

# Abductive Resolution for Presuppositions of ‘Again’: Reinterpretation of Context with Temporal Information

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## 1 Introduction

This paper aims to demonstrate that temporal information in the context assists in identifying a proposition in the context as the presupposition of *again*, thereby developing a model of the mechanism whereby the presupposition trigger *again* is interpreted in a conversation. When encountering a sentence that includes *again*, people generally seek the context for a proposition qualified for the presupposition of *again*. If such a proposition cannot be found in the context, *again* is ignored (Tiemann et al. 2014). In this paper, it will be argued that even if they cannot find a proposition qualified for the presupposition, temporal information gained from the context enables hearers to abductively infer that an apparently unrelated proposition in the context serves as the presupposition of *again*. To test the validity of this argument and modify the model suggested by Tiemann et al. (2014), an experiment was conducted on the processing of the presupposition trigger *futatabi*, the Japanese counterpart of *again*. The remainder of this paper is organized as follows. In Section 2, the theoretical background to the presupposition will be given. Section 3 will detail the model by Tiemann et al. (2014) and give a potential counterexample to it, Section 4 will explain the experimental conditions, Section 5 will give the results, and Section 6 and 7 will offer the discussion and the conclusion.

## 2 Theoretical Background

In this section, the basic presupposition notion will be introduced. This paper refers to the presupposition as common ground; that is, mutual acceptance for the purpose of the conversation (cf. Stalnaker 2014). For example, when someone says that *In 2018 Nick played tennis again*, it will be interpreted with a reference to an already mutually accepted proposition that *At some point in time before 2018, Nick played tennis*, with this mutually accepted proposition being the presupposition.

In the above example, *again* demands that a certain kind of proposition be entailed by the context. Linguistic items of this kind are called a presupposition trigger (Levinson 1983). When a trigger is encountered, one of the following strategies will be subconsciously chosen: resolution, accommodation, or rejection (Domaneschi 2016). Adopting the first is equal to identifying a proposition demanded by the trigger with the proposition already in the context. The second is defined as accepting the proposition demanded by the trigger as an ad-hoc presupposition, especially in case the demanded proposition cannot be identified with any proposition in the context. The third is to ignore the trigger.

## 3 Processing Model for *Again*

This section will present the model suggested by Tiemann et al. (2014) and give a potential counterexample to it. Tiemann et al. (2014) conducted an experiment to assess the preference for either accommodation or rejection in understanding sentences that include the German presupposition trigger *wieder* (*again* in English), especially when any proposition in the context is not identified with the proposition demanded by *again*. Participants were shown a pair of sentences; for example, *Last week, Linda bought Judith a pink lamp for a room* and *Two days ago, Linda received a pink lamp again*, which did not include the presupposition that *Linda received a pink lamp sometime before two days ago*. By showing pairs of this kind, Tiemann et al. (2014) aimed to make participants adopt accommodation or rejection, namely creation of an ad-hoc presupposition without a reference to the context or abandonment of *again*. After reading the sentences, the participants were asked to answer a question such as *How many pink lamps did Linda receive?*, to which they could answer: *Cannot be answered*, *One*, or *At least two*. *One* accounted for 88 % of the answers, suggesting that rejection is preferred to accommodation.

Based on this result, Tiemann et al. (2014) suggest the following two-step model.

- (1) Two-step interpretation model for *again*:
  - a. Step one: check if the relevant proposition is entailed by the context. If not ignore trigger.
  - b. Step two: if the relevant proposition is given, assign a value to the free time variable using the variable assign function.

This model is based on the assumption that *again*'s presupposition consists of an event proposition (e.g. *Linda received a pink lamp at t*) and a temporal relation proposition ( $t < \text{two days ago}$ ). Tiemann et al. (2014) assume that the latter does not contribute to resolution,<sup>1</sup> as can be observed in the following statement:

In principle, since *last week* is prior to *two days ago*, one could assign the free variable the value of *last week* and consequently the first part of the presupposition [ $t < \text{two days ago}$ ] would be fulfilled. But this is obviously not what happens. The interpretation of the presupposition of *wieder* [*again*] really hinges on the relevant proposition being true at some other time. Only if the context furnishes this, will the temporal connection be made.<sup>2</sup>

(Tiemann et al. 2014: 57)

This view implies that in the above example, although it is possible to believe that the event in the first sentence occurred prior to the event in the second sentence because of the reference to the relationship between *last week* and *two days ago*, the temporal relation proposition (i.e.  $t(\text{last week}) < \text{two days ago}$ ) does not assist in establishing the proposition that *Linda received a pink lamp at t* inside the context that *Linda bought Judith a pink lamp for a room*. This seems quite reasonable and thus leads to the idea that if the event proposition demanded by *again* is not provided in the context, people subconsciously choose either accommodation or rejection rather than resolution. This idea, combined with the results corroborating the preference for rejection, constructs the step one of the model.

This paper proposes what is contradicted with the seemingly reasonable assumption above. It is that under certain conditions, temporal relation propositions can assist in identifying the event proposition necessary for resolution even if there appears to

<sup>1</sup>“Resolution” refers to resolution of an event proposition, and therefore there can be cases where resolution takes place but a temporal relation proposition is accommodated; that is, resolution can occur along with partial accommodation (cf. Beck 2007).

<sup>2</sup>Brackets ([]) are added for the clarity of our discussion.

be no event proposition identified with the one demanded by *again*. Consider the following statement pair: *I know that last year John bought a bike* and *As far as I remember, this year John gifted a bike to Mike again*. Generally, people would tend to regard the event proposition demanded by *again* (i.e. *John gifted a bike to Mike at t*) as being included in the context (i.e. *John bought a bike*), or, more concretely, they would interpret through an abductive inference that the event in the second sentence occurred *last year* after the event in the first sentence IN ADDITION TO *this year*'s occurrence. Putting it another way, despite the absence of any obvious event proposition in the context, certain information in the context could be reinterpreted as a presuppositional event proposition, i.e. the adoption of resolution. The reason why it is called resolution rather than accommodation is that a certain event at a certain point in time in the context is referred to. If the event proposition were created without a reference to the context, it would be called accommodation. However, the strategy taken in the above interpretation should be called resolution, as the event proposition demanded by *again* is identified with the implicit or reinterpreted information in the context.

If the above example is really interpreted this way, one of the factors for adopting resolution here is related with the order relation between the two verbalized events, as these two events could imply a single event that *John bought a bike and gifted it to Mike*, owing to our abductive reasoning. However, this is possibly not enough to confirm resolution, as this relationship itself implies an interpretation that the second sentence refers to an event that occurred soon after the event in the first sentence, and the two sentences express a series of events that occurred within a given time period. This interpretation obviously conflicts with the one gained from resolution. Resolution can only be adopted if the context includes a proposition of an event at a certain point in time before the same type of event in a sentence with *again*, which results in the interpretation that *John bought a bike and gifted it to Mike sometime before he gifted one to Mike again*. It needs to be emphasized that resolution is a kind of anaphora (Heim 1990; Kripke 2009) that holds between the context and the proposition demanded by *again*, rather than between the context and the proposition ENTAILED by a sentence with *again*; therefore, resolution is based on the distinction between the event in the context and that in the sentence. Considering that resolution can be chosen in the example here, the example must possess this distinction. Then, it will be reasonable to surmise that the temporal relation proposition (i.e.  $t(\text{last year}) < \text{this year}$ ) indicated in the example serves as this distinction, as it marks the difference

in the occurrence time, thereby connoting the distinctiveness of the two verbalized events.

If sentences like this example are presumed to be interpreted with the adoption of abductive resolution, this means that a temporal relation proposition, along with the conceivability of an order relation, can realize resolution, especially when it is not obvious that the event proposition can be resolved, or when “relevant proposition is not entailed by the context,” as outlined in step one of the model by Tiemann et al. (2014). The experiment we will report in Section 4 was designed to determine if this resolution interpretation is sound.

## 4 Method and Materials

We conducted an experiment on the Japanese presupposition trigger *futatabi*, *again* in English. The experiment sought to reveal whether a temporal relation proposition leads to resolution when there is an order relation between the event in the context and that in the proposition demanded by *again*.

We created nine pairs of sentences; in each pair, the first sentence set the context for the second sentence that included *futatabi*, with the first sentence describing an event at a certain point in time and the second sentence expressing a different event at a time after the context, as demonstrated in the following.

- (2) *Kinoo Taroo-wa syukudai-o*  
yesterday Taro-TOP homework-ACC  
*wasureta. Kyoo futatabi kare-wa okorareta.*  
forgot today again he-TOP scolded  
'Yesterday Taro did not do his homework.  
Today he was scolded again.'

Each of the nine pairs was accompanied with two questions. As in Tiemann et al. (2014), one is a multiple-choice comprehension question asking how many times the event in the second sentence occurred, with the choices being *Never*, *Once*, and *At least twice*; for example, the first question on (2) was *How many times was Taro scolded?* The other asks when the event in question occurred, with a direction to write down the answer, as exemplified in *When was Taro scolded?*

All participants were asked to read a pair of sentences and answer the two questions on the second sentence. This task was repeated for nine pairs of sentences. If the participants answered *Never* to the first question, it was presumed that they did not read the sentences closely, and the answers were removed in the analysis of the first question. The choices of *Once* and *At least twice* respectively meant rejection and either accommodation or resolution, and in the latter case, the second question determined which of

the two strategies was chosen. If the answer to the second question did not refer to the point in time in the context, this was seen to be equal to the participants' creation of an ad-hoc presupposition, which resulted from a failure to determine the context for an event proposition that qualified as part of a presupposition; that is, accommodation. Descriptions of a time related to the context, with *At least two* choices, meant that the context, the event in which did not appear to be identified with the event in the proposition demanded by *futatabi*, was reinterpreted as identified with the proposition in question, i.e. resolution.

The participants were 36 students from Kyoto Career College of Foreign Languages, all of whom were native speakers of Japanese. As one participant did not complete the task, his results were removed from the analysis.

## 5 Results

The item analysis of the first question revealed that all the item-total correlations were adequate, meaning that there was a demonstrated consistency across the sentence pairs. In addition, the reliability coefficients were high ( $\alpha = .9$ ).

For the first question, *Once* and *At least twice* were chosen 81 times and 234 times. A chi-square test of goodness-of-fit was conducted to determine whether the choices *Once* and *At least twice* were equally chosen. This test revealed that the two choices were not equally distributed in the population;  $\chi^2(1, N = 315) = 74.31, p < .01$ . Of the 234 *At least twice* answers, the point of time for context events was referred to 162 times. It was subsequently found through a further chi-square test of goodness-of-fit that this reference occurred more often than the expected frequency (i.e. the chance level);  $\chi^2(1, N = 234) = 34.62, p < .01$ .

## 6 Discussion

The results concerning question 1 indicated that resolution or accommodation of the event propositions was chosen, and those concerning question 2 supported the hypothesis that resolution takes place if temporal relation propositions are observed and if there is an order relation between the context and the event proposition demanded by *again*. As temporal relation propositions realize resolution under certain conditions, the model by Tiemann et al. (2014) needs to be modified, as shown in Figure 1.

It should be noted that this model puts its basis on the model by Tiemann et al. (2014), which assumes rejection to be preferred to accommodation of

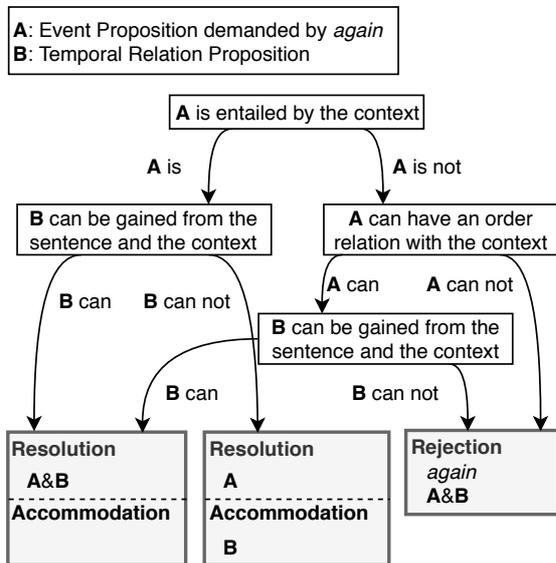


Figure 1: Renewed Model

an event proposition, and therefore hypothesizes that even if an order relation can be found out between the context and the event proposition demanded by *again*, the absence of a temporal relation proposition leads to rejection of *again* rather than an ad-hoc creation of the event proposition without a reference to the context. However, the hypothesis that there is a preference for rejection to accommodation is inconsistent with the treatment of apparently unrelated contexts as part of the presupposition, especially when the latter is seen to be based on the heuristics that any part of the sentence is intended by the speaker. The hearers' recognition that besides other parts of the sentence, the use of *again* represents part of the speaker's intention encourages a 'selfish' backward reinterpretation of the context, resulting in resolution. This obviously conflicts with the idea that there is a preference for rejection to accommodation, and thus it should be discussed how these two theses can be valid at the same time.

Besides, we should note that this paper has referred to "the conceivability of an order relation" as being a case where it is abductively inferred that the events in the propositions demanded by *again* occur AFTER the event in the context. However, in addition to the cases examined in this research, resolution could be realized in cases where the events in the propositions demanded by *again* can be interpreted as those before the event in the context; for example, *Last week, John went to a movie* and *Today, Kate gave me a ticket for a movie again*. If resolution is considered to be the primary choice for

examples of this kind, the order relation in the above figure would include this pattern.

## 7 Conclusion

This paper suggested that temporal information gained from the context and a sentence with *again* encourages abductive resolution of *again's* presupposition, especially when there is considered to be an order relation between the event in the context and the event in the proposition demanded by *again*, and constructed a renewed model for the processing of *again*. This extended comprehensive model illustrates that there are more conditions that allow resolution than have been considered in previous presupposition research. Stated differently, a variety of resolution patterns exist, as seen in Sato (2018). By exposing an incognito pattern of resolution, the current research makes a substantial contribution to the revelation of the genuine motivation to resolution.

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