Repetitive Translation and Conceptual Processing in SI

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This article aims to provide a description of interpreters' conceptual processing in English-Japanese simultaneous interpreting (SI) drawing on the conceptual complex (CC) model introduced by Funayama (e.g. 2005, 2007). CC is a concept-based descriptive device used to trace utterance comprehension in online discourse processing. Differences between source text (ST) and target text (TT) are analysed to explore the interpreter's cognitive status, one main focus being repetitive translations of one element in the ST into two or more places in the TT. Observing repetitive translations during the SI performance makes it possible to analyse the formation and transformation of CCs, as well as the contribution of various cognitive resources and other relevant phenomena. Through a description of the SI process, this article also demonstrates how the SI performance is supported by interpreters' conceptual processing. This is an attempt to substantiate deverbalization (Seleskovitch, 1978/1998) as an essential stage of the interpreting process.

1. Introduction

The cognitive process[1] in simultaneous interpreting (SI) addresses a rather conventional but still controversial question in the field of interpreting studies: How can interpreters' meaning construction be traced? A concept, which is a semantic representation constructed for discourse processing, is not perceptible. We can, however, observe various types of linguistic differences between expressions in the source- (ST) and a target text (TT). Such differences can be analysed as empirical clues that demonstrate the reality of the interpreter's conceptual operations during SI. One of the typical differences between linguistic expressions in ST and TT this study focuses on are repetitive translations. During SI, interpreters sometimes translate one single element from the ST

into two or more places in the TT. Some repetitive translations can be analysed to explain the development of concepts while processing the ST.

The aim of this study is to offer a description of interpreters' conceptual processing during SI in order to explore the construction and transformation of concepts and demonstrate how such conceptual processing supports the SI performance. To this end, the online nature of discourse comprehension will be examined, which is the incremental process to recover the speaker's message as a hearer (an interpreter) processes discourse along its temporal flow. The hearer tries to understand the speaker's message from the beginning of the discourse in accordance with the order of information input since discourse is a lineal series of linguistic signs. The hearer's comprehension, however, cannot be explained as the simple accumulation of linguistic information. The interpreter's conceptual operations will be traced through analysing the actual SI performance.

While the first section clarified the purpose of this article, the second section will review previous research on the subject matter. The third section provides an overview of the study's theoretical framework. The fourth section introduces different types of repetitive translation in an actual SI performance. The fifth section offers an analysis of repetitive translations in an SI performance sample, and the sixth section sums up the conclusions reached in this study.

2. Previous research

In spite of recent progress in pragmatics, cognitive linguistics, and cognitive psychology, efforts to explore the online development of conceptual representations have so far been limited in both interpreting studies and utterance comprehension. Setton's research (1999) deserves special mention for attempting to use a cognitive-pragmatic approach to elucidate the cognitive mechanisms of SI. His analysis suggests that "no processing unit which might be tracked from input to output can (...) be viably defined for SI in terms of syntactic or semantic chunks" (Setton, 1999, p.271) and that "SI must involve highly organised non-linguistic intermediate representations" (Setton, 1999, p.272). While his analysis covers a wide range of issues concerning the SI process, the online nature of conceptual development does not seem to be of interest to him, and it is not clear in what way his findings were incorporated into his model.

Funayama (1994) focuses on the exploration of interpreters' conceptual operations through the differences between ST and TT. The differences reported are repetitive translations, non-correspondence of lexical meaning, and long retention of information. Also, he analyses conceptual fusion and fission from the non-correspondence of expressions between ST and TT, suggesting the existence and function of conceptual representation during SI. Looking at the fluid nature of concepts, Funayama (2002, 2004)

introduces the notion of a cognitive tag as a device to secure the identity of concepts. Shifting his interest of study to the content of concepts and its transformation during the online processing of discourse comprehension, Funayama (2005) introduces the notion of conceptual complex (referred to below as CC). Funayama (2006) proposes this model to trace the development of CCs in online utterance comprehension in general. In 2007 he proposed an approach that adapts the CC model in order to describe the SI process. While this model can be useful to analyse interpreters' conceptual operations based on the actual SI performance, Funayama covers only selected aspects of conceptual operations to demonstrate the basic ideas of the model so far, leaving room for full-scale research. It is expected that the comprehensive description of the SI process will be completed in the future.

Minamitsu (2002) observed the exhibition of meta-representations through interpreters' use of demonstratives and discussed the phenomenon from a relevance theoretical point of view (Sperber & Wilson, 1986/1995). He did not, however, directly refer to the nature of conceptual representations.

Ishizuka (2008) explored the non-linguistic nature of conceptual representations through repetitive translations in actual SI performances. The development of concepts, however, is not directly related to aforementioned repetition. In 2010, Ishizuka also analysed the structural nature of conceptual representations looking at interpreters' construal of causal events. Although this was not the main focus of his study, his research suggested that an incremental structuring of concepts occurs in the construal of causal events.

This study focuses on the development of conceptual representations during an SI performance, aiming to explicate interpreters' conceptual processing drawing on the CC model. The study assumes that an interpreter constructs CCs during the online processing of the ST. For the interpreter, while the ST is an important resource to construct CCs, it is not his/her only resource. Other resources as well as the non-linguistic status and the incremental development of CCs can be explored through differences between ST and TT. This study focuses on how the interpreter comprehends the ST as a crucial part of the SI process rather than how he/she produces the TT. For the analysis in this study, the TT serves as an empirical clue to observe the interpreter's conceptual operations during SI. Before examining actual SI performances, a theoretical framework of this study will be presented.

3. The CC Model
This part introduces basic points of the CC model, which was originally introduced and developed by Funayama (e.g. 2005, 2006, 2007), and lays out a notation system for the model.

The CC is a descriptive device of conceptual representations formed for utterance comprehension in online discourse processing. Funayama (2005) describes the nature of the CC as follows:

(1) It is conceivable that concepts constituting utterance comprehension are formed by capturing contextual information and knowledge rather than being stably coded with linguistic expressions. Representations mentally constructed by a hearer of utterances will be called 'conceptual complexes'. This is an attempt to trace utterance comprehension based on conceptual complexes, which transform according to development of utterances alongside their corresponding linguistic expressions (Funayama, 2005, p.4).

The basic assumptions concerning CCs stated in (1) are summarised below.

(2) a. Resource: derived from both linguistic and non-linguistic resources
    b. Status: non-linguistic status as a mental representation
    c. Development: incremental construction during online discourse processing

Details of the theoretical framework of the CC model will not be addressed here. Rather, the aim is to describe the non-linguistic nature of the CC. In the following, the essential CC concept will be introduced using the following examples:

(3) a. There's nothing on telly tonight. (Carston, 2002, p.26)
    b. The steak is raw. (Carston, 2002, p.27)

These examples show that the comprehension of utterances entails inferences to reduce or expand linguistically coded meaning. For example, considering it unlikely that none of the broadcast stations in a country are operating, (3a) is judged as false unless they all went on strike or a similar act of god interfered with the usual course of things. In order for a hearer to understand (3a) as the speaker intended, the pragmatic process involves the "adding of conceptual constituents" (Carston, 2002, p.27). In this case, the topic of the utterance is TV programmes, but this notion includes the assumption that those interest the speaker and are worth watching from his point of view. The hearer understands this while also taking in the literal meaning of the expression and narrows down the scope of 'nothing'[2] according to this information.

The pragmatic process that leads to the comprehension of (3b), on the other hand, involves "adjustments to linguistically encoded concepts" (Carston, 2002, p.27). If (3b) is an utterance used by a guest in a restaurant because the meat he refers to is not cooked to

his satisfaction, the meat is not in fact completely raw. In our day-to-day communication, these utterances are not comprehended simply as an accumulation of syntactic rules and lexical meaning. The hearer of (3b) assumes the starting point that the meat's purpose is to be eaten and that for this purpose, the speaker who intends to eat it, expects it to be cooked to a certain degree. As a consequence, 'raw' assumes the meaning of 'not cooked to the speaker's satisfaction'. In this case, the meaning of *raw* is expanded in contrast with that of *cooked*, which is assumed to refer to the expected state of the meat for eating purposes. In this example, "the lexically encoded concept in the logical form of the utterance is replaced by an ad hoc concept, pragmatically derived from the lexical one, and (...) this new non-lexicalized concept is a constituent of the proposition expressed by the speaker of the utterance" (Carston, 2002, p.28).

As demonstrated in these cases, the meaning of words in utterance comprehension is constructed with supplementary information as well as linguistically coded-information. Seen from the perspective of conceptual construction, concepts are constructed as a package of information derived from linguistic information and other non-linguistic information. In the following, a notation will be provided to describe CCs constructed for two scenarios given in (3).
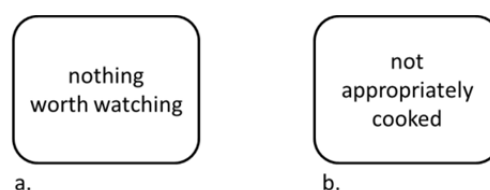

Figure 1: Notation of CCs

In Figure 1, the CCs are depicted as rounded rectangles, which contain their respective contents. In this figure, (a) is a CC constructed for 'nothing' in (3a). Likewise, (b) is a CC constructed for 'raw' in (3b). Normally, linguistic expressions are used to specify the content of a CC, but this does not mean that the content is linguistically represented. Linguistic expression describes the approximate information in a CC only schematically. Linguistic expression is used merely for convenience of description. In (a) Figure 1, 'worth watching' stands for additional conceptual constituents, which narrow down the linguistically coded meaning of *nothing*. (b), on the other hand, represents a CC for 'raw', but its linguistic meaning is replaced by ad hoc information. Description in a CC is only a minimal specification of the content. Therefore, the same CC can be described differently according to the purpose of the discussion. For example, we can use a simplified notation for the same CCs shown in Figure 2.
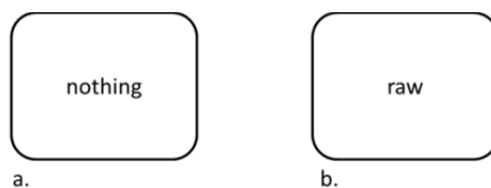
Figure 2: Simplified notation of CCs

Another important feature discussed in this article is the nested structure of grouped CCs. When CCs are grouped, they can form a structured CC on a higher level. Funayama (2006) identifies three types of CCs: event, property, and unspecified. For example, when a hearer listens to (4), CCs are thought to be constructed for 'we', 'discuss' and 'the issue' to form an event.

(4) We discussed the issue.

An event CC must include one or more entity CCs as participants in the event and a relational CC to determine the relation among participants. Figure 3 is the notion of an event CC for (4). In this study, uppercase letters and a pair of brackets are used to specify the type of a CC and show the difference between the abstract information concerning the type of CC and its actual content. Two straight lines connecting a relation CC and each participant CC indicate what CCs are to be associated with each other under the event.
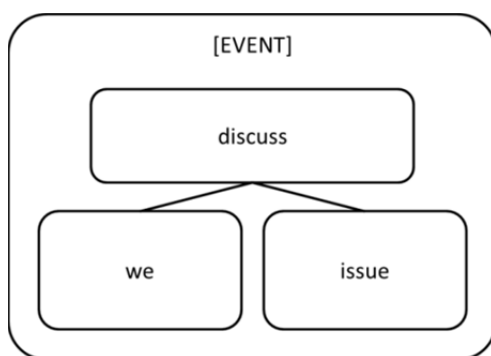

Figure 3: An event CC for (4)

If the purpose of the illustration is to show the components packaged into an event CC, Figure 3 is a sufficient notation for the status of an event. 'Discuss' is a relational CC, which determines the relationship between participants in the event. An event CC is not simply a group of CCs but contains framing information. In this event CC, each participant CC bears one semantic role respectively. Since the semantic role of a participant CC can be conceptually determined at the non-linguistic level, it is also

independent from trajector/landmark alignment. Langacker (2008) clearly recognises the distinction: "at issue is the interplay between two basic aspects of conceptual organization: semantic role (pertaining to conceptual content) and focal prominence (a matter of construal)" (Langacker, 2008, p.365). When Langacker (2008) argues the choice of trajector in a clause (grammatical subject), he identifies two major strategies: agent orientation and theme orientation. While the prototype of an agent is "an individual who wilfully initiates and carries out an action" (Langacker, 2008, p.356), the basic thematic roles are "zero, mover, patient, and experiencer" (Langacker, 2008, p.370). This categorization of the clausal structure may suggest the prestigious status of the agent among participants in an event. These terms will be used to distinguish participants in an event or a situation[3], although the clausal structure itself is not the object of this study. In the example 'discuss' in (4), the CC for 'we' serves as the agent and that for 'issue' as the theme.

Normally, framing information is integrated in the event CC. However, it is theoretically possible to abstract a frame from an event. Figure 4 is an illustration of the frame of the event above.
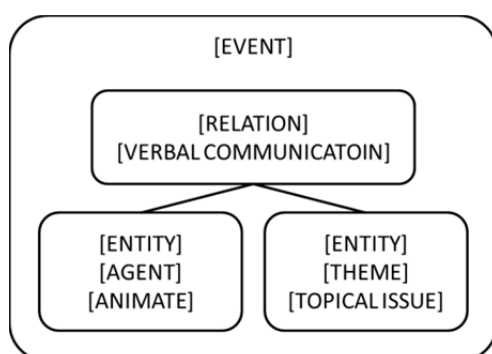

Figure 4: An event frame abstracted from Figure 3

In this case, the information necessary to construct an event CC is linguistically given in (4). In actual discourse processing, however, information for constructing CCs is not necessarily given in linguistic expressions. In this example, for instance, the content of 'we' and 'issue' in (4) is highly schematic. Normally, a hearer comprehends the rich content of these items based on each context, constructing CCs with non-linguistic content. Such CCs are not constructed at once, but developed step by step during discourse processing. Until a CC is completed as an event or a property, the type of the CC is thought to remain unspecified.

Before describing the interpreter's online construction of CCs, the next section will examine certain types of repetitive translations observed in actual SI performances.

4. Types of repetition

Repetitive translation can be qualified as one type of observable difference between ST and TT. This operation demonstrates retention of the corresponding elements at least until the last trial of the repetition. Although the taxonomy of interpreting performances is not the focus of this study, it will address some subcategories of repetitive translations in order to exemplify the diversity found in this field.

(5) N-1[4]

    E 010 OVERWHELMING MAJORITY OF THE AMERICAN PEOPLE FELT COULD NOT BE   TOLERATED
    J 010   ですからブッシュ大統領，それからアメリカの　議会も，　　　　そしてアメリカ

    E 011   LEST IT RESULT IN ANOTHER   ATTACK   UNPROVOKED,
    J 011 の市民も，こういうことは許せない，容認できない，と思ったのです.　　　また攻撃があるかもしれ

The first example of repetitive translation is found in (5). In this part of the SI performance, "TOLERATED" (E010) was translated twice as "*yuruse-nai*" (cannot forgive: J011) and "*younin-deki-nai*" (cannot tolerate: J011). The difference between the two TT expressions here is realised only through the selection of lexical items from a range of synonyms. Since *younin* (forgive) is used in more specific context than *yurusu* (tolerate), the interpreter probably produced this repetition to revise the first translation.

(6) N-1

    E 076 [G]: WELL, I THINK YOU'VE INDICATED   BEFORE THERE WAS SORT OF AN OVERALL
    J 076   [G]: おっしゃったとおり，先に，最初示唆されましたけれども，

    E 077 EFFORT TO EXPLOIT INFORMATION TO MAXIMUM EFFECT. IT WAS USED BOTH TO   DOMINATE
    J 077 全体的な 努力が なされて，　　　　情報をできるだけ駆使しようと，それをもって，成果を最大化し

In the second example, "YOU'VE INDICATED" (E076) was repeatedly translated into "*ossyatta-toori*" (as you mentioned: J076) and "*shisa-sare-mashi-ta-keredomo*" (as you indicated: J076). Also, "*saki-ni*" (before: J076) and "*saisyo*" (first: J076) seem to be a repeated translation of "BEFORE" (E076). These actions can also be interpreted as revising operations. What is more important, however, is to highlight the strategic aspect of this performance. Because this part of the ST is the beginning of the answer to a question, the interpreter had to wait for further information in order to determine the direction of the discourse. The nature of SI as an interpreting mode, however, resulted in

pressure on the interpreter to produce a TT output as quickly as possible. As a consequence, it is likely that these repetitive translations were motivated by the interpreter's stalling strategy.

(7) R-6

E 050	And there was also from the African side	likewise a firm and strong
J 050	けさせなくてはなりません。で、また、アフリカ側からも発言がありました。	アフリカ側

E 051	commitment to good governance, to democracy to human rights, to respect for the rule of law.	We have said
J 051	からも強い	コミットメントがありました。この法による支配、そし

E 052	throughout, and I say again now, this can never be done on the basis of the old relationship of charity between donor and
J 052	て民主主義、よき統治に対するコミットメントです。これは決して　　　　以前の

In the next example, "African side" (E050) is translated into "*Africa-gawa*" (African side) in two places in J050 and "commitment" (E051) is translated into "*commitment*" in J051 and J052. This operation is not a revision of the first translation or a result of stalling, but is instead related to segmentation. When the interpreter translated the section "there was also from the African side" (E050), she added the expression "*hatsugen*" (statement: J050) without a corresponding ST expression. It seems that the interpreter constructed a CC for 'statement' at this juncture. When she heard "a firm and strong commitment" (E051), she introduced this information into the CC. If this is the case, the CC for 'commitment' was generated before the interpreter actually heard the term "commitment" (E051). Then, retaining the CC, the interpreter translated the following section "to good governance, to democracy to human rights, to respect for the rule of law" (E051). This is corroborated by the second translation of "commitment" (E051) in J052. In this way, it can be explained how the interpreter constructed a CC for 'commitment' and utilised the CC for this part of her SI performance.

In this section, three examples were examined to introduce a variety of repetitive translations in SI. As the extent of this article is limited, however, the construction of CCs has not been illustrated for each example. In the next section, the SI process will be traced and analysed drawing on the CC model in order to describe the development of CCs in online discourse processing.

5. Describing the online development of CCs

In this section, the interpreter's conceptual operations are analysed through observing repetitive translations in actual SI performances. Furthermore, this section endeavours to trace the development of CCs during the online processing of the ST.

(8) N-1

E 019	IT WAS	TECHNICALLY,	IMMENSELY IMPRESSIVE.	TREMENDOUS
J 019		軍事的な観点からいいますと，	技術的には，大変すばらしいものがあったと思います．	

E 020 ADVANCES HAVE BEEN MADE SINCE THE FIRST GULF WAR MAINLY, I THINK, IN THE
J 020   さまざまな，   最初の湾岸戦争のときよりは，

E 021 APPLICATION OF INFORMATION SYSTEMS   TO THE WEAPONS   AND THE SENSORS,
J 021 発展が見られました．   特に，情報システムの適用の仕方に，大きな違いがありました．それを，

E 022 AND   BETWEEN THEM   THE DECISION MAKERS, SO THAT EVERYTHING
J 022 兵器，そしてセンサーに用いたわけですが，   そして，意思決定者もそれを利用しました．

E 023 HAPPENED VERY FAST.   AND BECAUSE EVERYTHING HAPPENED   VERY FAST,
J 023 ですから，   すべて，   たいへん早く進みました．   そして， すべてが

This section focuses on how the interpreter processes the ST expressions in (8) from "TREMENDOUS ADVANCES" (E019) to "THE DECISION MAKERS" (E022). The information from this part of the ST is segmented into four expressions in the TT. In analysing this performance, first of all, the linguistic differences found between ST and TT will be examined. Next, the transformation of CCs through repetitive translations in this part will be analysed. Based on this analysis, the following section traces the development of CCs during the performance and examines how these conceptual operations support this part of the SI performance. To conclude this section, this performance will be compared with an alternative performance.

5.1 The development of CCs

First, the differences between ST and TT observed in this part will be examined. The excerpt of the ST in question is segmented into four parts in the TT demonstrating the difference in sentential units. In the first segment, "ADVANCES" (E020) was translated into "*hatten*" (advance: J021). In the second segment, "ADVANCE" (E020) was translated into "*chigai*" (difference: J021) with a different TT expression. In the same segment, "APPLICATION" (E021) and "INFORMATION SYSTEMS" (E021) were translated into "*tekiyou-no shikata*" (application: J021) and "*jouhou system*" (information system: J021) respectively. In the third segment, two repetitive translations can be identified: one is "*sore*" (it: J021) for "INFORMATION SYSTEMS" (E021) and the other is "*mochii-ta*" (used: J022) for "APPLICATION" (E021). These two elements were also translated repeatedly in the fourth segment as "*sore*" (it: J022) and "*riyou-shi-mashi-*

ta" (used: J022) respectively. The repetitive translations observed in this part are summarised in Table 1.

ST expressions	Seg. 1	Seg. 2	Seg. 3	Seg. 4
ADVANCES	*hatten* (advance)	*chigai* (difference)	-	-
APPLICATION	-	*tekiyou-no sikata* (the way of application)	*mochii-ta* (used)	*riyou-shi-mashi-ta* (used)
INFORMATION SYSTEMS	-	*jouhou system* (information system)	*sore* (it)	*sore* (it)

Table 1: Repetitive translations in (8)

Looking at these repetitive translations brought considerable insight into the way information was conceptualised based on the ST during this part of the performance. The repetitive translations for all three items are not revisions of the first translation or the simple results of stalling tactics, but are instead clearly related to segmentation in this part. In this performance, "ADVANCES" (E020) was translated in the first and second segments. "APPLICATION" (E021) and "INFORMATION SYSTEMS" (E021) were translated in the second, third, and fourth segments. Since 'application' of 'information systems' is the theme of the 'advance', a cognitive element of 'advance' is thought to be anchored in the interpreter's mind. It follows that this repetition was supported by the anchoring of 'advance' as a topic during this part of the discourse. When the interpreter translated this part into four segments, apart from the repeated elements, each segment introduced a new element to the TT. Based on the CC model, it is assumed that the interpreter constructed a CC for 'advance' when she heard "ADVANCES" (E020) and incorporated new conceptual information for the CC when producing each element. Figure 5 illustrates this conceptual processing.
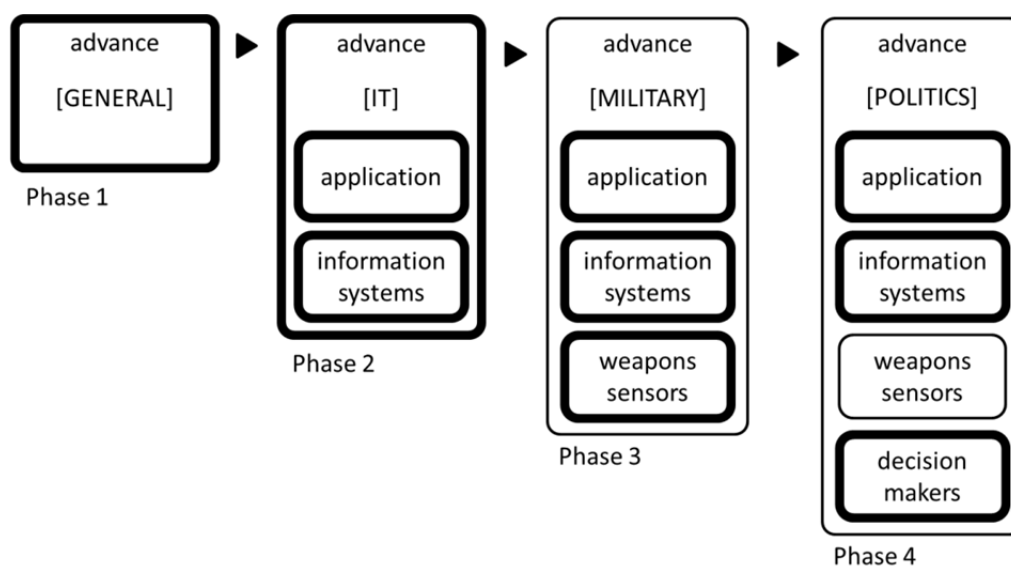
Figure 5: CC formation for 'advance'

This figure identifies four phases corresponding to each segment in the TT. If an element is identified within a certain segment, this element is considered to be activated in the interpreter's mind during the production of the segment. The CCs highlighted in Figure 5 represent the CCs activated at each juncture. When a CC for 'advance' was introduced in Phase 1, this CC includes no information to specify 'advance'. Hence, it is described as [GENERAL]. In Phase 2, by way of 'information systems', the CC for 'advance' is then specified as [IT]. Phase 3 shows the status of the CC after it has developed into [MILITARY] by incorporating an element of 'weapons and sensors'. In Phase 4, the CC assumes the nature of [POLITICS] by incorporating 'decision makers' into the picture. This is the formation process proposed for the CC of 'advance'.

Observing the shift in TT expressions throughout this series of repetitive translations allows for a more detailed analysis of CC transformation.

"ADVANCES" (E020) is first translated into "*hatten*" (advance: J021), and "*chigai*" (difference: J021). The first translation is more literal than the second, and the expression used in the second translation is more general. The explanation is that the element 'advance' was first retained in its lexical form, but later conceptualised and separated from its lexical form when translated again.

Next, "APPLICATION" (E021) is translated three times into "*tekiyou-no shikata*" (application: J021), "*mochii-ta*" (used: J022), and "*riyou-shi-mashi-ta*" (J022) respectively. Once again, this suggests a generalisation of TT expressions. More importantly, it should be noted that taking in this element, TT expressions underwent a shift from nominal to predicative. The explanation is that the CC for 'application' was converted from an entity to a relation type CC. It follows that the interpreter constructed

an event CC for 'application' at this juncture. Although no information on the agent of 'application' can be found in either ST or TT, it seems that the interpreter introduced a CC as the agent of the event, although it is merely implicit in the TT.

"INFORMATION SYSTEMS" (E021) is also translated three times into "*jouhou system*" (information system: J021), "*sore*" (it: J021) and "*sore*" (it: J022) respectively. When the interpreter translates this element for the first time, the TT expression is a common noun. In the second and the third translation on the other hand, she expresses the element using demonstratives without any corresponding expressions in this part of the ST. This is an exhibition of a meta-representation (Minamitsu, 2002), which demonstrates a certain form of conceptualisation of a corresponding element.

Based on the analysis above, the CCs for each phase can be illustrated. Figure 6 illustrates the status of the CC for 'advance' in Phases 1 and 2.
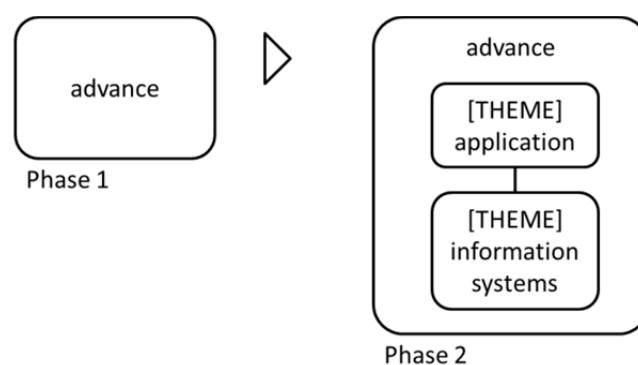

Figure 6: The CC for 'advance' in Phases 1 and 2

When the CC for 'advance' is introduced, it contains no specific information. This is shown as Phase 1. This CC is considered to be associated with 'Gulf War' as produced in the TT. However, for practical reasons, this element is omitted from this illustration. In Phase 2, the CC for 'advance' takes in the elements 'application' and 'information systems'. These elements are thought to form sub-CCs. While the CC for 'application' is interpreted as a theme of 'advance', the CC for 'information systems' is interpreted as a theme of 'application'. At this stage, the type of CC is thought to remain unspecified. Consequently, this CC evolves into Phase 3 as shown in Figure 7.
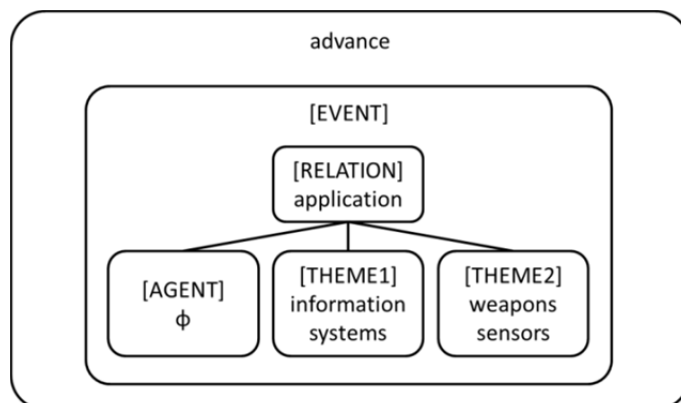
Figure 7: The CC for 'advance' in Phase 3

In Phase 3, a new CC is introduced for 'weapons and sensors' as another theme for 'application'. The CC for 'information system' is still there, but, as observed earlier, its status has become conceptual. Also, the CC for 'application' has shifted from entity to relation type CC. At this stage, this CC is formulated as an event CC. In this operation, an abstract CC is implicitly introduced as the agent of the event. All these features are part of the thought model that assumes a non-linguistic nature of the CCs at this juncture. In producing the fourth segment, it is crucial to construct CCs as illustrated in Figure 7. Next, the conceptual processing from Phase 3 to 4 will be examined.

5.2 The role of contextual information

In order to examine the conceptual operations that result in the fourth segment, the analysis focuses on how the interpreter translates 'the decision makers' (E022). In this part, "AND BETWEEN THEM THE DECISION MAKERS" (E022) is translated into "*soshite ishi-kettei-sya-mo sore-wo riyou-shi-mashi-ta*" (and the decision makers also used them: J022). While the interpreter has obviously produced this TT based on an event CC and 'decision makers' are construed as the agent in the event, there is no information on the event or on the semantic role of 'decision makers' in this part of the ST. In the following, it will be retraced how this particular interpreter determines the semantic role of 'decision makers'. Refer to the list below for the necessary steps to determine the semantic role of 'decision makers'.

(9) a. Construction of an event CC for 'application'

   b. Input from the ST

   c. Construction of a CC for 'decision makers' and reference assignment of 'them'

   d. Introduction of 'decision makers' into the event as the agent

Among the necessary steps listed above, (9a) has already been examined. As analysed above, by the time the interpreter produces the third segment, she has constructed an event CC with an abstract agent. In this environment, the ST for the fourth segment is introduced (9b). Then, a CC for 'decision makers' is constructed and 'them' is understood as 'information systems' and 'weapons and sensors' (9c). While the semantic role of 'information systems' and 'weapons and sensors' has already been determined in the event, that of 'decision makers' is still open. Although 'decision makers' might be understood as an entity between two elements from this part of the ST, this information is still insufficient to identify 'decision makers' as the agent of the event. Even when an entity CC is constructed where an event has an abstract agent, this is still not enough to construct a coherent concept. (10) examines whether other entries can be understood as the agent of the event here.

(10) a. and between them tanks

    d. and between them logistics

    c. and between them engineers

    d. and between them journalists

The interpreter determines the semantic role of the 'decision makers' when she processes "AND BETWEEN THEM THE DECISION MAKERS" (E022). (10a) to (10d) are examples that consider other entries instead of *decision makers*. All entries in (10) have the same structure as *decision makers*, but cannot form an agent CC for the event of 'application'. (10a) and (10b) are inanimate entities and thus inappropriate for the agent of 'application'. Since (10c) and (10d) are animate, volitional entities, they are both possible candidates to be the agent of 'application' in general. On the other hand, they are by no means eligible players to control information systems as a military strategy in the Iraq War. This means that the determination of the semantic role of 'decision makers' requires background information on the topic as well as the existing event CCs and immediate ST expressions. In conclusion, the resources utilised to construct CCs in this SI performance are summarised below.

(11) a. Linguistic information form the ST

    b. Background information

    c. History of the CCs

If contextual information is defined as the non-linguistic information required for utterance comprehension, it consists of (11b) and (11c). It is conceivable that the linguistic information from the ST grants the interpreter's mind access to background

information she already has about politics. The history of the CCs at this juncture is illustrated in Figure 7. An event CC is constructed for 'application' with an abstract agent and two themes for 'information systems' and 'weapons and sensors'. As previously examined, due to these elements, the aspect 'advance' is thought to have evolved from [GENERAL] via [IT] to [MILITARY]. As a result, the cognitive process that leads to CC construction in Phase 4 can be understood as illustrated in Figure 8.
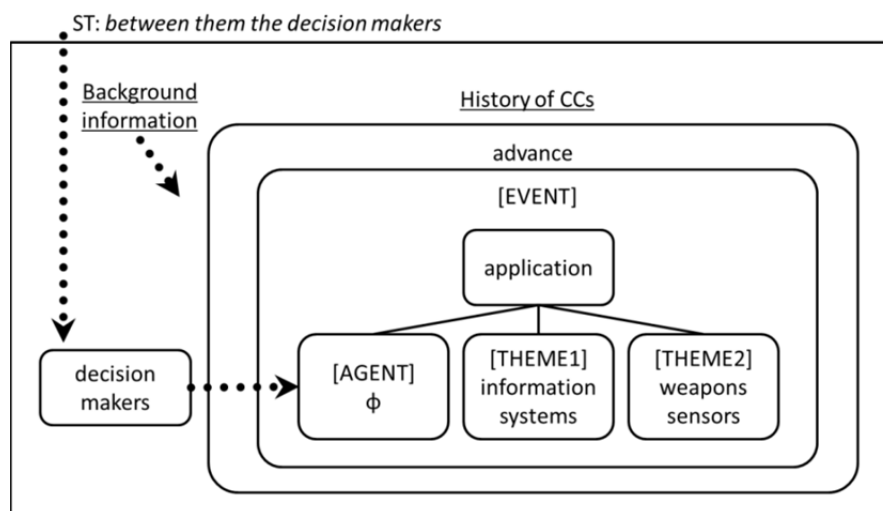

Figure 8: Construction of CCs for Phase 4

In this figure, the outside box represents the entire cognitive environment of the interpreter. Dotted arrows show the information flow that leads to the construction of CCs. Although the ST input for the fourth segment is only "BETWEEN THEM THE DECISION MAKERS" (E022), the interpreter produces a predicative expression of "*riyou-shi-mashi-ta*" (used: J022) with 'decision makers' as its agent. This is possible only because of the history of CCs constructed for the previous part of the discourse and existing background information on the subject. This article does not discuss the composition of background information in detail, but suffice it to say that background information consists of various types of information. Listed below are the items considered to be necessary information in order to identify 'decision makers' as the agent of the event.

(12) a. World knowledge

    b. Knowledge about the subject

    c. Communication setting

    d. Introduction of respective utterances

World knowledge includes frames (Fillmore, 1982/2006) on military strategy and information systems. Knowledge about the subject includes information about the Iraq War, which is the topic of this programme, and information about the ST speaker who is a guest on the programme. Regarding background information, we need to consider the setting of this SI performance. The communication setting provides information about the interpreting site. The ST is part of a Japanese TV programme called "Tettei Kensyo Iraq Sensou" (A Comprehensive Examination of the Iraq War). The ST speaker is a British military official. The interpreter interprets his speech during a live broadcast. The introduction of the respective utterances contributes to the identification of the source speaker (there are two English speakers as guests) and narrows down the topic of the ST according to the questions asked by the programme's host. The ST is the answer to a question concerning his view on the Iraq War, asked by the programme's host. By virtue of such information, a CC is constructed so that the 'decision makers' are understood as officials, which constitute the agent of a military event. The CC shares its basic feature with the mental model proposed by Johnson-Laird (1983), which may support the idea of CCs.

It is not asserted here that the interpreter should always identify the 'decision makers' as the agent of 'application'. This is only one possible performance for this ST, and another interpreter might produce a different TT. As the interpreter produces the TT in this way, however, the differences between ST and TT make it possible to explore the details of the interpreter's conceptual processing. The point here is not the quality of the SI performance, but the process involved in it. The CC model can result in alternative performances. The next section will outline a different possibility concerning the development of CCs for the same ST.

5.3 Alternative performance

Another interpreter may produce a more literal TT for this part. (13) and (14) are alternative translations for the third and fourth segments.

(13) a. to the weapons and the sensors

　　b. *heiki-to sensor-ni* (to the weapons and the sensors)

(14) a. between them the decision makers

　　b. *sore-ra-no aida-ni ishi-ketteisya* (between them the decision makers)

(13a) and (14a) are the ST for the third and fourth segments, and (13b) and (14b) are alternative translations for them. It is possible to produce (13b) without constructing an event CC for 'application'. If the interpreter does not construct an event CC, the fourth segment must be translated without it. Even in this case, (14b) can be produced as a

literal translation for this part. Figure 9 illustrates the status of CCs in the case that the interpreter does not construct an event CC.
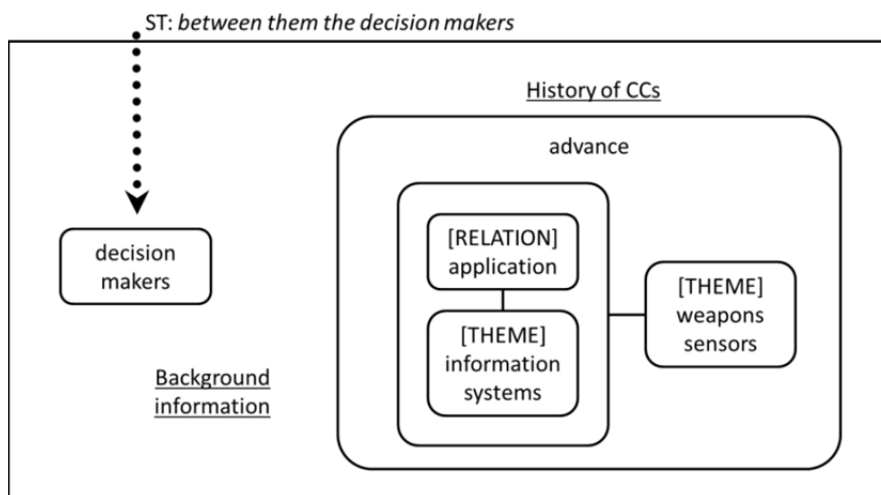

Figure 9: Alternative conceptual operation

Although a CC for 'decision makers' is constructed in the interpreter's cognitive environment, it is not associated with the history of CCs, and background information does not play any role. This case may seem extreme, but as novice interpreters tend to pay too much attention to the superficial features of the ST, they may not be able to construct sufficient CCs to support their SI performance. If this is the case, it is extremely difficult to determine the semantic role of 'decision makers'.

Even when an interpreter constructs sufficient CCs, he/she may produce a TT without any observable linguistic differences from the ST. A literal translation in itself might not be a problem. Whether it is comprehensible for the audience or not, it is not an error as long as the interpreter translates the ST accurately. However, in order to make segmented information comprehensible, supplementary information is required in many cases. The sample performance suggests that segmentation is not simply the splitting up into parts of ST expressions, but involves the conceptualisation of discourse. What should be supplemented depends on how the interpreter constructs CCs during his/her online processing of the ST.

The TT is produced to represent part of the CCs. When it comes to CC construction, the level of elaboration varies according to individual differences between interpreters. If an interpreter constructs elaborate CCs and produces part of the TT information based on these CCs, any necessary information is usually added naturally in the process. If the interpreter constructs insufficient CCs, on the other hand, it seems more difficult to separate information derived from the corresponding parts of the ST and produce literal translations in the TT.

6. Conclusion

This article's objective was to explore interpreters' conceptual processing during the SI performance, and give a description of the observations made based on the concepts laid out in the CC model. In addition, it demonstrated that among the various types of differences between ST and TT, repetitive translations are of special interest in this context. The central phenomena identified in this study through the analysis of repetitive translations are listed below.

- Retention of CCs
- Incremental formation of CCs
- Conceptualisation of CC content
- Transition a CC from entity to relation
- Implicit introduction of a CC
- Contribution of contextual information

Repetitive translation is a common operation in SI, whose specific form depends on the conditions in the SI performance. Through repetitive translations, it can be analysed when and how interpreters introduce contextual information in online discourse processing. Repetition is not an independent technique, but the performance is supported by conceptual operations involved in natural discourse processing.

This article aims to support the notion of deverbalization (Seleskovitch, 1978/1998) based on actual SI performances. The analyses in this paper represent hypotheses about conceptual operations during SI that are based on linguistic evidence, which ought to be examined by non-linguistic evidence in the related cognitive sciences (e.g. philosophy, psychology, and artificial intelligence). As a model of online discourse processing, which, based on the observation of actual SI records, seems plausible, this must be validated by further interdisciplinary research.

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About the author

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Notes

1. The word *process* is used in this paper to refer to a series of events that occur in a specific order so as to achieve a purpose, and the word *processing* is used to refer to a set of operations to deal with information. But as long as they can be properly understood in the context of use, this differentiation may not be definite.

2. In this study, italics are used to mark linguistic expressions and single quotation marks to specify the content of each expression. The content of an expression under this study includes both the linguistic meaning of the expression and its conceptual representation.

3. There is little agreement as to the number or the terms of participants' roles. But as the classification of participants' roles is not part of this study, agent-like participants (e.g. an instrument) and others (e.g. a goal) are also referred to as themes.

4. The titles of the two SI performance sample transcripts analysed in this study, N-1 and R-6, are included in two volumes of JSPS Grant-in-Aid for Scientific Research reports (Funayama et al., 2005; Funayama et al., 2008). The number given with each example identifies the respective source transcript.

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