Research project of Gianluca Sorrentino
PHD course in Translation, Interpreting and Intercultural Studies
University of Bologna

Title: a new paradigm of the traditional Effort Model and the reversal of the readability coefficient, deriving from SI from non-SVO languages into English.

1. Overview

This research programme will contribute to interpreting studies, introducing new data and important clues to account for various cognitive issues involving simultaneous interpreting. In particular, the focus will be on some studies of the so called Japanese school (Funayama, Mizuno, Kasahara), highlighting structural difficulties concerning the rendition from non SVO-languages (such as Japanese and German) to SVO-languages (Italian, English) in simultaneous interpretation.

In its first stage, the project will be based on the study of the predominant structural features involved in the transmission of semantic and syntactic information. So far, the translation from romance languages into English has attracted much pedagogical and scientific interest, but very poor scientific research has been done in connection with strategies regarding the particular asymmetries occurring in SI between more exotic source and target languages. Much is known about interpretation from traditional European working languages. Supported by the knowledge of both German and Japanese, the candidate wishes to show that the interpreter dealing with non SVO-languages has to come to terms with particular unexplored strategies, other than the free-wheeling interpretation hypothesized by Lederer¹ (1981) in several essays dedicated to “anticipation in simultaneous interpretation”, in order to make a sound, sober and precise content rendition into the TL. In carrying on these studies, the candidate will concentrate on the production of constituents in the SLs and their corresponding constituents uttered in the TL (English). In addition to a quantitative data analysis resulting from a descriptive study of the syntactic articulatory components in the two SL, the candidate will focus on specific processing information strategies such as anticipation, top-down rendition and all those strategies adopted by a professional conference interpreter in order to circumvent the consequences of what Akira Mizuno² calls the “articulatory loop”. In order to showcase the cognitive skills required by such a demanding and energy-consuming task, the candidate will analyze the broadness of items to be accounted for by professional interpreters. In particular, figures and humor-based contents are, in certain cases, hard to render into English, a language, whose audience proudly retains its unparalleled sense of humor. The first PHD phase will turn the quantitative analysis into a qualitative one, whereby the candidate’s attempt will be to explain the load-reduction strategies needed to perform simultaneous interpreting, when overloaded contents or dense strings of contents (in

non-SVO languages) occur, and the only rendition tool is provided by a well-trained working memory. Considering that both German and Japanese render low-redundant items such as figures in a very complex way, not having to do with the basic decimal system adopted in international standardized English (reference is not made to BE), the rendition strategies are strained by concurrent high-density content strings, forcing the professional interpreter to adopt non-conventional strategies to store the message, hold it and subsequently articulate it into the TL, without distorting the recall and comprehension task of surrounding strings. Since conference interpreting is nowadays a very demanding activity, mostly performed by skilled professional interpreters, the contents dealt with during meetings or inside the international organizations require more than ever the ability to cope with technicalities and the high degree of informational density. In such cases, the interpreter can only rely on ST and TT redundancy as well as predictability strategies.

After the first research phase, the candidate will (presumably during the PHD’s second year) focus on the analysis of a live interpretation – hopefully to be recorded during working sessions in international organizations – in order to confront the qualitative data collected during the first research year with those deriving from a scientific analysis to be made on the spot. An array of EU and UN organizations (from UN Rome-based ones to the European Union institutions) working with the affected language combinations will be likely to offer the candidate the opportunity to record simultaneous interpreting sessions. Starting from these records, the candidate will carry-on an accurate qualitative analysis of data resulting from on the spot research and will concentrate on some structural peculiarities of the affected language pairs, and will assess whether data on CL collected during the 1st year and the qualitative results deriving from texts interpreted from these SLs coincide. If this is the case, this will help to prepare the ground for changing the old paradigm set by Daniel Gile with his “Model des efforts”, and demonstrating, as anticipated in academic studies on relay interpreting, that the working memory and the strategies adopted by professional interpreters are not enough to determine the amount of cognitive load surrounding SI process. The cognitive model itself should be re-considered, starting more accurately from the SL taken into account. And, since the SLs are more demanding and syntactically complex language combinations, the model should be re-written, according to a new paradigm and more recent scientific data. If the Effort-Model (Model des Efforts) is reviewed, the readability coefficient itself is to be re-written, taking into consideration that most scientific data, generally accepted to date, such as the Lederer anticipation rate – “fixed” at to 85 seconds - have to be reviewed and updated. The University of Bologna might support the acknowledgment of such data, ensuring its own contribution to the disclosure of results deriving from new studies on CL. Such analyses diverge from data traditionally set forth by Swiss and French scholars and stress that, when it comes to SI processing tasks from non-traditional language combinations, the scientific data collected so far prove to be only partially acceptable from a scientific as well as academic viewpoint, as they do not always pay much attention to the correspondence between processing strategies and

---

peculiarities of the language combinations taken into account. Therefore, it is not possible to sustainably assess the ST extent, the medium length of silent pauses or to determine the medium anticipation rate during a complex SI, since all these data should be empirically confronted with relevant endogenous and exogenous parameters (and variable), such as:

\[ \text{SI: SD + EF + T + WM + PK + LP} \]

**SD:** speed of delivery. Whether phonological and semantic information can be retrieved or not, also depends on the speed of delivery. As Mazuka\(^4\) puts it, in left branching languages (non-SVO), seeking a formal correspondence with the TL (SVO) requires to apply a set of strategies, affecting every grammatical unit. Therefore, the higher the SD is, the greater is the cognitive burden on the interpreter’s WM. In the research project, much attention will be devoted to this variable and to how it impacts on the overall interpreter’s rendition. According to the Japanese school, comparative studies on non-SVO languages would show a lower cognitive burden resulting from SI from structurally similar language combinations.

**T:** time (variable time in general as well as the ratio between concurrent tasks (listening and speaking) / delivery speed (words per minute, wpm))

**WM:** working memory. Following the Cowan\(^5\) Embedded Processes Model of WM, the storage capacity of skilled conference interpreters working from non-SVO languages (e.g. Japanese) should be activated, as to retrieve from long-term memory in less than 10 to 20 seconds. In Cowan’s model, retrieval is meant to be “the ability to enter the correct item into the focus of attention”.

**EF:** exogenous factors: context, setting, working conditions, environmental conditions, etc.

**PK:** prior knowledge (**endogenous variable**), affecting the work done by conference interpreters. It falls within the most important variables, since the quality of rendition is in strict relation with the topic, the preventive information acquired by the conference interpreter during the training phase ahead of the conference day.

---


**LP:** language pairs. Considering Cowan’s model, the relation SL/TL has a direct influence on the “phase shift” or EVS (ear-voice span), because the semantic structure of the SL (non-SVO in JAP, DE) might be accountable for not retrieving the corresponding target language for lexical items or for “lagging behind” in some SL segments. In addition to this, the influence on the interpreter’s WM is direct and brings in a higher amount of unprocessed information as well as a “knock-on” effect on SI processing as a whole.

In bringing forward this hypothesis, the candidate believes that the “probability mechanism prediction model” (PMP) set by Chernov\(^6\) maintains its scientific validity, as “the meaning of a message can only be extracted (...) after only receiving part of it by making linguistic, cognitive, deictic and pragmatic inferences” (1994: 140-141). Said assumption presents its core scientific value even in non-SVO/SVO rendition, as interpreters, despite possible impaired phonological memory abilities and higher burden on semantic rephrasing, once confronted with the situational pattern and the overall ratio thematic/rhematic information, make use of prediction models, mostly based on continuous inference-making. Since SI is *per se* a complex task, mostly relying on urgent *decision-making* skills, this is all the more true when the conference interpreter has to cope with high delivery speed, semantic constraints and syntactical differences. In such cases, the conference interpreter can only explore those tools offered by the TL, such as redundancy, inference-making and anticipation, these representing the only processing strategy making it possible to utter a corresponding constituent in the TL\(^7\) (Lederer: 1978).

Hence, considering the above described formula and leaving the Markovian formula completely apart from this analysis, because hardly can an interpretation follow a linear sequence processing such as \(A+B+C\) and a SI from a non-SVO language is unlikely to “linearly” disclose B-content after A-content and C-content after B-sentence, the research data collected in the first two years – thanks to the empirical research and the research on the spot – will allow to outline a new readability paradigm, different from Alexsieva’s readability coefficient\(^8\). Although the notion of FAMILIARITY introduced by Alexsieva sheds light on the above described variable – prior knowledge – and reveals that familiarity is at the very basis of the language comprehension and production system\(^9\) (Osaka: 2002), it does not seem to take into account the syntactical changes required by non-converging language models. Therefore, the Familiarity or Listenability Coefficient of a text introduced by Alexsieva, though providing a sound description of the ratio *notional words/words occurring more than once* in a non complex SI case, do not seem to provide a thorough description of the same ratio applied to a non-SVO/SVO rendition context.

---


Therefore, the research project will turn Alexsieva’s Coefficient into a more complex formula than

\[ \text{Sigma Y (number of words occurring again)} \]

\[ \text{Kn} = \phantom{\text{X}} \]

\[ \text{X (number of notional words)} \]

where \( \text{Kn} \) stands for coefficient once recognized that the formula is scientifically valid.

The conclusion of the research studies conducted during the 2\textsuperscript{nd} year will be the application of a new READIBILITY Coefficient, considering rendition from non-SVO basic order and changing the traditional Effort Model into one that takes into account the perspective of SI from languages where conceptualization or linear sequence encoding \((A+B+C)\) are not always the rule.

In the PHD’s 3\textsuperscript{rd} year, the candidate will draw out the results from the studies conducted in the previous semesters and will try to define the outcome of the whole PHD research work, in order to turn the drafted results into a definitive study, presumably divided into two volumes.

\section*{2. The PHD project: issues regarding WM}

One of the main research fields of this PHD project will be the cognitive load posed on the WM. Starting from Shlesinger’s definition of cognitive resources allocation and attention sharing\[10\], according to which interpreters need to store information - in terms both of single words and more complex strings - interpreters tend to prioritize information and to share their own attention between rhematic information and the search for an equivalent solution in the TL. In doing this, most interpreters are well trained and can recognize and distinguish between redundant information and those contents to be verbally encoded in the TL. This process, applied to SI from non-SVO

---

languages, requires the interpreter not only to store the different code under stressful time constraints but also to share the amount of attention between listening and recall of a meaningful sentence. In performing this process, the interpreter must rely both on his own probability prediction mechanism – as Chernov (1994) defines it – and on the ability to trigger the memory activation in less than 10/20 seconds, before the information goes out of the given span and fades away. Cowan’s model (1999) painstakingly describes this mechanism, stressing the need to turn the LT (long-term) memory in the ST (short-term) one, when the SL is a non-SVO language (e.g. Japanese). According to this model, interpreters are well aware of the need to keep the delay time as short as possible; therefore, the ST memory prevails over the LT and it becomes a matter of behavioural approach to the information retention.

Watanabe\textsuperscript{11} outlines a mechanism where the central executive deals with the focus of attention and the coordination of the WM efforts. This system can be represented as follows:

The Japanese School highlights the strict relation between the interpreter’s WM and the cognitive efforts made to extract meanings from the center of a layer memory, drawing on many studies formerly conducted in the field of neuropsychology.

In this framework, Watanabe \textit{et al.} believe that there is unavoidably a direct relation between the WM and verbal retrieval from non-SVO languages, since the need to perform reversals and modifications turns into a language comprehension task as well as an on-line operation (Mazuka: 1998). In SI interpretation, Funayama, Kasahara and Nishimura (2002) recall that semantic memory\textsuperscript{12} lasts longer than phonological memory, easing the conceptualization of contents and leaving behind listening efforts. Despite the strong academic interest towards this theory (outside Europe), this PHD project will not confine the rendition mechanisms to the semantic memory, since the nature itself of languages such as Japanese requires the interpreter to comply with rises or drops in pitch. Therefore, the manipulation of information by the conference interpreter is needed.

\begin{flushleft}
\textsuperscript{11} Watanabe, M. 1998, "Central executive is more than a slave system within working memory: comments on Fuji’s article" in \textit{Japanese Psychological Review}, 41/2, p. 172-173.
\end{flushleft}
Example:

**JAP:**
Okanega attemo, ...

**EN:**
- (Intonation) – translation: though there is money
- (yo is used to confirm one’s intention or what has been said)

Translation: surely there will be

Whilst the Japanese research concentrates on psychological effects of SI, constantly keeping in touch with cognitive psychology, the Western academic research studies mainly focus on the relation interpreters/customers and the need to ensure a sustainable interpretation, whereby the interpreter’s knowledge of the situational context must be of the utmost importance. As Seleskovitch (1986: 236) puts it, the interpretation is not an end in itself and “the chain of communication does not end in the booth”.

This research project will try to put together both the prominent Eastern studies regarding the effects of presentation rate and syntactical structure on the TL rendition and the relevant Western academic issues pertaining quality standards – as prescribed by international AIIC standards – and content-related interpretation models.

In this framework, reference will be made to models spread by the interpreters’ community throughout Europe to improve creativity, one of the core skills required to perform the SI tasks (Gui: 1995). Some of these models will be taken into account during the qualitative analysis of SI from non-SVO languages, in order to look into the decision-making processes put in place through strategic choices made by interpreters.

Decision-making processes are also triggered when it comes to interpreting figures and data in general. In such cases, even considering the scientific validity of Gile’s Effort Model, whereby the interpreter’s WM actually works under utmost stressful conditions close to the so called saturation level, reference will be made to recent academic research projects highlighting the direct relation between prior knowledge – as well as overall interpreter’s knowledge regarding everyday’s life and events of topic interests – and figures, numbers and data. According to academic research studies conducted by Mazza (2001) and Sorrentino (2011), a topic-related interpretation can help the linguist to cut down the burden posed by the translation of complex figures, triggering a positive perception of data as well as restoring the interpreter’s storage capacity and making it possible not to lag behind sequences characterized by complex figures, triggering a positive perception of data as well as restoring the interpreter’s storage capacity and making it possible not to lag behind sequences characterized by

---

a high amount of non-redundant information (numbers). In SI from German and Japanese, interpreters traditionally acknowledge that the amount of non-redundant information is much higher than from other languages and strive against the time pressure. Regardless of the conference type, interpreters tend to cope with these time and energy-consuming tasks, resorting to approximation and note-taking and averting in any cases the danger to give rise to a set of errors or omissions. In doing so, they try to rely as much as possible on the phonological memory (Funayama: 2002), since it represents the only viable tool that can somehow hold non-conceptualized items irrespective of time and length (within 10/20 seconds).

Example:

<table>
<thead>
<tr>
<th>DE</th>
<th>EN</th>
<th>JAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Der im Jahre neunzehnhundereinundachtzig (1981) verarbeitete Program wurde (...)</td>
<td>The programme, drawn up in 1981 was (...)</td>
<td>Senkyuhyakuachijuichinen de (1981) kaita puroguramuwa ...</td>
</tr>
</tbody>
</table>

In this example, interpreters could conceptualize even the item 1981 and put it into the focus of attention, since it is relatively easy to retain this non-redundant piece of information. On the contrary, in the PHD project, attention will be devoted to more complex cases – closer to the work actually carried on by conference interpreters – where working conditions reveal a limitation of conceptualization.

See Example 2:

<table>
<thead>
<tr>
<th>DE</th>
<th>EN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Der von dreizehn Jahren verarbeitet Gesetz, in zweitausendzehn durchgesetzt, wurde nur von hundertachtundachtzig Abgeordneten verabschiedet.</td>
<td>The law, drafted thirteen years ago and endorsed in 2010, was passed only by 188 Deputies.</td>
</tr>
</tbody>
</table>

In complex, technical meetings, interpreting from non-SVO languages can prove to be very demanding, forcing the interpreter to resort to all cognitive resources to perform the SI task. The Western academic and scientific interpreting community emphasizes the need to meet the customer’s expectations (towards interpretation) and to improve interpreting quality standards. As Moser-Mercer (1996) admits, (...) “some users tend to blame the interpreter rather than the speaker for lack of clarity” 180 (... or for very

---

technical and complex strings, where no interpreting technique can guarantee the precise rendition of all data (Sorrentino: 2012).

Analyzing practical cases of SI from non-SVO languages, where the cognitive burden in connection with the rendition of figures, data and technicalities is higher, the PHD project will try to give a scientific contribution to the need to accuracy in terms of SL-oriented rendition and SL/TL formal correspondence.

One of the scientific contributions from the first part of this PHD project might arise from the analysis of Intelligence Applied Programmes, rarely applied to the interpreting studies. Relevant to this PHD projects are Rothenberg\(^\text{19}\) (1979) and Sternberg\(^\text{20}\) (1986) theories, whereby the subject can make use of cognitive skills to improve his own memory, update it and extract the information, when needed.

2.1 Rothenberg’s theory

According to Rothenberg, an approach inspired by creativity might lead the interpreter to keep in mind opposite sides of reality, providing the possibility to choose the option that squarely corresponds to the affected item. Following this synectical approach, the interpreter can recall - from the whole flow of ideas – the items (words, strings) to be integrated in a superior hierarchical order. If this theory were applied to the mentioned example 2 (numbers), in SI from German into English, the conference interpreter might draft a paper containing “open data” (open to further developments), where he updates the ongoing communicative scenario, as he goes on interpreting.

Example 3:

<table>
<thead>
<tr>
<th>DE</th>
<th>EN</th>
</tr>
</thead>
<tbody>
<tr>
<td>LISTENING</td>
<td></td>
</tr>
<tr>
<td>thirteen years ago</td>
<td>updating 1 the law, drafted 13 years ago</td>
</tr>
<tr>
<td>2010</td>
<td>updating 2 and endorsed in 2010</td>
</tr>
<tr>
<td>188</td>
<td></td>
</tr>
</tbody>
</table>

**final rendition**

The law, drafted 13 years ago, endorsed in 2010,


\(^\text{20}\) Sternberg, R. J. 1999, Intelligence as Developing Expertise in Contemporary Educational Psychology 24, 359-375.
was passed by 188 Deputies.

Further to the hierarchical order of the information provided, the conference interpreter might as well proceed to oppose the numbers one with another (13 VS 188 – 2010 VS 188), in order to subsequently integrate them into the TL reality (final rendition). In doing so, the only thing to do will be to restore the basic order of the components. Many argue that applying this theory to numbers and data may be hardly efficient, but when it comes to conceptualized items, the Rothenberg theory maintains its scientific value insofar as it helps the interpreter to re-build the basic order of sequential information as well as semantic components.

2.2 Sternberg theory

In the first phase of this PHD project, much attention will be devoted to the analysis of all devices employed by conference interpreters during SI from non-SVO languages. In fact, one basic assumption is that the conference interpreter is not only a decision-maker – which poses great responsibilities as well as a Damocles’ sword leaning on his words, as every processed word has to be validated by the TL audience – but also a professional linguist performing continuous problem-solving tasks. In this view, applying Sternberg theory may prove to be helpful and increase the scientific evidence that interpreting from non-SVO languages poses a higher cognitive burden than in traditional “European to European languages” (EU2EU) interpreting sessions. According to Sternberg, the information production is meant to be a finite product deriving from a complex set of rules and laws, where the task of the interpreter is to turn the initial strategy into another one (a renewed one) that offers him the “exit strategy”. In order to solve the problem and get the key to render the actual vision of the linguistic reality, the interpreter can rely on three items:

1. a system that processes data, information etc., combining and analyzing them through a “sequential search”; 
2. a reality where every information is embedded in space and time, in order to know where a natural event starts, takes place and where it ends; 
3. a framework that permits to find all information or data and to finally reconstruct all stages of a given process.

Applying this cognitive psychological theory to conference interpreting is of scientific interest, as it shows that retrieving the corresponding lexical items in the TL and triggering the problem-solving skills call for interpreting strategies based on:

<table>
<thead>
<tr>
<th>Metacomponents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discourse planning operations (assess, evaluate, collect ideas and arrange them)</td>
</tr>
</tbody>
</table>
Though scant attention has been paid to such theories, the PHD project will try to shed light on the contribution given by applied-intelligence studies. Especially Japanese interpreting scholars have, to a greater or lesser extent, agreed that interpretation is more than a linguistic process, demanding continuous brainstorming activities as well as the activation of those skills typical of selective WM. In sharing this view, Japanese scholars have stressed that not only is encyclopedic knowledge a “must-have” asset, but also practiced strategic operations play a vital role, since they make it possible to find cultural equivalents. This is all the more true when S-interpreting from non-SVO languages, where the linguist can rely on consolidated formal correspondences and avoid to put a heavier burden on his WM (Mazuka: 1998).

Following the above described steps, the PHD project will try to combine Eastern instances - mostly affecting cognitive memory and efforts - with constructivism instances pertaining storage capacities and knowledge-based processing.
2.3 Lipman’s theory

In connection with problem-solving strategies, Lipman\(^{21}\) (1980) drew up a programme aimed at improving the individual’s ability to scale down problems, resorting to innovative ways of thinking and new strategies to find an original, unexplored solution. In particular, Lipman invites the individual to consider not only an idea, a viewpoint, a given reality or an assumption but also its contrary.

Recalling everyday’s life problems, the individual searches for equivalents and new semantic solutions.

Speech flow

Lipman’s theory:

in SI, the interpreter can combine formerly stored information with new ways of describing reality: A implies not-A

A-context (SL) requires a [X + n- “(new) solutions”].

In SI, interpreters try to find a solution, not only resorting to knowledge deposits, but also opening up a new operational scenario.

Lipman’s theory, applied to SI from non-SVO languages, shows that conference interpreters can have plenty of alternative solutions, if they a. analyze the context in which they work (and have a thorough knowledge of the context), b. recognize ahead of time the X? issue to deal with, c. apply original solutions to semantic/syntactic knots formerly loosed in their previous linguistic experience.

Example: **Einsatzbereitschaft** (DE) = ready to employ, readiness, operational readiness (x+n), readiness for duty (use), devotedness (x+n), willingness.

2.4 From Lipman to Kintsch and van Dijk

Lipman’s theory is intertwined with Kintsch and van Dijk’s model, according to which two big processes underlie the speech creation and translational task:

1. construction;
2. integration

The constructive process generally builds-up a text, taking into account propositions, inferences, local coherence. This process is developed both at micro-structural and macro-structural level. Like in consecutive interpreting, the linguist has to interweave the surface speech structure with well-chosen discourse strategies. Once adopted a given strategy, the interpreter, as a decision-maker, cannot change it and will be forced to pursue the communicative goal that has just set, building a specific sentence.

The integration process will allow the interpreter to trigger other propositions complying with the communicative process.

<table>
<thead>
<tr>
<th>SI: die Zahl der Arbeitslosen, trotz der positiven Wirtschaftskonjunktur, steigt ständig auf und könnte in den nächsten drei Jahren ein minus 2% verzeichnen. (DE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN: Although a positive economic trend is recorded, the unemployment rate is steadily increasing and could rise to -2% in the next three years.</td>
</tr>
</tbody>
</table>

Lipman’s model:
the economy is improving but the unemployment rate is rising, too. As a consequence, in the next three years, a -2% might be recorded.

Kintsch and van Dijk’s model:
A positive trend is being observed. Nonetheless, figures speak by themselves: in the next three years, economists expect a -2%.

The Kintsch and van Dijk model is scientifically interesting, because it anticipates the Cognitive Load Model (CLM) and gives an idea of how to scale down the impact of cognitive load, using as many tools as internal inferences, TL content-related counterparts. In connection with this model, in analyzing the SI from non-SVO languages, the PHD project will dwell upon this CLM and will try to outline the most effective cognitive processing patterns. Therefore, particular attention will be devoted to chunking, rephrasing, stalling and anticipation. The focus on the latter might give academic evidence to SI strategies applied from non-SVO languages. The candidate will show that anticipation and chunking fall within the most explored content-processing strategies. The candidate’s aim is to demonstrate – in the relevant PHD phase – that, though chunking allows the conference interpreter to create strings with lower content-density and to leave the syntactical structure open to further developments, as the SI process goes on, it cannot be considered a sustainable processing model, since it generates too many low-density (and semantic low-quality) strings, and does not allow to end sentences in the TLs in an appropriate manner. In such cases, the interpreter is forced to invent or predict (in every string) the verbal...
information cells. This processing model is considered too risky and does not seem to provide the accuracy requested by conference interpreting.

On the contrary, anticipation seems to fit the logical and syntactical needs of non-SVO language structure, thus allowing the interpreter to retain the information and fix the sentence when all data are there. Ilg\(^ {22} \) (1959:10) states that chunking is not a sustainable processing strategy, because its use turns the target text (TT) into a set of muddled sentences weighing on the spontaneous character (as well as on the originality) of the SI task: “(sentences) (...) extrêmement lourdes, [au point] qu’elles font carrément violence à la langue (...). When applied to SI from non-SVO languages, both Ilg and Gile (1992) state that anticipation represents the only viable technique, as the initial burden put on cognitive skills is subsequently bypassed thanks to the inversion of both the semantic and the syntactic order. Furthermore, anticipation makes it possible to avoid the so called spillover-effect, an accumulation of delays weighing on all propositions. Ilg (1959) believes that this effect is very dangerous, jeopardizing the sense (and verbal) units.

Many strategies have been developed and studied over the years mostly by French and Swiss scholars, but the candidate will only focus on those techniques pertaining SI from non-SVO languages (part 2 of the PHD project: research on the spot).

Following these approaches, the candidate will try to find the CLM that best fits the SI from Japanese and German into English. In doing so, the hereunder drafted scheme will be taken into account for analyzing the structural presentation of the speech (including omission, symmetrical and asymmetrical syntax patterns):

Example 1: **chunking**

<table>
<thead>
<tr>
<th><strong>Cognitive Load Model: chunking</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INPUT</strong></td>
</tr>
<tr>
<td><strong>Sentence 1</strong></td>
</tr>
<tr>
<td>Wir glauben die Delegierten treffen ihre Entscheidung nach einer langen Debatte</td>
</tr>
<tr>
<td><strong>Sentence 2</strong></td>
</tr>
<tr>
<td>Das ist der Anfang einer neuen Phase</td>
</tr>
<tr>
<td><strong>OUTPUT</strong></td>
</tr>
<tr>
<td>We believe the delegates take their decision after a long debate</td>
</tr>
<tr>
<td><strong>This is the beginning of a new phase</strong></td>
</tr>
</tbody>
</table>

Example 2: *anticipation*

<table>
<thead>
<tr>
<th>DE</th>
<th>INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satz 1</td>
<td>Wir glauben, dass die Delegierten ihre Entscheidung nach einer langen Debatte treffen.</td>
</tr>
<tr>
<td>Satz 2</td>
<td>Das ist der Anfang einer neuen Phase.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EN</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentence 1</td>
<td>Here is what we believe. The delegates need a decision. They make it after a long debate.</td>
</tr>
<tr>
<td>Sentence 2</td>
<td>This is already the beginning of the next phase.</td>
</tr>
</tbody>
</table>

### 3. Re-writing the Effort Model (EM) and the Readability Coefficient

After conducting both the semantic and linguistic analysis of non-SVO languages and validating data through research *on the spot* (collection of SI TT in national or international institutions), the candidate will have enough data to “circumvent” Giles’s Effort Model and rewrite Alexieva’s Coefficient, clearly based on Giles’s data and EM.

Although the EM is academically a cornerstone for measuring processing efforts in SI, the candidate will show that interpreting from non-SVO languages requires more than the three Efforts admitted by Gile:

- L – the Listening Effort;
- P – the Production Effort;
- M – the short-term Memory Effort

Gile’s EM also represents a remarkable academic contribution to information-processing flow and cognitive models, as a whole. As a matter of fact, it is still one of the most unquestionable models in the cognitive architecture. Nonetheless, it presents a host of limits, since it has not been applied to all language combinations and has not reflected the various cognitive constraints posed by specific language combinations.

For this reason, the total processing capacity consumption (TotC) should be rethought and re-written, under a different equation than Gile’s one:

(1) \[ \text{TotC} = C(L) + C(M) + C(P) + C(C) \]

The \( \text{totC} \) seems to only take into account the three basic efforts that every SI - from each language combination - requires. Furthermore, Gile acknowledges \( C(M) \) as the basic short-term memory effort needed in the processing phase, thus skipping some
important remarks: in SI from non-SVO languages, where the anticipation rate is higher than in other language combinations, the interpreter is forced to recall informative components through LT memory, generally activated during consecutive interpreting. But even if Gile lists the production effort as being one of the efforts triggered during consecutive interpreting, he does not list LT memory amid cognitive efforts. In addition to this, Gile states that, as to the ST memory effort, it is non-automatic insofar as it involves storing and retrieving ever-changing information elements. Taken as a whole, processing activities in SI very often involves ever-changing information components, thus making it impossible to manage the SI task adopting SL content-related strings. For this ground, the candidate supports the idea that other joint efforts should be included in the existing EM, reversing the well-known equation and including:

\[ C(M_1+M_2) \] (short and long term memory efforts)

as well as a double production effort \( C(P)^2 \), due to the fact that SI from non-SVO languages calls for redoubling the efforts, taking into account both syntactic divergences and culture-bound nouns (idioms, etc.).

For this reason, the PHD project will review – in the third phase – Gile’s Effort Model, trying to maintain its academic evidence and exploring new ways (and new data) to re-write it.

Changing Gile’s paradigm will also bring in some formal changes in Alexsieva’s (1998) coefficient, which, admittedly, follows Gile’s EM. According to Alexsieva, three coefficients can be drawn from the analysis of the ST: readability, familiarity and listenability.

All of them take into account the ratio between the explicit and the implicit (PN):

\[
\frac{\sum Y_n}{X} = \text{Sigma Yn} \frac{\sum P_N^{exp}}{P_N^{total}} = \text{Sigma PNexp} \quad (1)
\]

In (1), \( X \) is the number of notional words that can be found in a text, whilst \( Y_n \) is the number of notional words occurring again (including repetitions, synonyms as well as antonyms).

In (2), Alexsieva outlines the ratio between total explicit (or implicit) PN (predications) and their total amount.

Familiarity coefficient is the same used for Listenability.
Although these coefficients attract much academic interest, it can be argued that, Gile’s EM alike, Alexsieva’s coefficient lack scientific evidence when it comes to SI more complex tasks. Following Gile’s EM, Alexsieva only focuses on the three efforts recognized by the predecessor and does not focus on the other cognitive processes triggered in SI operations. For this ground, the coefficient reflects the idea that the TT is the result of a complex ratio between known and unknown data (or implicit and explicit). All other data must either fall within this field or they are not taken into account.

This PHD project considers the innovation brought by Alexsieva as a core contribution after Gile’s EM, especially because the Coefficient is generated by a quantitave analysis of the ratio between the number of syllables uttered per minute\(^{23}\) (Barik: 1973) and the lexical density of information crammed into the text. This coefficient provides a sound scientific basis to target cognitive models involved in SI, opening up a new perspective on CLM. In spite of this, it does not reflect the variety of data encountered in complex SI settings, where new parameters have to be taken into account, such as the exogenous factors listed in the first PHD part. In the translation of culture-bound words (as well as neologisms) or figures, idioms and language-related components, other items do appear: from lexical density of information in SLs as Japanese – where there isn’t any formal correspondence with the TL (English) length of words or the overall lexical density. The same applies for SI from European non-SVO languages as German. In addition to this, completely new strings have to be drafted in the TL, when Japanese uses its own idioms or words that do not have a direct equivalent in English. And the same applies for humor-related references, where interpreters translating out of Japanese have to draw up some formal redundant constructions in order to fill the English sentences and add culture-related counterparts (Lederer: 1981).

If one takes into account the high number of lexical adjustments needed in SI out of non-SVO languages, and the fact that most of them tend to inflate the sober structure of standard conference English (as a lingua franca), a new paradigm and a new Listenability (and Readability) coefficient needs to be set. A paradigm that takes into account the other variables influencing the rendition into the TL. Therefore, SI is more than a mere sum of A+B+C components; it is a complex demanding task requiring the interpreter to balance information flow with a number of items, ranging from lexical density, SL content- (and culture) related references, exogenous factors and different delivery manners.

The PHD project, in its last stage, will try to outline that the more exotic the requested SI task (whereas exotic stands for different typological orders) is, the more demanding the interpreter’s duty will be in bringing together cultural differences under the same structural horizon and in the name of the communicative purpose requested by modern high-level conference interpreting.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI</td>
<td>consecutive interpreting</td>
</tr>
<tr>
<td>CL</td>
<td>cognitive load</td>
</tr>
<tr>
<td>CLM</td>
<td>Cognitive Load Model</td>
</tr>
<tr>
<td>EF</td>
<td>Effort Model</td>
</tr>
<tr>
<td>EF</td>
<td>exogenous factors</td>
</tr>
<tr>
<td>Et al.</td>
<td>et alia</td>
</tr>
<tr>
<td>LT</td>
<td>long-term</td>
</tr>
<tr>
<td>SD</td>
<td>speed of delivery</td>
</tr>
<tr>
<td>SI</td>
<td>simultaneous interpreting</td>
</tr>
<tr>
<td>SL</td>
<td>source language</td>
</tr>
<tr>
<td>ST</td>
<td>short term</td>
</tr>
<tr>
<td>ST</td>
<td>source text</td>
</tr>
<tr>
<td>T</td>
<td>time</td>
</tr>
<tr>
<td>TL</td>
<td>target language</td>
</tr>
<tr>
<td>TT</td>
<td>target text</td>
</tr>
<tr>
<td>SVO</td>
<td>subject, verb order</td>
</tr>
<tr>
<td>WM</td>
<td>working memory</td>
</tr>
<tr>
<td>Wpm</td>
<td>words per minute</td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY

- Osaka, M. 2002, Working Memory: The Sketchpad in the brain, Tokyo, Shinyosha.;
- Seleskovitch, D. 1986, "Who Should Assess an Interpreter’s Performance?” in Multilingua, 5-4, p. 236.;
- Shlesinger, M. 2003, Effects of presentation rate on working memory in simultaneous interpreting in The Interpreter’s Newsletter, n.12/2003, Università degli Studi di Trieste, pp. 37-49.;
- Snelling, D. 1992, Strategies for simultaneous interpreting: from romance languages to English, Campanotto Editore, Udine.;
- Sorrentino, G. 2011, "Bidirezionalità e multi tecnicità nella formazione dell’interprete di conferenza” in The Journal of Cultural Mediation, issue 01/2012.;
- Sorrentino, G. 2012, L’interpretazione simultanea in relais: una sperimentazione, Schena Editore, Bari.;
- Sternberg, R. J. 1999, Intelligence as Developing Expertise in Contemporary Educational Psychology 24, 359-375.;
Watanabe, M. 1998, "Central executive is more than a slave system within working memory: comments on Fuji’s article" in Japanese Psychological Review, 41/2, p. 172-173.