to the fact that no grammatical indication predicts a negative form of the main verb at the end of the sentence. They claim that they are therefore at risk of erroneously starting to formulate an affirmative sentence and of having to correct things in mid-sentence. In the sample studied here (23 speeches totalizing more than 500 sentences), there was no such case, as semantic indications of a negative ending always arose from the context or from the very meaning of the formula which the PSE was part of, as in "*...kore ni suguru yorokobi/ wa gozaimasen*" ("nothing could exceed the pleasure of...").

It is also important to recall that underlying the various types of identifiers listed below, the semantic role played by the context, both linguistic and situational, is vital, as it is indeed in the general process of speech recognition. However, beyond this semantic 'layer', other types of indications make prediction of PSEs possible.

Another point is that in many cases in oral speeches, and in particular in impromptu speeches, it is the delivery which identifies PSEs, either jointly with another indication, or by itself. The two aspects of delivery which were found to identify PSEs were certain *stresses* in intonation and *pauses*, possibly corresponding to the boundary of a planned speech segment and to some hesitation as to the choice of the final speech segment of the sentence.

1. Morphological identifiers

Morphological identifiers are words or word segments which identify expressions and therefore make it possible to anticipate their endings.

In the Japanese sample of speeches studied here, these morphological identifiers were few. Many were related to standard conference speech sentences at the beginning and end of speeches and to politeness formulas: *doumo ari/gatou gozaimashita, goseichou/ arigatou gozaimashita.* In the first example, it is the sound *ari* which identifies the word *arigatou* (thanks) and therefore the ending *gozaimashita.* In the second-example, it is the word *goseichou* (polite word for listening) which identifies the expression. Other morphological identifiers (identified by the slash which follows them) appear in the following examples: "*...gozonji/ no toori desu*", "*...oinori/ moshiagemasu* (wishing something)", "*..omedetou/gozaimasu*" (congratulations).

3. Grammatical identifiers

Grammatical identifiers are words or word segments which announce a mandatory

grammatical complement, sometimes followed by another type of complement (politeness, attenuation, etc.) at the end of the sentence.They are distinct from grammatical words (or function words) as discussed in the next section by the mandatory or quasi-mandatory nature of their complement; grammatical words in the 'semantic identifier' category can be followed by a wide variety of complements, though they do announce a PSE as well.

In the sample of Japanese speeches, there were five grammatical identifiers:

- The *tai* suffix, indicating a wish or desire and followed by *to omoimasu, to zonjimasu* or a variation thereof: "*...sono ouyouka wo hakatte ikitai/ to kangaete orimasu*".

- The *mizen* form of verbs indicating that only an auxiliary verb follows:*...koto wo otsutae/ itashimasu.*

- The *asete* factitive form, followed by *itadakitai to omoimasu* or a variation thereof: "*...missetsu na kankei wo musubasete/ itadakitai to kongan itashite orimasu*", "*...gosetsumei sasete/ itadakimasu*".

- *Nakereba*, one of the few standard structures indicating the need to do something, which announces the normative ending narimasen (as in "*...sekinin wo hatashite ikanakereba/ narimasen*".

- The *ku* form of adjectives: "*...taihen yorokobashiku/ omoimasu*".

4. Semantic identifiers

'Semantic' identifiers are words and word-segments which indicate the start of a PSE and which do not belong to the three previous categories, but which point to the beginning of a PSE on the basis of semantic analysis with or without the help of pauses and intonations.

In our sample of Japanese speeches, semantic identifiers are by far the most numerous category: more than 90% in all speeches.

Semantic identifiers are of two kinds:

- Function words

Function word identifiers are function words that indicate the end of the information segment and the beginning of a PSE. Their PSE-identifying function is linked to the fact that Japanese sentences are articulated in 'groups'; except for the final groups, which generally end with the sentence's final verb clause, each is most often marked by a particle at its end which indicates its functional or grammatical role in the sentence.

- *to,* a particle which is used to mark the end of a direct or indirect quotation, but also, by extension, the end of the meaningful part of a statement: "*...joukyou to/ narimasu, "...kiipointo dearu to/ kangaete arimasu*"

- *ni made* (indicating a level or threshold, similar to "up to"): "*...80% ni made/ kakudai shite orimasu*" - in this particular case, *kakudai* is obvious from the context.

- *wo* (object particle): "*...wo rei wo/ moshinobesasete itadakitai to omoimasu*".

- *ni*: "*...juunen ni/ narimasu*", "*...ni tsuite kantan ni/ ohanashi wo sasete itadakitai to zonjimasu*".

- Content words

This was the most frequently observed identifier category in the sample of Japanese speeches investigated in this study. Content words do not announce PSEs by the way of standard morphology, mandatory grammatical rules or functional indications, as is the case of function words as semantic identifiers. Their function as identifiers therefore depends more than that of other identifiers on a semantic analysis of linguistic and situational context and on delivery, in particular stresses and pauses.

Two content word identifiers in the sample were found to have very strong predictive value, close to that of morphological identifiers, namely *hitsuyou* (necessity) and *juuyou* (importance), as in: "*...juuyou/ de aru to kangaemasu*" and "*...hitsuyou/ na no de arimasu*".

Another observation is that many word identifiers are *kango* nouns that have been made into verbs by the addition of an auxiliary verb, as in: "*...no takakuka ni chuuryoku/ itashite orimasu*" (the verb being *chuuryoku itasu*) or "*...ga ichidan to zoukyou/ sareru koto ni narimasu*" (here the verb is *zoukyou sareru*).

Other examples of semantic identifiers are: "*...buji/ oeta tokoro de arimasu*", "*...8.8 man ton/ de arimashita*", "*...yotei/ de gozaimasu*".

PSEs IN WESTERN LANGUAGE

A sample of 12 French speeches (5 recordings

and 7 written speeches), 10 English speeches (5 recordings and 5 written speeches) and 6 German speeches (2 recordings and 4 written speeches) was studied for comparison purposes. All speeches were 25 to 40 sentences long.

No PSEs were found in formal French and English speeches except the morphological "Mister Chairman, Ladies/ and Gentlemen" and "*Monsieur le Président, Mesdames/ et Messieurs*" in 3 French and 2 English speeches. However, in one recording of a bilingual meeting of an international organization working party (with 3 French and 2 English speeches), each speaker began and ended with "Thank you Mister/ Chairman" or "*Merci Monsieur/ le Président*".

In German, grammatical PSEs were frequent, involving a total of 12% of the sentences. In all cases, PSEs had no more than 5 syllables and consisted of final verb combinations, mostly with *"sein"*, *"zugestimmt"* and *"machen"*.

Samples are too small for fine quantitative analyses, especially in view of the high variability in communication modes in conference situations (see Ch.1 in Gile 1989) and the variability in speech behaviour it is associated with. Furthermore, sampling was convenience-based, *not* random. However, results suggest strongly that *to the extent the speeches are representative*:

1. PSEs are numerous in Japanese, rare in English and French, and fairly frequent in German.
2. Practically all PSEs in French and English are morphologic.
3. Practically all PSEs in German are grammatical and of one kind, namely the last auxiliary verb complement in the sentence.
4. PSEs in Japanese are generally longer than in German.

These four ideas can be summarized as a strong indication that PSEs are much more present in Japanese speeches than in the three Western languages speeches studied, both in frequency and in length.

The striking difference in PSE frequency between Japanese and German on the one hand and French and English on the other can probably be explained to a large extent by a single factor: in Japanese, and in some cases German, determinant elements precede the sentence's main verb which comes at its end. Therefore, as soon as there is an indication that there are no more such determinants in the sentence (for instance through a function word or tonal stress), the listener has the assurance that the next segment will be a sentence ending and can use available information to anticipate this ending. In French and English, anticipation is also possible, but complements can be added after each element within the same sentence structure. For example, morphological prediction is possible in "*...les armes seront appelées à/ parler*", but in the speech this example is extracted from, a speech on the Gulf war by French Foreign Minister Roland Dumas (on February 20, 1991), it was followed by "*et à trancher le débat*", which could not be predicted.

Anticipation within a sentence (not up to its end) is not as helpful as PSE anticipation in interpretation between Japanese and Western languages such as English and French. In simultaneous interpretation, such anticipation in the 'middle' of the sentence can lower processing capacity requirements for the listening component. However, in interpretation from Japanese, the main verb or PSE only comes at the end of the sentence, which means that interpreters often have to wait for the PSE before they can safely start interpreting into English and French. There is, therefore, not much PC saving as regards the short term memory component M. In consecutive interpretation, anticipation in the middle of the sentence is more useful, since information pieces can be written down in notes, thus unloading short term memory M immediately.

On the other hand, PSEs give the interpreter the knowledge that he already has all the information content of the sentence, and thus allow him to start reformulation of the message in the target language earlier, which may be very effective in the prevention of processing capacity saturation or PC management problems.

Similarly, in sight translation, PSEs reduce the number of characters that the interpreter has to process, which amounts to a lowering of processing capacity requirements for both the

receiving component (the reading component in this case) and the short term memory component.

CONCLUSION

Subject to confirmation in a larger sample, it seems that there is a very large difference in PSE presence between Japanese on the one hand, and French and English on the other, and a marked difference between Japanese and German. The question is whether this is associated with a difference in interpretation patterns or difficulty between interpretation from Japanese into these Western languages and intepretation from one of those Western languages into another.

Intuitively, the answer is affermative. It is a fact that while interpreting from Japanese, practitioners find that having anticipated a long PSE, they manage to finish interpreting a sentence while it is still being pronounced by the speaker. In this respect, PSEs are 'pauses' which do to a certain extent have the role Barik (1973) and Goldman-Eisler (1968) assigned to real speech-interruption pauses, namely allowing interpreters to catch up on lag and thus reducing the duration of actual simultaneous speaking and listening. In our sample, many Japanese sentences had PSEs that last more than one second (more than 6 to 8 syllables), thus allowing interpreters to do some catching up. However, in our view, the problem lies not so much in the simultaneousness of speaking and listening per se. At times, both actions require little processing capacity, for instance when the source language speech is highly predictable and the interpreter is pronouncing a speech segment which has been planned previously. Furthermore, the simultaneousness is a desirable quality feature of delivery from the audience's point of view, as it is widely agreed that interpretation listeners consider 'blanks' an unpleasant delivery feature. As stated earlier, the benefits of pauses or PSEs in this case have to be measured in processing capacity and time saving.

However, although there were no long grammatical and politeness PSEs in Western languages and though other PSEs were rare in the sample of speeches studied, interpreters working from English, French and German also find they sometimes anticipate sentence endings and can also finish interpreting sentences while they are still being pronounced by speakers. Such anticipation probably relies more on linguistic and situational context analysis, and may be facilitated by phonological features of sentence endings in Western languages, but there are no statistical indications as to the frequency of the phenomenon.

Reaching a quantitatively documented clear-cut answer to the question is a difficult task, the more so because it is not known to what extent interpreters actually use the theoretical PSEs anticipation potential while interpreting. The most direct procedure, namely a comparison of interpretation errors and other quality degradation symptoms in interpretation from Japanese into Western languages and between Western languages, poses formidable methodological problems, if only because of the difficulty in finding enough interpreters working from Japanese, in assessing the difficulty of speeches and in attributing quality degradation phenomena to particular source language features. It therefore appears that the best research strategy for the moment would be an indirect one, namely some measurement of processing capacity requirements of subjects listening to Japanese and Western language speeches, possibly in dual task experiments.

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APPENDIX

Potential Effects of PSEs on PC Requirements

Fig. 1 represents schematically a Source Language sentence and the PC requirements of the various components of simultaneous interpretation over time.

The I (for information) graph in Fig. 1 shows the amount of information carried by the SL sentence over time. For simplicity's sake, the sentence is assumed to have one informationally dense segment only. The segment could be the name of an organization, such as "*Association Internationale des Ville Francophones de Congrès*".

The L (for Listening) graph in Fig. 1 shows the L-component PC requirements. They start at an assumedly constant level, then increase when the informationally dense segment is recognized, then decrease back to the initial value when the informationally dense segment is recognized to be over, and drop to zero when the SL sentence is recognized to be finished.

The M (for Memory) graph in Fig. 1 shows the M-component PC requirements. An initial low level is present along the initial low information density part of the SL sentence, after the SL speech has started. As the informationally dense SL segment is being heard, since the interpreter does not (and often cannot) translate it at the same rate, memory load builds up until after the segment is over. As the SL speech slips into a less dense continuation, memory load goes down gradually until a point where it is maintained at a still relatively high level because of the lag the informationally dense segment has caused.

The P (for Production) graph in Fig. 1 shows the P-component PC requirements. Production starts after some information has been heard, memorized and analysed. The informationally dense segment increases production requirements because it also forces the interpreter to process and reformulate a larger amount of information. At the end of the sentence, production goes back to the level required to voice a mentally prepared linguistic structure.

The T (for Total) graph in Fig. 1 shows the sum of requirements for the 3 components. The graph has two peaks. Both occur *after*, and not *while* the informationally dense segment is heard. In fact, while the first peak is quite close to this segment, the second occurs more significantly later. This means that in this hypothetical case, saturation is more likely to occur after than during a dense segment,which would explain the "carry over effect", namely interpreters stumbling not on difficult segments, but on seemingly simple ones.

Fig. 2 shows the case of a sentence with a PSE, shown in the I graph as the "tail" of the sentence, which has virtually no informational content. The L graph shows that as soon as the PSE is identified, listening requirements are also virtually non-existent. M requirements can come down rapidly after the dense segment has been

dealt with, because during the PSE, no further information is coming in, while production keeps unloading memory. Similarly, production requirements are not driven up by the need to catch up with lag, since time for that is provided by the PSE. As a result, the T graph only has one peak, close to the informationally dense segment, with decreasing requirements towards the end of the sentence.

Fig. 3 shows the total requirements graphs in the two cases. It appears that PSEs have a significant effect on the total requirements pattern, not only because of the general reduction in requirements, but because of the interrelation between component requirements over time.

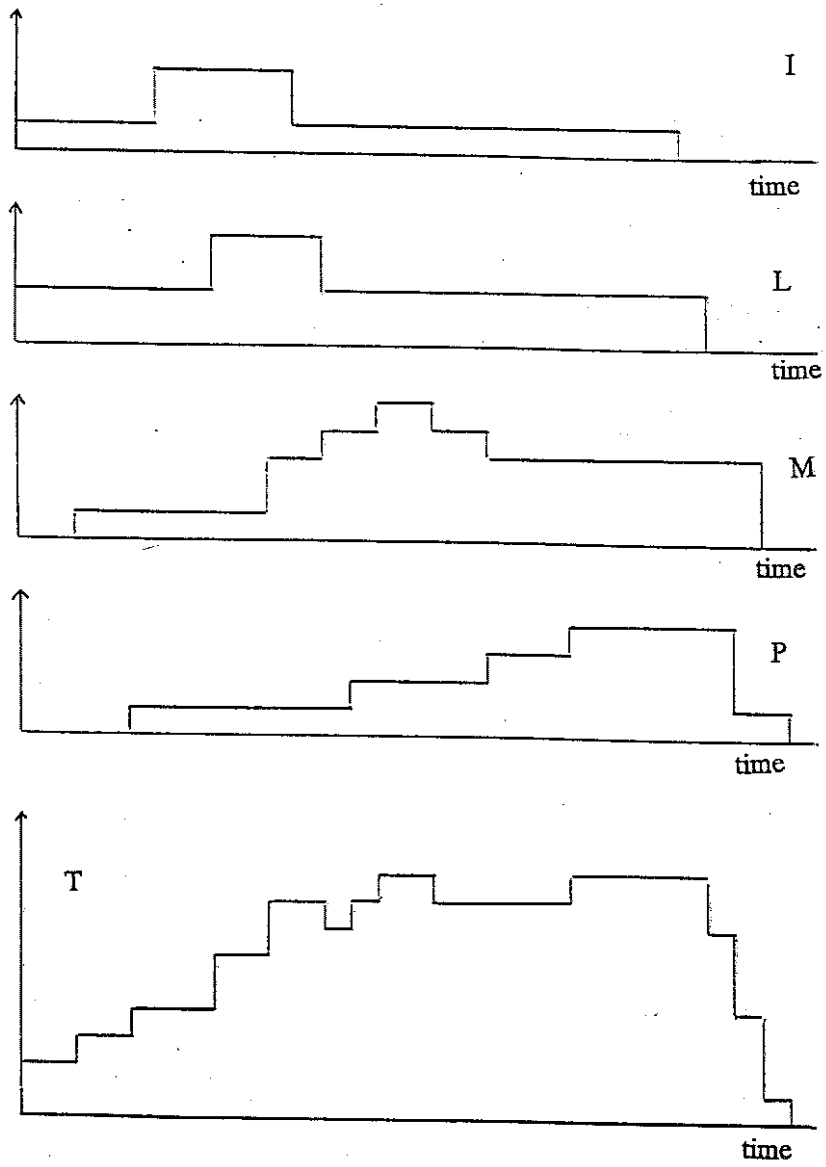

FIG. 1: PC requirements in an ordinary sentence

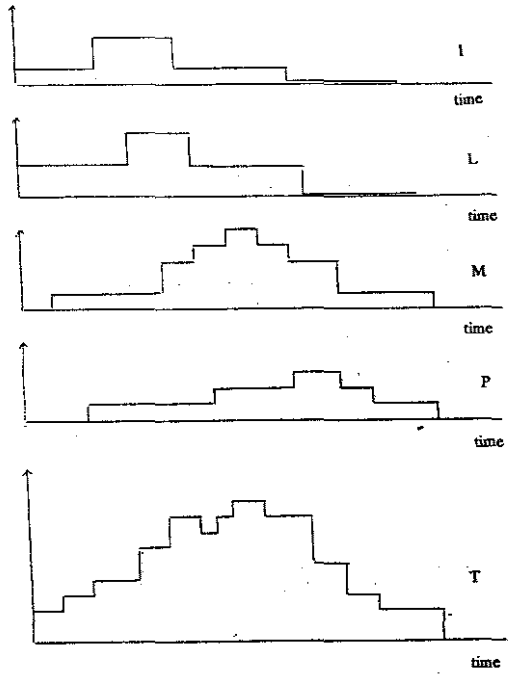

Fig. 2: PC requirements in the case of a PSE

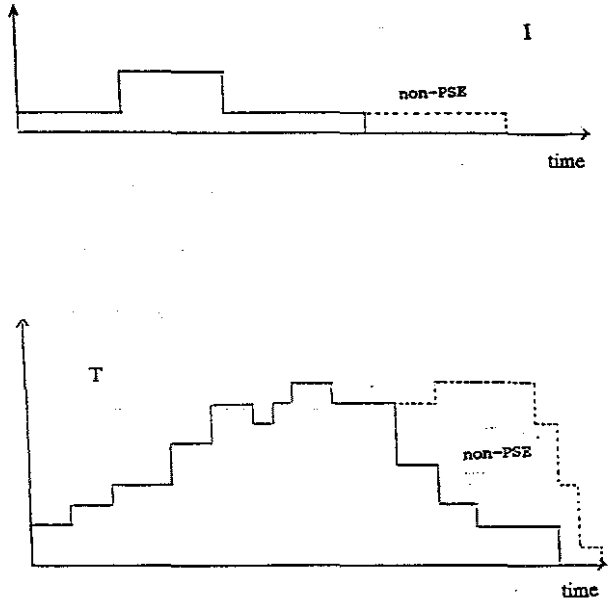

FIG. 3: A comparison of PSE and non- PSE processing capacity requirements