

Extrapolation and the directionality of movement

Jiro Inaba

This paper deals with extrapolation of relative clauses in English and German. Through the examination of data, it will be argued that extrapolation in English is a syntactic movement with effects at LF, while it is a phonological operation in German. Based on the concept of directionality and optionality of movement, I will try to give an account for this hitherto unnoticed contrast between the two languages. Specifically, I propose that operations giving rise to non-canonical ordering of elements are more severely restricted, blocking movement of certain features. My analysis will be further confirmed by relevant data from Japanese.

1. Introduction

In this paper I discuss the extrapolation of restrictive relative clauses in English and German. I will concentrate on the question of whether extrapolation brings about LF-sensitive semantic effects, and try to account for the observed facts in both languages.

As a starting point, let us look at the examples in (1):

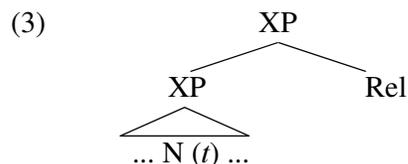
- (1) a. Peter met [the woman [who likes to drink beer]] yesterday.
b. Peter hat [die Frau [die gerne Bier trinkt]] getroffen.
Peter has [the woman [who willingly beer drinks]] met
'Peter met the woman who likes to drink beer.'

These sentences are regarded as so-called base structures where the relative clause and its antecedent are adjacent. When the relative clause is dislocated into the clause-final position, we get (2). Here and in the examples below, the trace is indicated just for convenience:

- (2) a. Peter met [the woman *t*] yesterday [who likes to drink beer]
b. Peter hat [die Frau *t*] getroffen [die gerne Bier trinkt]

They are the extraposed variants of (1). There are actually some competing analyses proposed in the literature for the extrapolation of relative clauses. Typically, the discussion centers around whether there is a rightward movement involved or not. First of all, however, I want to emphasize that the relationship between the sentences in (1) and (2) must be clarified, whichever analysis one assumes for extrapolation.

Before going into the discussion, I will just briefly comment on two competing analyses of extraposition. They are the so-called movement analysis and base-generation analysis.¹ The movement analysis (cf. e.g. Müller 1995, Büring & Hartmann 1997) starts from the structure in (1) and then assumes a rightward movement of the relative clause. The relative clause adjoins to some maximal projection, like VP, on the right side. This is shown in (3). Here the base position of the relative clause is indicated by the trace.



The base-generation analysis (cf. e.g. Culicover & Rochemont 1990, Kiss 2005), on the other hand, assumes the structure in (3) as a base structure; that is, the relative clause is base-generated in some adjoined position. It is specifically the representation (3) without the trace.

The discussion about these two analyses often centers around the problem of whether the extraposition obeys the general constraints on movement. Especially, the proponents of the base-generation analysis emphasize the fact that the relative clause extraposition is different from other types of movement, typically from *wh*-movement.² Because of this, it is claimed that the structure in (3) must be base-generated, that is, formed without movement.

It seems to me that this fact does not suffice to argue for the base-generation and against the movement of the extraposed relative clauses. Crucially, although the extraposition behaves differently from *wh*-movement, it nonetheless obeys some kind of locality constraint: it is just that the constraint is different from usual *wh*-movement. It then follows that whichever analysis is assumed, the locality constraint on extraposition must be captured. For that, the movement analysis must answer the question of how far the relative clause can move. Under the base-generation analysis, it is formulated as the question of how far the relative clause in (3) can modify deep into the adjoined-to category. This way, the locality constraint has to be described in both analyses. The observation that relative clause extraposition is subject to some other locality constraint than *wh*-movement therefore gives no positive evidence against the movement analysis for extraposition.

For reasons that will become clear later, I will adopt the movement analysis of the extraposition in the following discussion. But it should be noted that neither the locality problem nor the comparison of each analysis is the topic to be pursued here.

This paper is organized as follows. In the next two sections, relevant data from English and German will be presented. The focus will be placed on whether the extraposition has LF-relevant structural effects. In order to account for the observed facts, I will in section 4 introduce an idea of Fukui (1993) as a preliminary device for the following discussion. In

¹ In addition to these two major analyses mentioned in the text, there are still other proposals advocated in the literature: (i) crossing of branches (McCawley 1982), (ii) base generation of the 'extraposed' relative clause in a deeper position (Haider 1993, 1994), (iii) base generation of the whole constituent in the 'extraposed' position and leftward movement (copy and delete) of the 'non-extraposed' part (Kayne 1994, Wilder 1995), (iv) late insertion of the relative clause to the antecedent moved rightward 'covertly' (Fox & Nissenbaum 1999), (v) phonological approach (Truckenbrodt 1995), etc.

² Culicover & Rochemont (1990:23f), for example, report cases where the extraposition is less restricted (i) and more restricted (ii) than leftward A-bar movement.

i) a. [A man *t*] came into the room [that no one knew].
 b. *[With what color hair] did [a man *t*] come into the room?
 ii) a. *It was believed [that John saw a picture *t* in the newspaper] by everyone [of his brother].
 b. [Who] did Mary say [that John saw a picture of *t* in the newspaper]?

(Similar German data are found in Müller 1995:216ff.) Culicover & Rochemont subsequently conclude that 'These contrasts pose problems for any account of the alternation [...] that seeks to represent it in terms of an antecedent-gap relation'. Cf. also Kiss (2005:286f).

section 5, a proposal will be made which should capture the different properties of extraposition in English and German. My analysis will then be supplemented by relevant data from Japanese given in the next section. Section 7 summarizes the discussion with some concluding remarks.

2. Extraposition in English

In this section, I will examine some empirical data on extraposition in English. As will be shown later, the analysis for English remains influential also for the analysis of extraposition in German. Based on some naïve intuition, extraposition of relative clause was occasionally regarded as something stylistic (cf. Chomsky 1986: 40f, Rochemont 1985: 13f, 50), especially because the application of this rule is optional. If the extraposition were to apply in some extra-syntactic component, it should have no effect on the truth-conditional semantics or the interpretation in the LF component. In order to examine this, we can contrast the sentences with and without extraposition. Let us first look at the sentences from Guéron (1980: 650), slightly modified here as (4) and (5):

- (4) a. The only man (there) [who was interesting to talk to] was invited.
 b. *The only man (there) *t* was invited [who was interesting to talk to].
- (5) a. *The rule [which has the slightest effect on LF] hasn't been found yet.
 b. The rule *t* hasn't been found yet [which has the slightest effect on LF].

As for (4), the extraposition itself is legitimate, as seen below (Guéron 1980: 650):

- (6) Only those people *t* will be invited [who were interesting to talk to].

What is crucial for the grammaticality in (4) and (5) is licensing of polarity items. This is presumably a constraint which works in LF. At this point, I cannot go into the exact licensing condition of the polarity items in question. For our purpose, it is sufficient to establish that the extraposition here evidently has LF-sensitive effects. If extraposition were a PF operation, the difference in grammaticality in (4) and (5) could not be predicted.

There are also data concerning extraposition and binding. (7) is from Culicover & Rochemont (1990:37) and (8) is a constructed pair.

- (7) a. *I sent her_i many gifts [that Mary_i didn't like] last year.
 b. I sent her_i many gifts *t* last year [that Mary_i didn't like].
- (8) a. I showed every book_i to the professor [that wrote a review of it_i]
 b. ??I showed every book_i to the professor *t* yesterday [that wrote a review of it_i]

Binding is a relationship that is sensitive to structural configuration. So both pairs of sentences clearly show that extraposition cannot be a PF phenomenon, but must be an operation that also brings about structural change.

Summarizing, we can safely say that the extraposition in English is not a mere phonological, but a syntactic operation which gives rise to semantic effects. It must be an operation taking place in the syntactic component.

3. Extraposition in German

Next, let us examine extraposition in German. Based on the analogy with English, it is often argued in the literature that relative clause extraposition in German cannot be just a stylistic phenomenon. For example, Müller (1995:221) says that ‘a PF-related approach runs into problems given evidence to the effect that extraposition has syntactic consequences’, such as binding. We already observed this fact for English. What does it concretely look like in German?

Kiss (2005) also asserts that extraposition, like scrambling, interacts with semantic interpretation. As evidence for this claim, he gives examples in (9) (p.323).³ (10) is just a control case to show that (9b) is not excluded because of some locality constraint on extraposition. Although I have to admit that (10) is not accepted as natural by every speaker, the contrast to (9b) seems to be obvious.

- (9) a. Wir haben niemandem_i die Frage *t* gestellt [auf die
we have nobody_i the question *t* asked [on which
er_i sich vorbereitet hatte]
he_iREFL prepared had]
‘No one was asked the question that he expected.’
b.*Wir haben [die Frage *t*]_j niemandem_i *t*_j gestellt [auf die er_i sich vorbereitet hatte]
- (10) Wir haben [die Frage *t*]_i niemandem_i gestellt [die
we have [the question *t*]_i nobody *t*_i asked [which
jeder vorbereitet hatte]
everyone prepared had]
‘No one was asked the question which was expected by everyone.’

On the basis of these data, Kiss (2005:330) reaches the conclusion that ‘extraposition must not be treated as a phonological process.’⁴

However, upon closer scrutiny, these data turn out to be irrelevant to our concern whether extraposition has effects at LF or not. What is demonstrated by these examples is just that it is wrong to treat both extraposition and scrambling as mere stylistic operations (cf. footnote 4). It is indeed an already established fact in German syntax that scrambling does have semantic effects (cf. e.g. Frey 1993, Haider & Rosengren 1998). The sentences given in (9) are actually a minimal pair whereby (9a) is the so-called unmarked structure and (9b) a scrambled variant. When we concentrate on extraposition data, however, the situation seems rather to be the opposite from what Kiss argues. Let us look at the sentences in (11). They represent the base structures for (9), that is, the relative clause stands adjacent to the antecedent noun.

- (11) a. Wir haben niemandem_i die Frage [auf die er_i sich vorbereitet hatte] gestellt.
b.*Wir haben die Frage [auf die er_i sich vorbereitet hatte] niemandem_i gestellt.

The comparison of (9) and (11) rather lends support to the view that relative clause extraposition does not influence the binding relation here: each of the extraposed relative

³ Kiss (2005:327ff) demonstrates that the negative quantifier is a better candidate for examining the configurational relationship of the elements in question rather than a universal quantifier like *jeder* (‘everyone’), which allows so-called dynamic binding across a sentential boundary.

⁴ Kiss (2005:330) goes on: ‘Phonological analyses of extraposition, i.e. analyses that assume that *extraposition (and similarly, scrambling)* is a stylistic operation that does not affect the syntactic structure, cannot explain the intricate interactions between extraposition and word order variation [...]’ (emphasis by me, J.I.)

clauses in (9) is interpreted as if it is located in its base position (indicated there by the trace), as in (11).

In spite of the claims by the above-mentioned and other authors, there seems to be no decisive evidence that relative clause extraposition in German brings about LF-sensitive structural change. For example, Müller (1995) cites some literature for arguing against the PF treatment of extraposition in German, but no relevant examples are given there. There are, on the contrary, data that actually show the opposite. (12) demonstrates the same point as (9) and (11), that is, that extraposition does not influence the binding relation (cf. also Grewendorf 1988:315).

- (12) a. Niemand [der auch nur das geringste von Marias_i ausgefallenen
nobody [who also just the least of Mary's curious
Schlafgewohnheiten weiß] würde sie_i vor Mittag anrufen.
sleeping-habit knows] would her before noon call
'No one who has the least idea of Mary's curious sleeping habit would call her
before noon.'
- b. Niemand *t* würde sie_i vor Mittag anrufen [der auch nur das geringste von Marias_i
ausgefallenen Schlafgewohnheiten weiß].
(Fanselow 1987:203)

In spite of the lack of evidence, relative clause extraposition in German has thus been regarded as having LF-relevant effects. I believe it is not hard to understand why this incorrect thesis is adopted in the literature. One reason could be that it would enable a uniform analysis of so-called optional operations like scrambling. That is, both scrambling and extraposition are to be treated in the same component of the grammar. This is the case with the claim by Kiss (2005). Other authors just accept the results from the analyses of English, where relative clause extraposition clearly does have LF effects, as we have seen. This is presumably because the operation in question looks, at least superficially, very similar in the two languages. Another, and maybe the most crucial source of the misunderstanding resides in the very naming of extraposition. That is, because of the general SOV-character of German, sentential complements to the right of the clause-final verb are also regarded as 'extraposed' by many authors. Sentential complements and relative clauses are namely both elements that typically appear in the so-called extraposed position. They are, therefore, treated uniformly in most of the literature. See, for example, the contributions in Lutz & Pafel (1995) and Beerman et. al. (1997). Also Hubert Haider, who offers his original analysis for the phenomenon 'extraposition' in a series of his works, is of the opinion that both sentential complements and relative clauses in the 'extraposed position' are located in the structurally same position. Citing the examples (13), Haider (1993: 175), for instance, claims 'dass Relativ- und Objektsätze die gleiche *Extrapolationsposition* einnehmen' ('that relative and object sentences take up the same *extrapolation position*'; emphasis by Haider).

- (13) a. [Hunde füttern [die Hunger haben]] kann jeder
[dogs feed [which hunger have]] can everyone
'To feed dogs that are hungry, everyone can do that.'
- b. [Zugegeben [dass er dort war]] hat er zwar nicht, aber ...
[admitted [that he there was]] has he indeed not, but ...
'Although he did not admit that he was there, ...'

However, it is very questionable whether these two sorts of subordinate clauses can be handled uniformly with respect to their postverbal positioning in German. Kiss (2005), for

example, gives some data that demonstrate different behaviours of relative clauses and complement clauses in German. See also the discussion in Inaba (2003).

In opposition to the widespread, but wrongly entertained hypothesis that relative clause extraposition in German must be syntactic, I now want to claim that it is a phonological operation which does not feed LF. At this point, then, we are interested in what the German counterparts of the English data look like, where we observed the relevant structure-sensitive difference caused by extraposition. For the English examples like (8), we have already confirmed in (9) and (11) that extraposition in the comparable German sentences does not influence the binding relation. The German equivalents for the other English data in section 2 (cf. (4), (5) and (7)) are given below:

- (14) a. dass der einzige Mann[der interessant war] eingeladen wurde
 that the only man [who interesting was] invited was
 b. dass der einzige Mann *t* eingeladen wurde [der interessant war]
 'The only man who was interesting was invited.'
- (15) a. Bis jetzt wurde die Regel [die den geringsten Effekt auf der
 till now was the rule [which the least effect on the
 LF hat] noch nicht gefunden.
 LF has] yet not found
 b. Bis jetzt wurde die Regel *t* noch nicht gefunden [die den geringsten Effekt auf der
 LF hat].
 'Till now, the rule hasn't been found yet which has the slightest effect on LF.'
- (16) a.*Ich habe ihr_i mit Absicht viele Geschenke [die Maria_i nicht
 I have her with intention many presents [which Maria not
 mag] geschickt.
 likes] sent
 b.*Ich habe ihr_i mit Absicht viele Geschenke *t* geschickt [die Maria_i nicht mag].
 'I intentionally sent Mary many presents that she doesn't like.'

Somehow surprisingly, there is a clear contrast between the two languages with respect to the superficially similar operations in question.

Büring & Hartmann (1997:16), while assuming a syntactic movement analysis for extraposition, give the following data:

- (17) a. weil wir jedem_i [die Daten *t*] gegeben haben [die er_i
 because we everybody [the data *t*] given have [which he
 braucht]
 needs]
 'because we gave everybody the data that he needs'
 b.*weil [ein Mann *t*] jedes Datum_i kennt [der es_i braucht]
 because [a man *t*] every data knows [who it needs]
 'because a man who needs it knows every piece of data'

Now, the grammaticality of these sentences corresponds to that of the following ones, where the extraposed relative clauses in (17) are located in the base position, respectively.

- (18) a. weil wir jedem_i die Daten [die er_i braucht] gegeben haben
 b.*weil ein Mann [der es_i braucht] jedes Datum_i kennt

Based on examples of the sort we saw in (9), which point to the same effect as (17) and (18), Buring & Hartmann (1997:17) claim, concerning interpretation, that ‘it is the D-structure rather than S-structure position of the extraposed clauses which is decisive for its properties with respect to variable binding and coreference.’ Although their analysis is based on syntactic adjunction movement that is not adopted here, I agree to their claim that the extraposed relative clause is interpreted in its base position. This idea of reconstruction amounts to saying that extraposition has no structural effects. Consequently, Buring & Hartmann’s evaluation of the data supports my claim here. I just cannot share their syntactic movement analysis that tries to treat not only the relative clause in German but also the complement clause and the data in English in a uniform way.

It may be well worth noting in passing that the observation so far can give a clear answer to the problem of which of the analyses mentioned in section 1 is to be favoured for relative clause extraposition in German. The data show that the extraposed relative clause behaves, as far as the interpretation is concerned, as if it still stands in its base position. This total reconstruction effect seems to be at odds with the base-generation analysis: since under this analysis there is no trace or base position into which the extraposed relative clause could be reconstructed, the above-mentioned fact that the extraposed relative clause is interpreted in its base position is now hard to account for. This state of affairs thus poses a problem for the base-generation analysis like Kiss (2005) and the approach taken up by Hubert Haider in a series of his works.

Before closing this section, a brief comment is in order concerning the conditions on extraposition. The claim made here that extraposition in German is not syntactic should by no means be interpreted as asserting that it can be applied without restrictions. As pointed out in the literature and also mentioned in section 1 of this paper, it is subject to some locality constraint. Within the analysis presented here, there should be not structural, but phonological conditions imposed on the extraposition in German. Concerning this topic, I have proposed in Inaba (2003) the conditions that capture the relevant data. It is also demonstrated there that prevailing analyses based on structural conditions are empirically inadequate. For another approach to extraposition based on phonological issues, see Truckenbrodt (1995). In the present paper, I cannot, however, go into the details further.

As we have seen so far, the empirical data show that relative clause extraposition in German has no LF-relevant structural effects. Summarizing this section, we can say that it should be treated as a post-syntactic operation.⁵

4. Directionality and optionality of movement

So far we have established the difference between English and German with respect to the extraposition of relative clauses. As a preliminary step toward deducing this observation, I will in this section introduce an idea proposed by Fukui (1993).

⁵ Chomsky (1995:324f,333) suggests that ‘stylistic’ or ‘rearrangement’ rules, as an example of which he mentions extraposition, ‘may not really belong to the system we are considering here’, namely ‘the core computational properties’. Essentially the same point is made also in Chomsky (2000:108,144) and Chomsky (2005:20). (Cf., however, also Chomsky 2001:8.) One could interpret this line of thinking as a suggestion to treat extraposition as an operation outside the domain of the core syntax.

Now, some authors have reported possible functional or information-structural effects brought about by extraposition of restrictive relative clauses, e.g. Ziv & Cole (1974). (Cf. also Huck & Na 1990, Takami 1990, etc.) In this paper, I want to abstract away from these issues and to rather follow the idea of Rochemont (1985: 18f) that ‘pragmatic’ aspects of interpretation that do not affect the truth conditions of utterance are treated outside the domain of syntax, which seems to be the case with extraposition in German.

Fukui (1993: 401) claims, first of all, that ‘the value for the head parameter is fixed locally’. Based on data such as (19) the parameter will be fixed as head-initial for English and head-final for Japanese.

- (19) a. [VP [V₀ eat] [XP an apple]]
 b. [VP [XP ringo-o] [V₀ taberu]]
 [VP [XP apple-ACC] [V₀ eat]]

Fukui calls this parameter value ‘canonical precedence relation’ (CPR) and assumes that the relevant value can be extended to non-local domains. He now claims that the movement operations that destroy the CPR are costly, whereas those preserving the CPR are costless. This entails, for example, that in head initial languages, rightward operations are costless whereas leftward operations are costly. In head final languages, the situation should be the opposite. Some cases are listed in (20) and (21).

- (20) In head initial languages (e.g. English)
 - Costless: rightward movement (e.g. extraposition, HNPS)
 - Costly: leftward movement (e.g. NP-movement, *wh*-movement)
- (21) In head final languages (e.g. Japanese)
 - Costless: leftward movement (e.g. scrambling)
 - Costly: rightward movement (??)

Fukui now claims that costly operations require some driving force, like a Case feature or *wh*-feature in the case of leftward movements in English. In other words, costly operations can only be applied when they are forced.⁶ Costless operations, on the other hand, do not need a driving force and are optional. This is the case, for example, with extraposition in English or scrambling in Japanese. They are actually optional in the sense that non-application of these operations does not render the sentence ungrammatical.

In his formulation, however, Fukui (1993) does not make clear how his notion of optionality of an operation corresponds with the semantic effects it should bring about at LF. Fukui maintains that scrambling in Japanese, for instance, is an optional and costless operation, preserving the CPR. But it is established that scrambling has semantic effects that are relevant at LF. One of many pieces of evidence is given below (Saito 1992:74f).

- (22) a. ?*Masao-ga [otagai_i-no sensei]-ni karera_i-o syookaisita.
 Masao-NOM [each-other_i-GEN teacher]-DAT they_i-ACC introduced
 ‘Masao introduced them_i to each other’s_i teachers.’
 b. Masao-ga karera_i-o [otagai_i-no sensei]-ni *t* syookaisita.

A similar point can be observed also for German, as in (9).

As has become clearer through the elucidation thus far, the ‘optionality’ as proposed by Fukui (1993) is rather a theory-internal concept: optional operations are those that are not feature-driven. At the same time, Fukui seems to also share the basic idea behind ‘optionality’ and to take those operations to be optional that need not take place for the grammaticality of the sentence. I want to follow this concept of optionality. Then, scrambling and extraposition are in principle typical examples of optional movements. Whether differences in interpretation at LF arise or not is another thing. Furthermore, I will adopt the basic intuition behind Fukui’s CPR in the ensuing discussion. Crucially, I want to

⁶ Fukui (1993:405ff) regards topicalization in English as an obligatory operation triggered by a spec-head agreement relation.

pursue the idea that the operations destroying the CPR are in a sense more severely restricted.

5. Proposal

With the observation and the discussion so far in mind, I now want to try to explain the difference between English and German with respect to the extrapolation of relative clauses. The answer which might first come to mind will be to assume a difference as to the level on which extrapolation applies. That is, extrapolation applies in the overt syntax in English, whereas it applies at PF in German. But this statement is just a reformulation of the question. The point is how this difference can be deduced from other properties of each language.

First of all, I adopt the view that constituents are made up of features such as phonological or semantic features. Phonological features are sent to the PF component and are later realized as sound sequences. Semantic features are delivered to the LF component and are processed there for the sake of semantic interpretation. For the present discussion, it suffices just to distinguish between phonological features and the others, such as semantic or categorial features.

Both in English and German, extrapolation is an operation that moves the constituent rightwards. This is schematized as in (23) and (24).

(23) ... V ... [NP ... N *t*] ... X Rel (Engl.)

(24) ... C ... [NP ... N *t*] ... V Rel (Germ.)

First of all, in English, extrapolation does not destroy the canonical precedence relation of the language. Remember that this is why Fukui (1993) regards extrapolation in English as costless. Now, I want to formulate this state of affairs in the following way: because of its SVO character, the right periphery is so to say ‘open’ in English and there exists no hindrance against rightward movement. Consequently, extrapolation in English is in a sense ‘unrestricted’ apart from relevant locality conditions, which are not discussed here. The extraposed constituent still lands in the domain where the canonical linear relationship is retained. Speaking in terms of features, extrapolation in English can move both the phonological and the other features freely so long as the locality constraint is observed. The movement of the semantic features, for example, now brings about semantic effects.

The situation in German is a little different, in spite of the superficial similarity to English. The crucial point is that extrapolation in German moves beyond the sentence-final verb (or verbal complex), as shown in (24). Because the verb in German selects to the left and so to say ‘closes off’ the clause, extrapolation locates the relative clause outside the domain in which it originally found itself. The extraposed relative is now on the right side of the verb and is not in the canonical direction of the language any more. Based on the reasoning by Fukui (1993), the extrapolation here thus has to be regarded as a costly operation because it destroys the CPR. The application of extrapolation, however, is actually optional in the relevant sense, as opposed to NP and *wh*-movement, which are triggered obligatorily by formal features.⁷ Now, when such an optional or not-feature-driven operation takes place and, despite its optionality, lands in a position outside the canonical domain of the language, it would be natural to suppose that the operation in

⁷ It must have become clear by now that extrapolation in German is a counterexample to Fukui’s (1993) claim in that it is costly but nonetheless optional in its application.

question is subject to severer restrictions than feature-driven or ‘motivated’ operations. Specifically, I would like to propose (25).

- (25) In the case of ‘optional’ movements, only phonological features, but no semantic (and other) features can be moved along when the movement is ‘costly’.

From this, it now follows that relative clause extraposition in German can take only phonological features along. This brings about the desired result that it shows a full reconstruction effect with respect to interpretation at LF.

Before closing this section, I want to point out the possibility that the notion of ‘costly’ in (25) can be expanded in a natural way beyond its original formulation by Fukui (1993). Remember from section 3 that the CPR is established first of all by virtue of local relationship between a head and its complement (cf. 19) and is then extended further to non-local domains. An operation is then judged as costless when the resulting linear positioning of the moved constituent conforms to the CPR thus extended beyond the original local domain. Now a question may arise how far this kind of extension can proceed. It seems implausible to suppose that it is unlimited: When the movement goes ‘too far away’, it should become impossible to check at all whether the CPR is observed. In such a case, the operation in question cannot be considered as conforming to the CPR and should consequently be evaluated as costly. Based on this reasoning, let us assume that a movement operation is also rendered costly when it crosses a certain domain boundary.

The next question is what category might count as the relevant domain within which a movement operation can comply with the CPR provided that the linearity constraint originally formulated (cf. section 3) is observed. As shown in (19), the local domain in which the value for the directionality parameter is set is the VP. Now it seems natural to assume that the CPR, starting from this VP domain, can be extended to the *v*P, TP and up to the CP domain, because these categories are the extended projections of V in the sense of Grimshaw (2000). That is, the CPR once established for the VP domain can be effective for the operations within the same clause or the CP domain. For the operations beyond the clausal boundary, the CPR cannot be satisfied anymore, and they are thus necessarily costly independently of the linear relationship brought about by the movement. The idea that CP possesses some special property, especially in terms of its seclusiveness, is consistent with the recent theoretical development based on the notion of phase in the minimalist model.

Returning to the case of German, we see that extraposition places a constituent to the right of the verb, which actually ‘completes’ the clause. Now, the clausal domain whereby the CPR comes into play seems to correspond partly to the so-called topological field, especially when the postverbal field (‘Nachfeld’) is at issue. Furthermore, it might be also promising to correlate the postverbal field with the phase in the minimalist sense; in particular, this field often shows some freezing effect (cf. e.g. Bayer 1996), which can be regarded as a typical characteristic of a phase. But for the time being, I want to leave this issue open for future research.

6. Long scrambling

Finally, I want to examine the hypothesis (25) against some other cases that seem relevant to the point here, taking up the so-called long distance scrambling in Japanese. An example is given in (26). Here, a constituent is extracted out of a finite clause (Yatabe 1993:173).

- (26) [sono hon]-ni Ken-ga nazeka [Naomi-ga *t* sawatta to]
 [that book]-DAT Ken-NOM somehow [Naomi-NOM *t* touched Comp]
 omotte-iru
 think
 ‘Ken somehow thinks that Naomi touched the book.’

Now, let’s check how this long scrambling interacts with interpretation. Saito (1989:191) gives the examples in (27).

- (27) a. [Mary-ga [[John-ga [donohon]-o tosyokan-kara karidasita]
 [Mary-NOM [[John-NOM [which book]-ACC library-from checked-out]
 ka] siritagatteiru] koto
 Q] want-to-know] fact
 ‘the fact that Mary wants to know which book John checked out from the library’
 b. [dono hon]-o [Mary-ga [[John-ga *t* tosyokan-kara karidasita] ka] siritagatteiru]
 koto

Wh-phrases in Japanese must be interpreted under the scope of the complementizer *ka*. In order for this to be possible, the long scrambled element in the (b)-sentence must be interpreted in the position of the trace. Hence, Saito concludes that long scrambling in Japanese is a semantically empty operation. He also gives binding data to the same effect. Still another example is given in (28) with weak cross over data, which makes the same point (Yatabe 1993:174).

- (28) a. *[sono_i/pro_i chosha]-ga [Naomi-ga [dono hon]-ni -mo sawatta
 [its/pro author]-NOM [Naomi-NOM [which book]-DAT -PART touched
 to] omotte-iru
 Comp] think
 ‘Its_i author thinks that Naomi touched every book_i.’
 b. * [dono hon]-ni-mo [sono_i/pro_i chosha]-ga [Naomi-ga *t* sawatta to omotte iru

Here too, long scrambling does not affect the LF semantics. This state of affairs is expressed by Saito (1992: 87), who asserts that ‘[long distance scrambling] does not, or at least need not, contribute to the interpretation of a sentence.’

Now, the long scrambling in Japanese seems to fulfil the precondition in (25). It is optional or not feature-driven, and it crosses a clause boundary, which renders it a costly operation. As predicted by the analysis here, long scrambling does not seem to bring about LF-relevant semantic effects and thus lends support to the proposal here.

German is said to allow only clause-internal scrambling. But Haider & Rosengren (1998) report a case of long scrambling out of a finite clause under certain conditions. This is called topic- or T-scrambling. I cannot go further into this area here, partly because the data are rather unclear. But if this T-scrambling is just a phonological operation, as claimed, for example, by Yoshida (2001), then it behaves parallel to the Japanese long scrambling.

7. Concluding remarks

In this paper, I first examined empirical data concerning the extraposition of restrictive relative clauses in English and German. In spite of the superficial similarity, extraposition in these languages exhibits a remarkable contrast that has somehow been ignored in the previous research: extraposition in English is a syntactic operation, while it is a

phonological movement in German. In order to explain this difference, I have proposed that a certain domain becomes a kind of island for the optional movement of some features. I have tried to deduce the relevant domain on the basis of the concept of directionality. In the German case at hand, the final verb closes this domain, and the extraposition beyond it cannot take the relevant features along. Furthermore, I have suggested that this domain might somehow be identified with the phase in the minimalist sense, which could furthermore be correlated with the topological field of the German clause structure. The analysis advocated here was then tested against long distance scrambling in Japanese. How the proposal in this paper could get theoretically more refined, especially in relation to the notion of phase, I want to pursue at some other occasion.

Acknowledgements

I would like to express my gratitude to the organizers of Console XIII held in Tromsø in December 2004 for giving me the opportunity to present my paper and to the audience there as well as an anonymous reviewer for feedbacks and comments. My special thanks goes to Joost Kremers for discussing with me the final version of this paper.

Jiro Inaba
University of Frankfurt am Main
inaba@lingua.uni-frankfurt.de

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