

# Chapter XX: Remnant Movement

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## Abstract

This chapter deals with “incomplete category fronting”, that is, the appearance in a topic position of what seems to be a constituent lacking some of its parts, which appear elsewhere in the clause. There have been several approaches to these constructions: (1) extraction of the subpart to a position elsewhere in the clause and subsequent topicalization of the full constituent, which now contains a trace of the subpart (Remnant Movement); (2) base generating the subpart elsewhere and topicalizing the rest (without a trace of the subpart); (3) copying the full constituent to the “topic” position and deleting (different) parts of the two copies (Distributed Deletion). While we discuss (2) and (3) briefly, we concentrated on (1), hence the title of the chapter.

## Contents

<b>1</b>	<b>Introduction</b>	<b>2</b>
<b>2</b>	<b>Background</b>	<b>4</b>
<b>3</b>	<b>Why look at Remnant Movement?</b>	<b>5</b>
<b>4</b>	<b>Types of “Incomplete Category Displacement”</b>	<b>9</b>
4.1	“Diving” vs. “Surfing” constructions . . . . .	9
4.2	Other “remnant” constructions . . . . .	11
4.2.1	Other cases of V(P)-fronting . . . . .	11
4.2.2	Split NPs . . . . .	12
4.2.3	Remnant extraposition? . . . . .	12
4.2.4	Missing (finite) verbs? . . . . .	13
<b>5</b>	<b>Explaining the restrictions (on the canonical cases)</b>	<b>14</b>
5.1	Den Besten & Webelhuth (1990) . . . . .	14
5.2	Müller (1998): His analysis, assuming movement . . . . .	20
5.2.1	Basics: characteristics of the data . . . . .	20
5.2.2	Aside: from <i>Barriers</i> to the Minimalist Program . . . . .	23

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5.2.3	Violation of the PBC in RM – why is this allowed? . . . . .	24
5.2.4	Freezing (& Anti-freezing) . . . . .	25
5.2.5	Movement asymmetries explained . . . . .	30
5.2.6	Unbound intermediate traces revisited . . . . .	34
<b>6</b>	<b>More recent approaches</b>	<b>36</b>
6.1	Grewendorf 2003/2015a, Abels 2007 . . . . .	38
6.1.1	Application of the principle . . . . .	39
6.1.2	Criticisms . . . . .	39
6.2	Müller (2014, 2015) “Buffers” . . . . .	43
6.3	Other movement analyses . . . . .	45
6.3.1	Saito & Takita . . . . .	45
6.3.2	Others . . . . .	47
<b>7</b>	<b>Objections and alternatives: Non-movement solutions</b>	<b>48</b>
7.1	Fanselow (2002) . . . . .	49
7.1.1	Scrambling Basics . . . . .	49
7.1.2	Arguments against (movement) scrambling feeding RM . . . . .	50
7.1.3	Freezing revisited . . . . .	52
7.1.4	Restrictions revisited . . . . .	52
7.2	Ott (2010) . . . . .	53
7.3	Other non-movement approaches . . . . .	55
7.3.1	HPSG solutions . . . . .	55
7.3.2	Hale & Legendre . . . . .	55
7.3.3	Thoms/Walkden . . . . .	55
<b>8</b>	<b>Secondary remnant movement revisited</b>	<b>56</b>
<b>9</b>	<b>Conclusion and evaluation: Some residual issues</b>	<b>56</b>
<b>10</b>	<b>References</b>	<b>57</b>

## 1 Introduction

So-called Remnant Movement (RM) presents a potential challenge to many common assumptions in syntax. Originally suggested as an (apparently) straightforward solution to a problem of German syntax, its use has spread to analyses of diverse types of constructions in many languages (and in various frameworks), while use of “remnant movement” as the proper analysis of the original construction in German no longer seems straightforward and remains controversial.

In a typical case, “remnant VP movement”, a single word (a participle or an infinitive) seems to have been fronted where one normally would expect a full XP (e.g. a VP):

- (1) Gelesen<sub>i</sub> hat [ er das Buch gestern e<sub>i</sub> ]  
 read<sub>pst.prt</sub> has he the book yesterday  
 “He read the book yesterday.” (cf.  $\sqrt{[_{VP} \text{ Das Buch gelesen} ] \text{ hat er gestern.}}$ )

One possibility is that the direct object *das Buch* has been extracted from the VP before fronting, and hence the fronted category is a VP containing a trace; that is, a remnant VP:

- (2) [<sub>VP<sub>i</sub></sub> e<sub>j</sub> gelesen] hat er [das Buch]<sub>j</sub> gestern e<sub>i</sub>

At first glance this seems problematic, as the trace  $e_j$  is not C-commanded by its antecedent. As we will see, two strategies have been employed in the literature: showing that the apparently unbound trace is not a problem, and solutions not involving an unbound trace.

As it turns out, there are several other cases of displaced constituents with something apparently missing, which we discuss below, and hence we use the term “Incomplete Constituent Displacement” (ICD) after Müller (1998) as a cover for all those constructions where a moved constituent apparently contains a bound or unbound trace.<sup>1</sup>

The availability of analyses involving remnant movement has spawned its widespread use outside of the constructions originally motivating it, and we will need to distinguish between two types of Remnant Movement, which, although formally identical, arise from different considerations: in (2) both operations seem to be independently motivated: fronting of a VP (3a) and scrambling<sup>2</sup> of a direct object (3b):

- (3) a. [<sub>VP<sub>i</sub></sub> den Hund geschlagen] hat er nicht  $e_i$   
           the dog  beaten      has he not  
       b. Weil er [<sub>DP<sub>j</sub></sub> den Hund] gestern  $e_j$  geschlagen hat ...  
           because he      the dog  yesterday  beaten  has

The second type, employed in Kayne (1994, 1998 *i.a.*) and Koopman & Szabolcsi (2000), among numerous others, is illustrated in (4b):

- (4) a. John reads no novels  
       b. John [reads  $e_j$  ]<sub>i</sub> [<sub>α</sub> [no novels]<sub>j</sub>  $e_i$  ]

The analysis (4b) of sentence (4a) shares the structure of first type of remnant movement as in (2), namely:

- (5) [<sub>YP</sub> ...  $e_{XP}$  ...] ... [<sub>α</sub> ... XP ...  $e_{YP}$  ...] ...

But while the details of (2) are controversial (especially, as noted in footnote 2 with regard to scrambling as feeding the VP-fronting), the two operations are independently motivated, and such a remnant movement construction cannot be ruled out, unless by the unbound trace, which *prima facie* doesn't seem to be a problem. However, the second type, as in (4b), is not “necessitated” by the surface structure configuration and traditional assumptions about constituent structure, but rather by rather abstract theoretical considerations, interpretation of quantifier scope, etc., and the operations involved do not, in general, occur independently from the remnant construction. We refer to the two types as *Primary* and *Secondary*, following Müller (2002), and return briefly to the latter in §8.

<sup>1</sup>Unfortunately, there is some terminological confusion in the literature: some linguists have used the term *remnant movement* to refer to movement of items out of a partially elided VP: For example, Tanaka & Smith (2006), p.11: “This section shows further constraints on remnant movement.” E.g.

- (i) a. I wouldn't try to persuade Alex, but I would ...Martha!  
       b. I wouldn't try to persuade Alex, but I would < *try to persuade* > Martha  
       c. *Analysis*: ... but I would [<sub>vP</sub> Martha<sub>i</sub> [<sub>vP</sub> (try to persuade)  $e_i$  ]]

Here the “remnant” direct object *Martha* is moved to the Spec of vP. Baltin (2002), who discusses both constructions, adopts *ellipsis remnant* for the above and reserves *remnant movement* for the construction discussed in this chapter. We follow this convention in this chapter, and use “remnant movement” and “remnant” as defined in the text unless explicitly stated otherwise, e.g. in the discussion of Den Besten & Webelhuth (1990).

<sup>2</sup>The proper analysis of alternate constituent orders in German (and many other languages) referred to as “scrambling” is a particularly vexed question, as is the question as to whether “scrambling” is indeed the source for remnant VP movement. We address some of these issues below, but see the SynCom Chapter Haider “Mittelfeld Phenomena: Scrambling in Germanic” as well as his bibliographical references.

In the following section we give a brief historical background with some more details of German syntax, and an outline of the rest of the chapter.

## 2 Background

The first use of remnant movement was as a solution to an apparent conflict between certain data in German, and the then current hypotheses about phrase structures. As Tilman Höhle (1986) pointed out some years ago, the unusual clausal structure of German was already known in the 19th century: traditionally known as field theory (Feldtheorie) it described German clauses as basically consisting of a front-field (Vorfeld); a left bracket (Linke Satzklammer: a complementizer or finite verb); a middle-field (Mittelfeld) with various arguments, adverbials, etc.; a right bracket (Rechte Satzklammer: the verb-cluster); and a post-field (Nachfeld) with various (extraposed) elements.<sup>3</sup>

This seemed a good fit with then-current theories of X-bar phrase structure as developed by Stowell (1984) and others: the Vorfeld was the XP Specifier of CP, the Linke Satzklammer was  $V_{\text{fin}}$  or  $C^0$ , and the rest of the clause was an SOV structure, with the finite verb moving to C; the elements of the Nachfeld were extraposed constituents.<sup>4</sup> Ignoring the many modifications of the details of this analysis as well as challenges to it, the part which concerns us here is the content of the Vorfeld (and by implication, the structure of the Mittelfeld): by hypothesis, this should always be a maximal projection of some sort (XP) raised from the Mittelfeld (IP or TP).<sup>5</sup> This seemed by and large to be borne out empirically, with some knotty apparent counter-examples.<sup>6</sup> The regular cases of Vorfeldbesetzung (cf. footnote 3) and the exception which prompted adopting a remnant movement analysis are illustrated in (6):

- (6) a.  $[_{\text{DP}} \text{Der}^7 \text{ Fritz}]_i \text{ hat } e_i \text{ heute vormittag den Hund gefüttert}$   
           the.NOM F. has today morning the.ACC dog fed  
           “Fritz (already) fed the dog this morning.”
- b.  $[_{\text{DP}} \text{Den Hund}]_i \text{ hat der Fritz heute vormittag } e_i \text{ gefüttert}$
- c.  $[_{\text{AdvP}} \text{Heute vormittag}]_i \text{ hat der Fritz } e_i \text{ den Hund gefüttert}$
- d.  $[_{\text{VP}} \text{Den Hund gefüttert}]_i \text{ hat der Fritz heute vormittag } e_i$
- e.  $[_{?P} \text{Gefüttert}] \text{ hat der Fritz den Hund heute vormittag } e_i$

If the fronted constituent in the German Vorfeld is a maximal projection (XP), as the examples (6a)–(6d) suggest, what is the constituent labeled “?P” in (6e)? As soon as we take into consideration the fact that constituents in the Mittelfeld can occur in various orders — cf. (6a) vs. (7) — i.e. they can be “scrambled”), a solution suggests itself.

- (7) Der Fritz hat den Hund heute vormittag gefüttert

<sup>3</sup>Traditionally “realization of the pre-field” is referred to as Vorfeldbesetzung (“pre-field occupation”) in German. Dutch uses similar terms: “voorveld”, etc. It’s hard to find natural-sounding English equivalents to these terms, so in the rest of the chapter, we employ the German terminology.

<sup>4</sup>German shares this structure with Dutch, which also has remnant VP movement.

<sup>5</sup>In the following discussion we ignore alternative analyses, such as example (6a) being a case of IP rather than CP as suggested by Travis (1984), Zwart (1997) i.a. — see Gärtner & Steinbach (2003b) for counter arguments — as well as detailed accounts of discourse factors involved in the ordering of elements in the Mittelfeld; see SynCom Chapter Haider *op cit.* for discussion.

<sup>6</sup>For example “Gestern am Strand hat sie Peter gesehen” (Yesterday on the beach has she Peter seen) with an adverb and a PP in the Vorfeld; cf. Bildhauer (2011) for references and discussion, and § 4.2.4.

<sup>7</sup>We often use articles on proper nouns, which are optional in standard German, to make the Case of the noun clear.

If we view scrambling as leftward movement, then we note that *den Hund* is to the left of *heute vormittag* in (6e), so what is fronted, under these assumptions, is the same verbal projection as in (6d), except that it contains the trace of *den Hund* as noted in (2) and below in (8):

(8) [<sub>VP</sub>  $e_j$  gefüttert] hat der Fritz [den Hund] <sub>$j$</sub>  heute vormittag  $e_i$

This was proposed in Thiersch (1985)<sup>8</sup> and by Den Besten & Webelhuth (1987, 1990), who in the latter article discuss restrictions on the construction, to which we return below.<sup>9</sup>

This analysis seems *prima facie* to violate the (very intuitive) Proper Binding Condition (PBC) proposed in Fiengo (1977) and many others; see Müller (1998, p. 20), for a list of references.<sup>10</sup> Basically the PBC as understood by most linguists excludes downward movement: traces must be bound by a C-commanding antecedent (abstracting away from various lowering analyses proposed in the literature, such as “reconstruction” in LF, affix lowering, etc., which presumably don’t leave traces). In (8) however, the trace  $e_j$ , is not bound by its antecedent *den Hund*.<sup>11</sup> This created considerable interest in the construction, especially since the discovery of restrictions noted i.a. in Den Besten and Webelhuth (1990). See discussion below in § 5.1

The remnant movement analysis of “partial VP fronting” is of course contingent on the variation in order being leftward movement (scrambling). Several linguists (Haider 1990 and Fanselow 2002 among others) have advocated base-generation of the various orders. While we don’t discuss scrambling extensively here, the base generated analyses demand a different approach to the Vorfeldbesetzung, along the lines of Chomsky’s (1995b) “Bare Phrase Structure” (BPS). We temporarily assume a remnant movement analysis for expository purposes, but return to the issue below in § 7.

The rest of the chapter is organized as follows: § 3 takes a brief look as to why the phenomenon is of interest; § 4 describes other related types of “incomplete category displacement” and in particular, § 4.2.4 discusses RM where the head of the projection is empty; § 5 discusses two seminal attempts to account for the restrictions on remnant movement (and ICD in general); § 6 discusses some recent movement-based approaches; § 7 discusses objections and non-movement alternatives; § 8 looks briefly at “secondary” RM and notes at some recent cases of application of (secondary) RM. We conclude with a short evaluation.

### 3 Why look at Remnant Movement?

From the previous comments, it is clear that Remnant Movement bears on several important issues. First of all, the history of generative transformational grammar has been characterized by the opposition of two general approaches to modeling human linguistic competence,

<sup>8</sup>At the time, there was considerable controversy as to the existence of a VP node in “scrambling” languages like German; cf. an early argument in Thiersch (1982).

<sup>9</sup>We note here that that this this being due to “scrambling” is not a forgone conclusion; Hinterhölzl (2006) claims the movement in question is a licensing movement rather than scrambling; Haider (2010 and earlier) i.a. have examples of  $V_{\text{part}}$  fronting where the missing XP cannot scramble; see discussion below § 7.1, examples (155)–(158).

<sup>10</sup>Fiengo introduced it to prevent improper configurations like “\* $e_i$  was destroyed by [<sub>NP</sub> the barbarians] <sub>$i$</sub> ” (although he defined it in terms of linear order.)

<sup>11</sup>Of course, as several linguists have recently noted, if we adopt Chomsky’s (1995a, § 3.5) copy-theory of traces, the trace of the VP is really an unpronounced structure, and the DP binds its trace within the VP “trace”. This is not entirely unproblematic, even though the pronounced copy “[das Buch]” C-commands the unpronounced lower copy, and the unpronounced higher copy doesn’t C-command the pronounced copy:

(i) [<sub>VP</sub> [~~das Buch~~] gelesen] hat er [das Buch] nicht [<sub>VP</sub> [~~das Buch~~] gelesen]

The problem of dealing with the restrictions of course remains (see discussion in § 5 below).

derivational (dynamic) and representational (static). Although linguistic theories can be further subcategorized, for example into roughly monostratal (HPSG; in GB, Koster (1987)) and multi-level (LFG, T-model GB)<sup>12</sup>, we take this to be the chief dichotomy among generative transformational theories. There has been much discussion over the years as to the merits of the two approaches, and although we base most of the discussion in this chapter on derivational approaches, we would like to at least touch on representational alternatives for the analysis of RM in the literature.

RM presents a potential challenge to monostratal, representational approaches as well as derivational ones. In a typical case, the German sentence in (1), repeated below, it is unclear, in a monostratal theory, what the proper method of relating the participial verb *geschlagen* and its direct object *den Hund* should be.

- (9) geschlagen<sub>α</sub> hat er den Hund nicht e<sub>α</sub>  
 beaten has he the dog not  
 “He didn’t beat the dog”

(The trace  $e_\alpha$  here is for expository purposes.) Some prominent HPSG analyses, rather than using the SLASH feature (the equivalent to GB trace, and used for example for Vorfeldbesetzung), make use of argument percolation for the evacuated argument.<sup>13</sup> Furthermore, common to both approaches, is the need to ask whether the fronted constituent is a word (head-movement in GB terms), or some larger constituent. Although one generally thinks of “head-movement” in relation to phenomena like verb-second and subject-aux-inversion, apparently displaced “words” are attested in several languages, for example the fronted adjectives in Slavic languages (10) and the element before the second position clitic in the Australian language Warlpiri (11):

- (10) Interesnuju ja chital vchera knigu  
 interesting I read yesterday book  
 “Yesterday I was reading an interesting book” *Russian*
- (11) a. Ngarkanku kà wawiri pantirni kurrirdingki<sup>14</sup>  
 man-ERG is kangaroo-ABS spearing tall-ERG  
 “The tall man is spearing the kangaroo” *Warlpiri*
- b. Kurrirdingki kà wawiri ngarkanku pantirni (*same meaning*)

In GB/Minimalist approaches there has also been recent discussion of whether apparently fronted words in languages such as Spanish, Polish, and Hebrew, among others languages, are heads or remnant XPs. See comments in § 4.2.1. We return to this issue in § 7.

As noted above, the structure in (2) violates the Proper Binding Condition. Intuitively, this ought to be ill-formed for the same reason as a logical formula like  $\exists x P(y) [\forall y Q(x)]$ , where the variable  $y$  is outside the scope of its binding operator  $\forall y$ . Nevertheless RM constructions are quite natural in all languages where they are attested, and one would like to know why just these are allowed, but not other cases which the PBC rules out. We discuss Müller’s (1998) solution to this in § 5.2.3.

Since RM constructions occur across many languages, we need to ask what the conditions are which allow them. Based on the brief discussion so far, it looks as if “scrambling” might be involved, since it appears to be scrambling which extracts the DP. We would then expect

<sup>12</sup>Head-driven Phrase Structure Grammar, Lexical Functional Grammar, Government-Binding approach(es), respectively.

<sup>13</sup>See § 7.3.1 on De Kuthy & Meurers (2001) and S. Müller (2013).

<sup>14</sup>Either a word or a multi-word “constituent” can appear before *kà*.

that other languages that have scrambling (such as Dutch<sup>15</sup>) would allow RM fronting, and languages (like English) that don't would not allow RM. At first glance this seems to be borne out:

- (12) Gezongen heeft ze slechts vijf liederen gisteren  
 sung has she only five songs yesterday  
 "She only sang five songs yesterday." *Dutch*
- (13) a. [Beaten the dog]<sub>i</sub> he never has *e<sub>i</sub>*!  
 b. \*He (the dog) never (the dog) has beaten yesterday (the dog)  
 c. \*Beaten (has) he (has) the dog yesterday.

Although English allows VP preposing (13a), there is no (easy) way to evacuate *the dog*. A question is whether English allows so-called Heavy-NP shift to produce the environment for RM:

- (14) a. ?He criticized *e<sub>i</sub>* at the audition [not a single one of the applicants]<sub>i</sub>  
 b. \*?Criticized at the audition, he hadn't a single one of the applicants.

This author finds (14b) dubious, but one would need to experiment, especially with speakers of other varieties of English (British English seems to allow Heavy-NP more freely) and more complicated examples.<sup>16</sup> Of course, the analysis of Heavy-NP shift is controversial, and depending on the analysis one might not expect (14b) to be grammatical in the first place.<sup>17</sup> We return to this in discussing Müller (1998), who makes extensive use of extraposition in his analyses, cf. § 5.2.

One needn't go so far as to invoke Heavy-NP shift, however. As several linguists have noted, if passive involves (A-)movement<sup>18</sup>, then English has remnant movement:

- (15) a. Fred<sub>i</sub> never was criticized *e<sub>i</sub>* by his boss.  
 b. [Criticized *e<sub>i</sub>* by his boss]<sub>j</sub> Fred never was *e<sub>j</sub>* !

We will look below in § 5.2.5 at the claim that the two movements apparently have to be different types; English topicalization and passivization fulfill this criterion, as do German topicalization (movement to the Vorfeld) and scrambling.

One would hence expect other cases of English raising to generate RM constructions; this author and Müller (1998) have claimed them to be unacceptable, on the basis of cases involving raising:

- (16) John<sub>i</sub> didn't seem (to Mary) [*e<sub>i</sub>* to have the proper qualifications]  
 (17) \* [*e<sub>i</sub>* to have the proper qualifications], John't didn't seem (to Mary)

However one can easily find acceptable sentences; an example similar to (18) is cited by Stabler (2011), p.626:<sup>19</sup>

<sup>15</sup>Of course, "scrambling" is extremely limited in Dutch, but the object DP can occur to the left of adverbs, which would suffice.

<sup>16</sup>But see Sauerland (1999:25), cited by Ruys (2015):

- (i) David gave *t<sub>i</sub>* to each of the students [a paper that I had written]<sub>i</sub>.  
 (ii) ...and [*t<sub>k</sub>* give *t<sub>i</sub>* to each of the students]<sub>j</sub> David<sub>k</sub> did *t<sub>j</sub>* [a paper that I had written]<sub>i</sub>

(The present author finds the latter ungrammatical.)

<sup>17</sup>That is, like extraposition, discussed elsewhere in this chapter, there is the question as to whether Heavy NP Shift adjoins upward (standard view) or is in its base position (Kayne and followers).

<sup>18</sup>Not universally accepted, of course.

<sup>19</sup>Note that many authors, from Den Besten & Webelhuth (1990) to Ott (2010) tie RM to the presence of scrambling in a language; evidently this is not so.

(18) [How likely  $e_i$  to win the election] *is*  $he_i$ ?

Resolution of whether RM constructions do indeed involve movement leaving an unbound trace — solving this and other restrictions should shed some light on the shape of linguistic theory, as we will see, although numerous issues can't be resolved in the space of this chapter.

The situation has been complicated by the existence of various other constructions which also seem to be cases of Incomplete Category Displacement, in addition to the classic cases of “Remnant Movement” proper as in (2). The question arises as to whether the conditions on these constructions fall under the same conditions as those involving remnant VP movement: Müller (1998), among others, is an attempt to show this for a certain subset of these. We briefly discuss some of these other constructions in the following sections.

As noted (above), the principle problem is induced by a movement which apparently destroys the C-command relation between antecedent and trace. There are several questions we need to ask (but which can't be conclusively answered within the scope of this chapter):

1. Are these simply marginal data, or is this a construction common in a particular language? in a language family? universally common?<sup>20</sup> From the above discussion it would seem that cases of RM are widespread.
2. Are we dealing with a single construction, or several constructions with different properties? We return to this in the next section.
3. Does the relevant linguistic analysis necessitate the C-command destroying property? There is disagreement on this, and we return to the issue several times in the course of the chapter. Related questions are:
  - (a) In the case of A-movement, is there a trace? Cf. Lasnik's (1998) proposal that A-movement doesn't leave a trace.
  - (b) What about approaches without movement traces? (§ 7.1)
  - (c) In the case of employing “scrambling” or other Mittelfeld movements, what kind of movement is scrambling? (This will be important in approaches that explain restrictions on RM via movement type.<sup>21</sup>)
4. Which cases of non-C-command are acceptable, which are not, and why? This is the subject of § 5 and 6.
5. Can the construction be iterated? I.e., can more than one C-command relationship per clause (or sentence) be broken without resulting in severe ungrammaticality?
6. How does Chomsky's “Bare Phrase Structure” approach fare?

(We will not be able to do more than comment on the last two in passing, but the reader should keep them in mind.)

With respect to split VP in Germanic, there are two major areas of concern:

1. Is RM the proper analysis: is/are there independently available movements to partially evacuate the VP; if not, what sort of alternative analysis presents itself, e.g. (base-generated) V-projections without arguments.

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<sup>20</sup>Originally most of the literature was on Germanic, but there have been studies of other languages; see especially the discussion of Japanese in §6. Also there has been considerable discussion of other languages regarding “secondary” remnant movement (see text), but this doesn't bear directly on the issues raised by “primary” RM.

<sup>21</sup>Originally formulated with respect to the A-/A' distinction, but more recently w.r.t.. an expanded hierarchy.

2. Since clearly not all possible combinations of elements (and derivations) produce acceptable sentences, what are the restrictions? This is both an empirical issue, as there is some disagreement about the data, as well as a theoretical issue: can we explain the restrictions?

Finally, an issue which deserves more attention than we can give it here, and which is seldom discussed more than superficially in the literature, is the question of which category fronts. E.g., VP or vP? Another functional projection? Note that RM can only be shown convincingly for subcategorized phrases – (adverbial) modifiers, being optional, don’t obviously leave traces, and the question of where they are in the clausal structure goes beyond the scope of this chapter.

## 4 Types of “Incomplete Category Displacement”

Since Incomplete Category Displacement is really a group of constructions (possibly related to one another), we discuss briefly in the following some members of this class, some general properties of these construction(s), competing analyses and relevance to RM. We identify several distinct types of ICD constructions in the following.

### 4.1 “Diving” vs. “Surfing” constructions

While some of the constructions are indeed “remnant movement” in the sense of the previous paragraph and Stabler (1999), others are not<sup>22</sup>, and we need to make clear which have the relevant structural properties. We take the principle (problematic) characteristic of “remnant movement” is that it destroys the C-command relation between a trace and its antecedent. This is also explicitly assumed in Stabler (1999). It is not, however, a clear concept in the linguistic community as the discussion in the preface of Alexiadou *et al.* (2002), borrowing the definition in Müller (1998, p. 147; cf. § 5.2.4 below), shows. In their Preface, Alexiadou *et al.* (2002) state:

- (19) A constituent  $\alpha$  is a *remnant* iff  
           there are constituents  $\beta$  and  $\gamma$ ,  $\beta$  a trace and  $\gamma$  the antecedent of  $\beta$ ,  
           and such that  $\alpha$  includes  $\beta$  and  $\alpha$  excludes  $\gamma$ . [their number (16)]

This shares the problem discussed below with regard to Müller’s definition: while it is true that in a classical remnant construction such as (2), shown in (20a), constituent B obeys the above definition, so does a structure like A in (20b):<sup>23</sup>

- (20) a.  $[_B \dots e_A \dots] \dots [_X \dots A \dots e_B \dots]$  “Diving”  
       b.  $B \dots [_X \dots [_A \dots e_B \dots] \dots e_A \dots]$  “Surfing”

In (20b) A includes the trace  $e_B$  and excludes the antecedent B, as required by definition (19), and A has even been displaced (moved) from position  $e_A$ ; but the C-command relations are preserved, disqualifying it as a case of “true” remnant movement. An example would be (21b) [Müller (1998), (6)a–b, p. 143]:

- (21) a.   Worüber<sub>i</sub>   hat keiner [ein Buch  $e_i$ ] gelesen?  
           where-about has no-one a   book   read  
           “What has no one read a book about?”

<sup>22</sup>Note that so-called roll-up movement, Koopman & Szabolsci (2000), *usually* involves secondary remnant movement, but not always; e.g. Stabler himself (1999) mistakenly cites an example which doesn’t.

<sup>23</sup>These terms are adopted from Abels (2007), who makes a similar distinction; the terms were evidently originated by Sauerland (1996), building on Pesetsky’s (1982) idea of crossing and nested paths.

- b. \*Worüber<sub>i</sub> hat [ein Buch e<sub>i</sub>]<sub>j</sub> keiner e<sub>j</sub> gelesen?

In sentence (21b) the direct object has scrambled over the subject, followed by extraction of the PP, and the result has the structure of (20b). As to whether or not this structure always represents an grammatically unacceptable sentence, the opinions differ; Müller (1998) wanted to handle them together, since (21b) [= (20b)] is ungrammatical due to “freezing” (cf. § 5.2.4 below), contrasting to the “diving” case (remnant movement). Recent literature has taken a different view of examples with similar structure, and there is contradictory evidence both from German and Japanese.<sup>24</sup>

In any case (21b) does not represent true Remnant Movement, but rather a category which has been moved and becomes incomplete due to the subsequent extraction.<sup>25</sup> Since the constituent from which the direct object was extracted in classic remnant movement analyses like (2), repeated below, is presumably in its base position when the direct object is removed, it is not evident why we should expect there to be a freezing effect, although why violation of the PBC is permitted still needs to be explained.

$$(22) \quad [{}_{VP_\alpha} e_\beta \text{ geschlagen}] \text{ hat er } [{}_{\text{den Hund}}]_\beta \text{ nicht } e_\alpha \quad = (2)$$

Since Incomplete Category Displacement is a grab-bag of potentially disparate phenomena and analyses, we note in the following sections various constructions and their analyses which have fallen under this rubric in order to assess their distribution, characteristics and analyses, as represented in the linguistic literature.

<sup>24</sup> Cf. Chomsky (2008/2004), Stark (2001), Rizzi (2006), i.a., cited in Abels (2007), also Hunter (2012). For example, Chomsky claims that (illicit) extraction from a passive subject is better than extraction from an active subject because the former originally occupied a licit extraction site. Haider (2010 and earlier works) gives examples like the following showing that a moved constituent is not necessarily subject to freezing [his (4c), p.157]:

- (i) Was<sub>i</sub> hat denn [e<sub>i</sub> für Witze]<sub>j</sub> [jeder von euch] gestern e<sub>j</sub> erzählt?  
 what has thus for jokes every<sub>Nom</sub> of you yesterday told  
 “So what sort of jokes did each of you tell yesterday?”

The direct object *Was für Witze* has been moved over both the subject and the adverb, and *Was* extracted; the purpose of the discourse particle *denn* is to prevent the moved object from surfacing adjacent to the fronted finite verb, as in Müller’s examples, which according to Haider *does* result in unacceptability.

Note that Haider’s “*was für*” examples which show absence of freezing effect, as well as the ones with R-pronouns discussed below, satisfy Bošković’s (2016) criterion that the extractable element is already at a left edge. The question then remains as to why Diesing’s (1992) examples (and Müller’s) are bad; cf. discussion in Haider (2010, p. 158–9).

Interestingly, surfing in Japanese seems not to induce “freezing”, contradicting Müller’s hypothesis and much received wisdom. See discussion in § 6.1. These, too, would seem to fall under Bošković’s criterion.

When reviewing the numerous apparently conflicting judgements in the literature, “freezing” might be assumed to be an epiphenomenon, and cannot be invoked as a principle to rule out derivations, plausible as this may be, “freezing” positions typically being non-complement positions from which extraction is prohibited by Huang’s (1982) CED (Condition on Extraction Domains). Indeed, two colleagues, Norbert Corver (author of the SynCom chapter on freezing) and Hans Broekhuis, are preparing an article to this effect (p.c.) However, suggestive work by Abels (2007), discussed here, and Bošković’s (2016) mentioned above suggest possible reasons for the conflicting judgements, so we leave explanations invoking “freezing” for their historical value with the *caveat* to the reader that the explanations may not in fact be valid. See discussion of the data in subsequent sections.

<sup>25</sup>Müller (1998) attributes the freezing effect to extraction from a non-complement (Huang’s (1982) CED), a scrambled constituent being per definition not a complement. Applying the operations in (20b) in the reverse order, moving first B and then A, would violate the strict cycle condition (SCC, Chomsky 1973). In view of this, the Japanese data mentioned in footnote 24 and discussed in § 6.1 are unexpected.

## 4.2 Other “remnant” constructions

In addition to the German and Dutch “split VP” cases noted above, there are candidates for remnant fronted VP cases in various other languages, as well as other for other categories: cf. (10) and (11) above. We discuss briefly a few in the following sections.

### 4.2.1 Other cases of V(P)-fronting

Müller (1998) mentions Breton and Serbo-Croatian (p.8–9), but notes that the former is not likely to be of the German/Dutch type, since there is no non-finite VP fronting.

Skandinavian, although lacking scrambling, seems to have something like German RM [Swedish, from Holmberg (1999), (11a)]:

- (23) Kysst har jag henne inte (bara hållit henne i handen).  
kissed have I her not only held her by hand-the

Swedish does have VP-fronting [his (12a)]:

- (24) Kysst henne har jag inte (bara hållit henne i handen)  
kissed her have I not only held her by hand-the

There is more suggestive evidence: object shift in Swedish only applies to pronouns, so if a full DP is used, the construction in (23) is predictably impossible [his (25b)]:

- (25) \*Kysst har jag Marit inte  
kissed have I Marit not

However, the sentence with non-shifted object is only slightly odd [his (25a)]:

- (26) ?Kysst har jag inte Marit  
kissed have I not Marit

which Holmberg attributes to information structural factors. There also remains a problem for a RM analysis of (23) of ordering the object-shift *vis à vis* V-movement: object shift is only allowed when the verb selecting the object is *not* in the VP. Hence we either move the participle verb to Spec,CP first and then move the object pronoun counter-cyclicly, or we move the object and then “repair” the illicit structure (the object has moved even though the main verb is present in the VP) by fronting the verb. Holmberg, however, opts here for V<sup>0</sup> movement.<sup>26</sup>

Similar constructions occur several Slavic languages: for example, the participle can be fronted in Bulgarian and Serbo-Croatian:

- (27) Čel (\*bŭrzo) e / beše knjigata (bŭrzo)  
read<sub>part.m.sg</sub> quickly be<sub>pres/past.3sg</sub> book-the quickly

Migdalski (2006) has an extensive discussion of these cases, see especially his § 2.3.5, which argues for L-participle fronting as remnant-movement of an XP as opposed to V<sup>0</sup> movement, as has been argued for by others in the literature. Also his chapter 5 which deals with this phenomenon in Polish.<sup>27</sup>

The number of languages which have apparent V<sup>0</sup> fronting has grown over the years, now also encompassing Spanish (Vicente 2009), Vietnamese (Trinh 2009), and Hebrew (Landau

<sup>26</sup>See however SynCom chapter Holmberg “Stylistic Fronting” for a discussion another candidate for remnant movement in Swedish, namely Ott’s (2009) analysis of stylistic fronting.

<sup>27</sup> See also Bański (2002) for arguments that there is prosodic (and in addition syntactic) evidence in Polish that adjective fronting involves remnant movement of an AP, not head movement.

2007) plus Vata (Koopman 1984!). Many of the authors argue for  $V^0$  fronting or generation in place, since the characteristics of the construction in several of these languages differs. For example, the verb is doubled in Spanish, but with different tenses [Vicente (2009), (1a)]:

- (28) Leer, Juan ha leído un libro  
 read.inf Juan has read a book  
 “As for reading, Juan has read a book”

Although the infinitive form would suggest base-generation, Vicente argues that there is movement, but what is “attracted” are the bare features of the V, hence it is spelled out as an infinitive. Trinh (2009) also argues for a copy analysis with deletion in certain languages.

#### 4.2.2 Split NPs

In addition to the split-VP type of construction discussed so far, there are a number of other constructions which are candidates for remnant movement analyses. Noun phrases (DPs<sup>28</sup>) can also be split; aside from the case in (21a), which is not remnant movement since the remnant DP doesn’t move, there is the opposite sort of split, where part of the DP is fronted and a PP, for example, is stranded:<sup>29</sup>

- (29) a. Er hat [<sub>DP</sub> eine Platte von Heino] gespielt  
 he has a record of Heino<sub>Dat</sub> played  
 “He played an LP by Heino”  
 b. Eine Platte hat er von Heino gespielt

There are several types: separating Det+Noun and PP above as in (29b); *was für*-split as in (30b); and partial DP fronting as in (31b):

- (30) a. [<sub>DP</sub> Was für Männer] hat Zelda  $e_i$  getroffen?  
 what for men has Zelda met  
 ‘What kind of men did Zelda meet?’  
 b. Was $_i$  hat Zelda [<sub>DP</sub>  $e_i$  für Männer] getroffen?  
 (same meaning)
- (31) a. Ich habe kein Auto  
 I have no car  
 “I don’t have a car”  
 b. Auto $_i$  habe ich [<sub>DP</sub> keins  $e_i$  ]  
 Car have I none

Particularly the last type is not straightforwardly extraction (note the difference in morphology between (a) and (b): *kein* vs. *keins*). We discuss the first type in conjunction with Müller (1998) (see section 5.2); for a more detailed discussion, see SynCom chapter van Hoof “Split Topicalization”, as well as van Riemsdijk (1989) and Fanselow & Ćavar (2002).

#### 4.2.3 Remnant extraposition?

Müller (1998) makes extensive use of remnant extraposition for problematic cases. However, there is a recurring problem in German/Dutch syntax: except for marked cases, object DPs occur to the left of the verb and finite CPs to the right:

<sup>28</sup>We use DP instead of NP for consistency, following the current consensus.

<sup>29</sup> See discussion in § 5.2.1.1 and Müller (1998) Chap.1, § 2.3 for arguments that the PP is indeed part of the DP and is extracted.

- (32) a. Weil Hans uns eine Geschichte erzählt hat, ...  
 because Hans us a story told has,  
 ‘Because H told us a story ...’  
 b. Weil Hans uns erzählt hat, dass Sandra gelogen hat  
 because Hans us told has, that S lied had

For those who assume an SOV base, the CP has been extraposed, and should be frozen; yet for speakers who allow WH-extraction, the extraposed CP is by far the preferred extraction site. For those who assume a Kaynean SVO base with intraposition of the direct object, the mirror image problem arises: the DP should be opaque, contrary to fact. (See footnote 29.) A third alternative is to base generate both in their respective positions, i.e. (DP) V (CP), with all the attendant problems of licensing,  $\theta$ -assignment, etc. A solution proposed in Müller (1998), who advocates a single base object position in an SOV structure, is that the [+WH] DP is first extracted to an intermediate position — e.g. Spec,vP as one would say nowadays — the remnant CP is extraposed to a higher position (say, IP), and the WH phrase is subsequently moved to Spec,CP. See discussion in §5.2.4.2. Notice this obeys the Strict Cycle Condition (SCC, cf. footnote 25).

#### 4.2.4 Missing (finite) verbs?

A recurrent misperception in the literature, beginning with Takano (2000) and Lasnik (1999), and referred to by Funakoshi (2013) as Takano’s Generalization:

- (33) XP-movement is prohibited if the head of XP has moved out of XP

This is based on various data from German (plus Japanese and English) like (34a), which is indeed bad:

- (34) a. \*Ihr ein Buch gab Hans  
 her.DAT a.ACC book gave Hans  
 ‘Hans gave her a book’  
 b.  $[_{VP} \text{ ihr } e_i \text{ ein Buch}]_j \text{ gab}_i \text{ Hans } e_j$

The presumed structure is in (34b). However the statement of the generalization in (33) can’t be correct, as sentences parallel structurally to (34a) are widely attested; cf. the (35a) from Fanselow (2002) [his (56c)] and (35b) from this author after Müller (1998:80c):

- (35) a. den Hubert seinen Wagen habe ich noch nie waschen sehen  
 the.ACC H. his.ACC car have I yet never wash seen  
 ‘I have never seen Hubert wash his car’  
 b. Kindern solche Süßigkeiten sollte man nicht geben!  
 children.DAT such.ACC sweets should one not give  
 ‘One shouldn’t give that kind of candy to children’

The two otherwise independent constituents,  $DP_i$   $DP_j$ , in the Vorfeld can be accounted for by assuming a Larsonian shell structure (Larson 1988), as does Funakoshi, but without the prohibition in (33). There is, in fact, a project at the Freie Universität in Berlin devoted to studying under what conditions such constructions can occur; cf. Bildhauer (2011) as well as publications cited therein by Stephan Müller and Philippa Cook; G. Müller (1998) has examples as well, cf. discussion in §5.2.5.4. For a recent discussion and reply to Funakoshi, see Vicente (2015).

We now turn to the literature which deals with explaining the (apparent) restrictions on remnant movement in §5 and §6, concentrating on remnant VP movement and remnant

DP/PP constructions, chiefly in Germanic, but with some mention of (problematic) Japanese data.

## 5 Explaining the restrictions (on the canonical cases)

### 5.1 Den Besten & Webelhuth (1990)

The earliest of these is by Hans Den Besten and Gert Webelhuth, building on their earlier (1987) GLOW presentation. There are three important observations in their (1990) article (henceforth DB&W), namely the (alleged) ungrammaticality of remnant movement involving a stranded preposition and a participle — cf. the paradigm in (36) below — and the ungrammaticality of an unbound *intermediate* trace, as opposed to the unbound trace in the Vorfeld. Although both of these claims are contested in Müller (1998) (see discussion in §5.2.1.2) they are important recurring issues in the literature. But perhaps most importantly, they introduce the data which will be most problematic for subsequent RM approaches: vacuous scrambling seems to be necessary, and it doesn't cause “freezing”; cf. (53a) below.

The examples in the article are given in DB&W in German, the presumption being that similar facts hold for Dutch.<sup>30</sup> The paradigm in (36) is based on their examples (4)-(5):

- (36) a. Hans hat nicht damit gerechnet<sup>31</sup>  
       P has not there-with reckoned  
       “Hans didn't reckon with that”  
       b. Hans hat da nicht mit gerechnet  
       c. Da hat Hans nicht mit gerechnet  
       d. Leider hat Hans da nicht mit gerechnet (“Unfortunately...”)  
       e. [<sub>VP</sub> [<sub>PP</sub> Damit] gerechnet]<sub>i</sub> hat Hans nicht  
       f. \* [<sub>VP</sub> [<sub>PP</sub> e<sub>j</sub> Mit (e<sub>j</sub>)] gerechnet]<sub>i</sub> hat Hans da<sub>j</sub> nicht<sup>32</sup> [DB&W's (4) p. 78]

As one can see from (36b) and (36c), *da+mit*, the preposition and its preposed pronominal object, are separable. Sentence (36d) shows that the *da* can land after subject in the Mittelfeld. But although VP preposing is fine (36e), remnant movement stranding *da* seems to be impossible (36f) here. Although Den Besten and Webelhuth give this sentence a star, a similar example in Müller (1998), gets only a question mark:

- (37) ?Mit gerechnet hat da keiner  
       with reckoned has there no-one  
       “No one reckoned with that” [M's (38a), p. 15]

Note the difference: the “low” subject *keiner* may make the sentence more plausible, cf. “Weil das Buch doch keiner gelesen hat, ...” (‘because the book<sub>Acc</sub> indeed no-one<sub>Nom</sub> read has’). For the sake of clarity and ease of following DB&W's original text, we will illustrate

<sup>30</sup>Although they may be based primarily on Dutch judgements, cf. discussion in §5.2.1.2.

<sup>31</sup>Although German and Dutch are prepositional, *mit ihm* ‘with him’, inanimate objects usually appear before the preposition. Similar data obtain in Dutch with *daar+me* and *er+mee* “there+with” (*mee* = the bound form of *met*). These are generally referred to in German and Dutch as R-pronouns because the Dutch forms end in “-r”, cf. Riemsdijk (1978).

While the separation of *da* and *mit* seems to be subject to some speaker variation in German, it is normal in standard Dutch. Cf. Fleischer (2002a,b). See following discussion in main text as to differences between Dutch and German judgements.

<sup>32</sup>DB&W's example only has the trace before *mit*, where the *da* would have been; but see later discussion.

their arguments with German sentences, as they do, but with the caveat that the judgements may hold only for Dutch. We return to these data, and the differences in judgements, in § 5.2.1.2 “Remnant PPs”.

Assuming that fronting of a single participle is indeed to be analysed as a case of remnant movement (as opposed to Fanselow (2002) and others, see § 7), DB&W concentrate in the remainder of their article on finding an explanation for this remarkable peculiarity of the construction<sup>33</sup>: as shown above in the paradigm in (36), the inability of fronting a PP+V<sub>prt</sub> combination from which the pronominal object of the PP has been removed to a position in the Mittelfeld is unexpected, since the latter operation is allowed in German and Dutch, as shown in (36b,d).

Their strategy is to draw a parallel with other cases of split constituent fronting. In addition extraction of the *da* from the PP in (38a), they cite split DPs as in (38b) and the *was-für* construction in (38c); cf. (30b), (31b) and SynCom chapter van Hoof “Split Topicalization”:

- (38) a.  $Da_i$  hat Hans nicht [<sub>PP</sub> mit  $e_i$ ] gerechnet = (36c) *P-stranding*  
 b. Bücher <sub>$i$</sub>  hat Hans [<sub>DP</sub> keine  $e_i$ ] gelesen  
 books has Hans no read  
 ‘Hans has read no books’ *split-DP(NP)*<sup>34</sup>  
 c. Was <sub>$i$</sub>  hat Hans [<sub>DP</sub>  $e_i$  für Leute] getroffen?  
 what has Hans for people met  
 ‘What kind of people did Hans meet?’ *was-für split*, cf. (30b)

They assume that each of these leaves through a specifier “escape-hatch”:

- (39) a. [<sub>PP</sub> [<sub>AdvP</sub>  $da_i$ ] [<sub>P'</sub> [<sub>P</sub> mit]  $e_i$  ]]<sup>35</sup>  
 b. [<sub>DP</sub> [<sub>NP</sub> Bücher] <sub>$i$</sub>  [<sub>D'</sub> [<sub>D</sub> keine]  $e_i$  ]]  
 c. [<sub>DP</sub> [<sub>NP</sub> was] <sub>$i$</sub>  [<sub>D'</sub> [<sub>D</sub>  $\emptyset$ ] [<sub>NP</sub>  $e_i$  [<sub>PP</sub> für Leute] ]]<sup>36</sup>

They observe that the three constructions behave alike: the evacuated DP/PP cannot be preposed without the verb, nor can it be scrambled, among other parallelisms<sup>37</sup>. For example,

- (40) a. \* [<sub>PP</sub>  $e_i$  mit] <sub>$j$</sub>  hat er  $da_i$  nicht  $e_j$  gerechnet  
 b. \* [<sub>DP</sub>  $e_i$  keine] <sub>$j$</sub>  hat er Bücher <sub>$i$</sub>   $e_j$  gelesen  
 c. \* [<sub>DP</sub>  $e_i$  für Bücher] <sub>$j$</sub>  hat er was <sub>$i$</sub>   $e_j$  gelesen

And for all of these, the (small) remnant cannot be topicalized with together with the verb:

- (41) a. \* [<sub>VP</sub> [<sub>PP</sub> ( $e_i$ ) Mit ] gerechnet] <sub>$j$</sub>  hat Hans  $da_i$  nicht  $e_j$  = (36f)  
 b. \* [<sub>VP</sub> [<sub>DP</sub>  $e_i$  keine] gelesen] <sub>$j$</sub>  hat er Bücher <sub>$i$</sub>   $e_j$   
 c. \* [<sub>VP</sub> [<sub>DP</sub>  $e_i$  für Bücher] gelesen] <sub>$j$</sub>  hat er was <sub>$i$</sub>   $e_j$

Setting aside some problematic examples (cf. Thiersch *in prep.*), we see that DB&W’s (preliminary) hypothesis, (42), draws the correct distinction:

<sup>33</sup>The original observation was made for Dutch by Riny Huijbregts *p.c.*

<sup>34</sup>We note in passing that analysing the split DP construction as movement is anything but uncontroversial: cf. “Einen Wagen hat er sich noch keinen leisten können” (*lit.* A car has he self yet none permit can, “He still can’t afford a car”) where the D<sup>0</sup> position is apparently filled in both places, and example (31b) in the introduction.

<sup>35</sup>“AdvP”: *sic.*

<sup>36</sup>*Sic.*, the PP is adjoined to the NP *was*, cf. their (13).

<sup>37</sup>See Thiersch (*in prep.*) for details and more discussion.

(42) (Unbounded<sup>38</sup>) traces in specifier positions are not reconstructable. [cf. their (36)]

In all the ungrammatical cases, e.g. (41), there is an *unbound* trace in a specifier position; in extraction of the “operator” alone, there is a trace in a specifier position,  $e'_i$ , but it is C-commanded by its antecedent:

- (43) a.  $Da_i$  hat er nicht [<sub>PP</sub>  $e'_i$  mit  $e_i$ ] gerechnet cf. (38)  
 b. Weil er  $da_i$  nicht [<sub>PP</sub>  $e'_i$  mit  $e_i$ ] gerechnet hat cf. (36d)

This was intuitively plausible in the spirit of the times, as it was clear that specifiers were restricted in their extraction possibilities, not being “properly governed”. The unbound trace in simple VP remnant preposing, on the other hand, is properly head-governed by the verb *gelesen* (and the traces in (43) are antecedent governed)<sup>39</sup>:

- (44) [<sub>VP</sub>  $e_i$  gelesen]<sub>j</sub> hat [<sub>DP</sub> diese Bücher]<sub>i</sub> keiner  $e_j$   
 read has these books no one

An apparent problem is the specifier escape-hatch; this was introduced for PPs in Van Riemsdijk (1978), although it has been questioned by Grohmann (2003) i.a. as being “too local” and hence disallowed. Note that in the split DP construction, the split can also occur in the Mittelfeld, yet the remnant still can’t appear in the Vorfeld<sup>40</sup>:

- (45) a. Weil er Bücher während seines Studiums nicht viele gelesen hat ...  
 because he books during his study not many read has  
 b. \*Nicht viele hat er Bücher während seines Studiums gelesen

DB&W would presumably claim there is an unbound trace of *Bücher* in the specifier of the DP: [<sub>DP</sub>  $e_i$  [*nicht viele*  $e_i$ ]], but its not clear where this high position would be, as it superficially seems to be filled in examples like the following:

- (46) Bücher<sub>i</sub> hat sie nur [<sub>DP</sub> Karls/Goethes  $e_i$ ] gelesen<sup>41</sup>

Even in approaches which advocate numerous functional categories in the DP as in (47b), the possessive has risen to the top specifier [É. Kiss (2002) p.161–2]:

- (47) a. János-nak a két fi-a  
 John-DAT the two son-POSS  
 John’s two sons  
 b. [<sub>DP</sub> János<sub>i</sub>-nak [<sub>DP</sub> a] [<sub>AGR</sub>P  $e_i$   $\emptyset$ ] [<sub>NUM</sub>P két  $\emptyset$ ] [<sub>POSS</sub>P  $e_i$  [<sub>POSS</sub>° -a] [<sub>NP</sub> fi- ]]]]]

Clearly this indicates the need for some rethinking.

A piece of supporting evidence for this approach given by DB&W is that in general, *intermediate* unbound traces seem to decrease grammaticality. (This issue is taken up by Müller 1998; see discussion in § 5.2.6.) This follows from DB&W’s hypothesis since an intermediate trace of, say, WH-movement would be in Spec,CP and fall under generalization (42), as amended, see footnote 38. Unfortunately, this is a bit hard to test, since such sentences are so complicated that some speakers have difficulty judging them. The following examples gradually build up to the crucial case.<sup>42</sup>

<sup>38</sup> Their original definition didn’t include the qualification “unbounded”, but one doesn’t want to exclude properly bounded traces in, for example, Spec,CP

<sup>39</sup> *Government*: Recall that traces can be licensed by a selecting sister or by an “unbroken” path to the antecedent. Cf. for example Haegeman (1994).

<sup>40</sup> With special I-topic intonation, cf. Jacobs (1997) among many others. Example (a) due to colleagues Jana Häussler, Gisbert Fanselow, i.a.

<sup>41</sup> Assuming an analysis like [<sub>DP</sub> Karl [<sub>DP</sub>° ’s] [<sub>NP</sub> Bücher]] as in Abney (1987).

<sup>42</sup> The *es/was* are underlined, so the reader can keep track of the position, and the allegedly offending trace is bold-faced.



Given the controversial nature of the data, we postpone further discussion until later<sup>45</sup>.

There is a further problem, which will bedevil the RM discussion in subsequent years. As expected, extraction is not possible from a moved constituent (recall “freezing” effect discussed earlier; also below and in SynCom chapter Corver “Freezing”):

(52) \*Da<sub>i</sub> hatten wir [<sub>PP</sub> e<sub>i</sub> mit]<sub>j</sub> nicht e<sub>j</sub> gerechnet

Examples like the following are acceptable for many speakers [dB&Ws (44)]:

(53) a. Gerechnet hatte Peter da nicht mit  
 b. *Structure*: [<sub>VP</sub> e<sub>j</sub> gerechnet]<sub>k</sub> hatte Peter da<sub>i</sub> nicht [<sub>PP</sub> e<sub>i</sub> mit]<sub>j</sub> e<sub>k</sub>

Here the PP must have moved out of the VP (since it is stranded), but then it should be frozen<sup>46</sup>.

DB&W advance two hypotheses: (I) the PP is adjoined to VP and hence C-commanded (and governed) by the higher Verb (or its trace); (II) extraction can take place if the PP is “adjacent” to the verb or its trace. Relevant to (II), note that *da* can be extracted from some argument PPs, but only if they are adjacent to the verb as in (a) vs. (c), cf. (b):

(54) a. Da<sub>i</sub> hat Peter sie/die Dose [e<sub>i</sub> mit] geöffnet  
 there has P. it/the can with opened  
 “Peter opened the can with it”  
 b. Peter hat sie damit nicht geöffnet  
 c. \*Da hat Peter sie mit nicht geöffnet

Note that the stranded PP in (53b) is actually adjacent to a trace of the VP which “contains” the trace of the verb (under a theory which countenances layered traces, such as the Minimalist copy-theory of traces)<sup>47</sup>.

Can one decide between hypotheses (I) and (II)? DB&W give the following argument: First we note that complement PPs in DPs can be extracted:

(55) a. [<sub>DP</sub> Das Vorwort vom Buch] hat er schon gelesen  
 the preface of.the book has he already read  
 ‘He already read the preface of the book’  
 (*Shows DP with PP is a single constituent*)  
 b. Er hat noch nicht das Vorwort da-von gelesen  
 he has yet not the preface there-of read

<sup>45</sup>Note that (50b) also involves an unbound *intermediate* trace, as in example (48d) and discussion of Müller (1998) in § 5.2.6, hence one might ask whether these might fall under whatever conditions rule such examples out. However, there would then be no explanation for the difference, noted here in the text and discussed following (65b) in § 5.2.1.2 between Dutch and German with regard to the \*P+V examples.

<sup>46</sup>Note this is still not resolved: Müller (2014) proposes two possible solutions, cf. § 6.2; Ott (2010) on the other hand, takes this to indicate that the PP here and other XPs elsewhere haven’t moved, and that the RM analysis is wrong; cf. § 7.2. (NB: This is also discussed in Müller (1998).)

<sup>47</sup>DB&W suggest that “small clause” predicates may be a problem but give no examples. Here is one from Dutch:

- (i) Hij heeft er<sub>i</sub>/daar<sub>i</sub> de muur [e<sub>i</sub> mee] groen geschilderd.  
 he has there the wall with green painted  
 ‘He painted the wall green with it’ (i.e. therewith)
- (ii) Geschilderd heeft hij er/daar de muur groen mee
- (iii) Geschilderd heeft hij er/daar de muur mee groen

It would seem that DB&W think these are a problem because the adjective intervenes in the unmarked order; but several Dutch speakers found (ii) and/or (iii) acceptable, so one might assume that adjacency to the adjective licenses the extraction in the same manner as adjacency to the verb.

- c. Er hat noch nicht davon das Vorwort gelesen
- d. Er hat davon noch nicht das Vorwort gelesen

In (c) the PP appears to the left of the DP and in (d) has been scrambled further to the left. From these positions, no extraction is possible [their (55)]:

- (56) a. \*Da<sub>i</sub> hat er noch nicht [e<sub>i</sub> von] das Vorwort gelesen
- b. \*Da<sub>i</sub> hat er [e<sub>i</sub> von] noch nicht das Vorwort gelesen

DB&W note that (56a) decides between the two hypotheses, as the PP could be governed by the (trace of the) higher verb here. They note that *da* can be extracted from the PP just when it is adjacent to the verb:

- (57) a. Er hat da<sub>i</sub> noch nicht [das Vorwort [e<sub>i</sub> von]] gelesen
- b. Er hat da das Vorwort noch nicht von gelesen
- c. *Structure?*: Er hat da<sub>i</sub> [das Vorwort e<sub>k</sub>]<sub>j</sub> noch nicht [e<sub>i</sub> von]<sub>k</sub> e<sub>j</sub> gelesen

However, we note that (57b) is a problem in several respects: the PP has been extracted from the DP (because its remainder is stranded), so it must have moved; hence if freezing is at work in these judgements, the extraction of *da* still violates the expected freezing. (This is a constant theme in the literature). Furthermore *das Vorwort* is a remnant DP; the derivation must be to extract the PP, move the remnant DP, and then extract *da* (which should be impossible)<sup>48</sup>.

Finally, DB&W claim that hypothesis II makes the right prediction in the remnant VP cases: if *das Vorwort* has scrambled, the preposed VP must be completely empty except for the verbal participle<sup>49</sup> [their (57)–(59)]:

- (58) a. [<sub>VP</sub> e<sub>k</sub> e<sub>j</sub> gelesen]<sub>m</sub> hat er da<sub>i</sub> [das Vorwort]<sub>k</sub> noch nicht [<sub>PP</sub> e<sub>i</sub> von ]<sub>j</sub> e<sub>m</sub>
- b. \* [<sub>VP</sub> Das Vorwort e<sub>j</sub> gelesen]<sub>m</sub> hat er da<sub>i</sub> noch nicht [<sub>PP</sub> e<sub>i</sub> von]<sub>j</sub> e<sub>m</sub>
- c. [<sub>VP</sub> Das Vorwort e<sub>j</sub> gelesen]<sub>m</sub> hat er davon<sub>j</sub> noch nicht e<sub>m</sub>

In their terms, (58a) is grammatical because the PP is next to the trace of a constituent containing only the verb; (58b) is bad because the PP is next to the trace of a constituent which contains the DP, hence no adjacency; and for comparison, (58c) is OK since it's just normal remnant movement. If we attribute the effects to freezing, however, (58a) is problematical in the same way as (57b).

Conclusion: very interesting data, which have formed the basis of further accounts. (But note the aforementioned difference between Dutch and German, with regard to fronting the remnant P with the Verb.) However, the solution uses two dubious concepts: the ability of reconstruction in LF to determine extractability, and string-adjacency: in the spirit of the times then, one would like to have had the facts reduce to government. Nowadays, of course, the concept “government” is not employed in “minimalist” analyses and one needs to seek another solution. For a proposal to account for DB&W’s insight that extremely local scrambling doesn’t cause freezing, cf. Müller (2014), discussed in § 6.2.

<sup>48</sup>There doesn’t seem to be an exact match in Müller (1998), he just discusses the PP+V cases. Note that Bošković’s (2016) would presumably solve the problem and correctly predict extraction of the *da* in (57b) to be good. But there remains the problem of the Mittelfeld scrambling of the remnant DP *das Vorwort* – on the face of it, movement of the PP and DP are both scrambling, and the sentence should be bad according to Müller’s UD – see (104) in § 5.2.5. But if they are different types, the sentence might be (correctly) ruled in, especially if the movement of the PP is a lower “type” of movement than scrambling of the remnant DP. See § 6.1.

<sup>49</sup>Of course, multiple constituents can be preposed with the V<sub>part</sub> (“Den Kindern Bücher geben wird er nicht”); the prohibition is against including a constituent which is itself a remnant.

## 5.2 Müller (1998): His analysis, assuming movement

Gereon Müller’s encyclopedic work *Incomplete Category Fronting* (1998) (henceforth Mü, unless accompanied by a date) developed from his Habilitationsschrift has influenced most of the subsequent discussion of primary remnant movement the last years. As he points out, however, the book is eclectic and does not cover certain types of apparent incomplete category fronting such as the type of partial DP fronting illustrated in (31b) in § 4.2.2, which seem to have different properties from RM *per se*.

Due to space limitation we cannot discuss all of the complex arguments in a monograph of this length, and so concentrate on the most important (and influential) observations and hypotheses. We begin with a brief discussion of Mü’s (new) data, and briefly summarize his theoretical assumptions. We then consider his arguments that the PBC is a pseudo-generalization and can be derived from other considerations for the cases where it seems to hold. He then offers an explanation for the difference between surfing (freezing) which is ungrammatical and diving (remnant movement) which isn’t, although this apparently needs to be revised in view of subsequent data. The core case has to do with the asymmetry of movement types, subsequently known as the “Müller-Takano generalization”.<sup>50</sup> We also consider briefly Mü’s reanalysis of DB&W’s observation about the ungrammaticality of unbound *intermediate* traces.

### 5.2.1 Basics: characteristics of the data

While DB&W concerned themselves chiefly with remnant VP topicalization, Mü introduces some new types of remnant preposing and observations about their characteristics.

**5.2.1.1 Remnant DPs** Hypothetically, certain cases of so-called DP split mentioned in the introduction as in (29b), repeated here, could be cases of remnant movement. For example, (59a) could have the structure in (59b):

- (59) a. Eine Platte hat er von Heino gespielt = (29b)  
 b.  $[_{DP} \text{ Eine Platte } e_i]_j \dots [_{PP} \text{ von Heino}]_i e_j \dots$

It has been argued that (some) DPs containing a PP can be reanalysed as a DP-PP sequence, permitting the DP to be extracted, and hence the preceding example is not a case of RM<sup>51</sup>:

- (60) a. She read  $[_{DP} \text{ some books } [_{PP} \text{ about Nixon}]] \rightarrow$   
 b. She read  $[_{DP} \text{ some books}] [_{PP} \text{ about Nixon}]$  (*cf.* She read about Nixon.)  
 c.  $[_{DP} \text{ Which books}]_i$  did she read  $e_i$  about Nixon?

The motivation for deriving (c) from (b), not (a) is that deriving it from (a) would involve moving a non-constituent (unless RM is involved, which is what Mü will claim). In German, unlike English, the PP seems easily extractable from the DP, both into the Vorfeld as well as in the Mittelfeld<sup>52</sup>:

- (61) a.  $[_{PP} \text{ Worüber}]_i$  hat keiner  $[_{DP} \text{ ein Buch } e_i]$  gelesen?  
 where-about has no-one a book read?  
 ‘What has no one read a book about?’

<sup>50</sup>This idea apparently was originally broached in Müller (1993) and Takano (1994); see Müller (2014).

<sup>51</sup>Cf. Chomsky (1977)

<sup>52</sup>Recall that inanimate PPs are postpositional, cf. footnote 31. English extraction of the PP seems highly marked, “\*About what did she read a book?” although stranding is fine: “√What did she read a book about?”

- b. Weil  $[_{PP} \text{ darüber}]_i$  keiner je  $[_{DP} \text{ ein Buch } e_i]$  gelesen hat, ...  
 because there-about no-one ever a book read has

Hence the first part of the discussion involves showing that a PP which seems to be part of a DP is in fact internal to the DP, and an apparently scrambled PP is not a case of a moved PP from a DP PP sequence; that is, as opposed to the analysis in (60), (62a) is derived from (62b), not (62c); and (62d) is therefore a case of RM, as shown:

- (62) a. Weil Antje über die Liebe ein Buch gelesen hat ...  
 because A. over the love a book read has  
 Because Antje read a book about love, ...  
 b. Weil Antje  $[_{PP} \text{ über die Liebe}]_i$   $[_{DP} \text{ ein Buch } e_i]$  gelesen hat ...  
 c. Weil Antje  $[_{PP} \text{ über die Liebe}]_i$   $[_{DP} \text{ ein Buch } e_i]$  gelesen hat ...  
 d.  $[_{DP} \text{ Ein Buch } e_i]_j$  hat Antje  $[_{PP} \text{ über die Liebe}]_i e_j$  gelesen

Mü argues that this shows the typical characteristics of movement (e.g., not out of subjects, etc.) and hence is a case of movement of the PP and fronting of the remnant DP<sup>53</sup>. (Recall that the cases discussed in DB&W, partial DP topicalization (38b) and was-für split (38c), were arguably not cases of RM.)

**5.2.1.2 Remnant PPs** Since neither Dutch nor German allows the separation of the P and a full DP, either by topicalization or scrambling, it comes as no surprise that there is no topicalization of remnant PP in these cases:

- (63) a. \* $[\text{Welchen Umständen}]_i$  hat niemand  $[\text{mit } e_i]$  gerechnet?  
 which circumstances has no-one with reckoned  
 “Which circumstances did no one reckon with?”  
 b. \*Eigentlich hat solchen Umständen niemand mit gerechnet!  
 Actually has such circumstances no-one with reckoned  
 c. \*Mit hat eigentlich solchen Umständen niemand mit gerechnet

However, separation of the R-pronoun from the preposition (actually, postposition) *is* possible, so it comes as a bit of a surprise that preposing the remnant isn’t possible:

- (64) a. Hans hat da nicht  $e_i$  mit gerechnet = (36b)  
 b. \* $[_{PP} e_i \text{ mit}]_j$  hat er da $_i$  nicht  $e_j$  gerechnet = (40a)

Mü attributes this to the impossibility of fronting a particle in German; although this can’t be the whole story, as certain particles *can* be fronted. Recent work<sup>54</sup> drawn the distinction between “transparent” particles, which can be fronted, and “opaque” ones which cannot (e.g., those belonging to idioms). The question then becomes to which class the PP associated with *rechnen* belongs, a possible topic for future research.

In the ensuing discussion however, there is a big surprise: Mü contrasts the following two examples:

- (65) a. \* $[_{VP} [_{PP} e_i \text{ mit}] \text{ gerechnet}]_j$  hat  $[_{DP} \text{ diesen Umständen}]$  keiner  
 b. ? $[_{VP} [_{PP} e_i \text{ mit}] \text{ gerechnet}]_j$  hat da $_i$  keiner  $e_i$  = (36f)

<sup>53</sup>See Thiersch (*in prep.*) for discussion of some problematic data, as well as Mü for details.

<sup>54</sup>Trotzke & Quaglia (2016)

The ungrammaticality of (65a) follows directly from (63b), but (65b) is parallel to (36f), to which DB&W gave a star. A preliminary informal survey of colleagues and friends in Germany and the Netherlands seems to confirm that sentences like (36f)/(65b) are indeed rejected by Dutch speakers, but, perhaps surprisingly, widely accepted by German speakers, confirming Müller’s judgement. Clearly this is a topic for future research.<sup>55</sup>

**5.2.1.3 Coherent infinitives** As further evidence that “scrambling” evacuates the fronted VP, Mü notes that German has two kinds of embedded infinitive clauses: “coherent” (*kohärent*), which behave as though there they are a transparent part of the main clause, and “non-coherent” (*inkohärent*), which behave as separate clauses. One can “scramble” arguments out of a coherent infinitive into the main clause, but not out of non-coherent infinitives.

- (66) a. Weil  $[_{DP}$  das Buch] $_i$  keiner  $[_\alpha$   $e_i$  zu lesen] versucht hat, ...  
           because    the.ACC book   no-one.NOM       to read   tried   has  
       b. \*Weil  $[_{DP}$  das Buch] $_i$  keiner  $[_\alpha$   $e_i$  zu lesen] abgelehnt hat, ...       (“refused”)

Hence, as expected, one can front the embedded VP as in (67a), but not in (67b):

- (67) a.  $[_\alpha$   $e_i$  zu lesen] $_j$  hat  $[_{DP}$  das Buch] $_i$  keiner  $e_j$  versucht.  
       b. \* $[_\alpha$   $e_i$  zu lesen] $_j$  hat  $[_{DP}$  das Buch] $_i$  keiner  $e_j$  abgelehnt.

Note that while one might suppose *zu lesen* in (a) to be a maximal projection which could be fronted on its own, the ungrammaticality of (b), due to the inability to separate the object *das Buch* from the infinitive, suggests that (a) must involve some structure  $\alpha$ , as indicated, which includes the trace of the object, and hence is a case of RM.

The same contrast holds when the embedded DP could be assumed to string-vacuously scramble into the upper clause:

- (68) a.  $[_\alpha$   $e_i$  zu lesen] $_j$  hat keiner  $[_{DP}$  das Buch] $_i$   $e_j$  versucht.  
       b. \* $[_\alpha$   $e_i$  zu lesen] $_j$  hat keiner  $[_{DP}$  das Buch] $_i$   $e_j$  abgelehnt.

Since these examples involve non-coherent infinitives which have *not* been extraposed, one can test to see if the entire upper VP containing the evacuated lower VP can be fronted; again there is a contrast between the case with a coherent infinitive where the object can scramble out and the non-coherent one where it can’t:

- (69) a.  $[_{VP}$   $[_\alpha$   $e_i$  zu lesen] versucht] $_j$  hat keiner  $[_{DP}$  das Buch] $_i$   $e_j$  .  
       b. \* $[_{VP}$   $[_\alpha$   $e_i$  zu lesen] abgelehnt] $_j$  hat keiner  $[_{DP}$  das Buch] $_i$   $e_j$  .

**5.2.1.4 Movement type asymmetries** We then turn to the important observation which has triggered the most discussion in subsequent years, including various attempts to account for the observation as well as new data challenging it, from German and Japanese, i.a.

Mü notes that one can not only displace a VP to the Vorfeld, one can also scramble in in the Mittelfeld (presuming  $\alpha = VP$ ) although for some speakers, (b) is less than optimal:<sup>56</sup>

- (70) a.  $[_\alpha$  Das Buch zu lesen] $_j$  hat keiner  $e_j$  versucht.  
       b. Weil  $[_\alpha$  das Buch zu lesen] $_j$  keiner  $e_j$  versucht hat, ...

<sup>55</sup>See Thiersch (*in prep.*) for a discussion of these data, perhaps relating to differences in preposition stranding with R-pronouns between Dutch and German.

<sup>56</sup>And usually requires I-topic intonation, see footnote 40

Hence one might ask if there is remnant VP *scrambling*. Apparently not; neither position for *das Buch* in (71b) yields an acceptable sentence<sup>57, 58</sup>:

- (71) a.  $[_\alpha e_i \text{ zu lesen}]_j$  hat  $[\text{das Buch}]_i$  keiner  $e_j$  versucht.  
 b. \*Weil  $[_\alpha e_i \text{ zu lesen}]_j$  ( $[\text{das Buch}]_i$ ) keiner ( $[\text{das Buch}]_i$ )  $e_j$  versucht hat, ...

(For Mü’s solution and new observations, see below.)

Remnant WH-movement seems to be unproblematic, but remnant Left-Dislocation, according to Mü, is unacceptable<sup>59</sup>:

- (72) *Was-für split*:  
 a.  $[_{DP} \text{ Was für ein Buch über die Liebe}]_j$  hast du  $e_j$  gelesen?  
 b.  $[_{DP} \text{ Was für ein Buch } e_i]_j$  hast du  $[\text{über die Liebe}]_i$   $e_j$  gelesen?

- (73) *Left dislocation*:  
 a.  $[_{VP} \text{ Das Buch gelesen}]_j$ , das hat keiner  $e_j$   
 b. \* $[_{VP} e_i \text{ gelesen}]_j$ , das hat  $[\text{das Buch}]_i$  keiner  $e_j$   
 c. cf.  $\checkmark$  Gelesen hat das Buch keiner.

The basic idea of “Müller’s Generalization” (which he makes more precise later in the book and derives from Minimalist considerations), is that the two movements involved have to be different; see § 5.2.5 below. This explains why there is no remnant scrambling (same type of movements) in contrast to normal “Vorfeldbesetzung” (topicalization) and WH-movement; (73b) seems to be a different case, calling for another explanation. See discussion in § 5.2.5.3.

**5.2.1.5 Unbound intermediate traces** As for DB&W’s observation regarding unbound *intermediate* traces, Mü will claim there are different cases amenable to different solutions, see § 5.2.6. Note he can’t use government since it isn’t available in the Minimalist framework.

## 5.2.2 Aside: from *Barriers* to the Minimalist Program

Chapter 2 involves an extensive detailed discussion of Mü’s conception of constraints under Minimalist assumptions. We give here only the minimum of definitions necessary as a reference to understand the subsequent discussion, without their justification; for the latter the reader is referred to Mü’s chapter 2.

Mü uses a version of the Minimalist Program as set out in Chomsky (1995a); structures generated by the operation Merge, and subject to economy/optimality conditions like Shortest Move and Last Resort. Movements are licensed by checking (strong) uninterpretable features. The most efficient derivation which completes correctly wins.

In comparing derivations his notion of **Reference Set** is as follows:

<sup>57</sup> However, as Mü himself notes later, replacing *das Buch* with a pronoun improves the sentence dramatically “Weil zu lesen es keiner versucht hat ...”. This is a conundrum which linguists in subsequent articles have noted and tried to explain; for instance, the movement of the *es* might be of a different sort than “scrambling” of full DPs.

<sup>58</sup> We should also note that when checked with some informants (German linguists), they found (71b) perfectly acceptable, although with an indefinite (*ein Buch*) unacceptable. Clearly there needs to be more careful investigation of the data, also in light of later authors’ use of a hierarchy (see § 6.1), which calls for more subtle distinctions in the judgements and information structure factors.

<sup>59</sup> Both judgements are problematic, see Thiersch (*in prep.*), as well as discussion of Fanselow (2002) in § 7.1.

- (74) Two derivations D1 and D2 are in the same reference set iff they yield the same LF output and converge at LF and PF.

Note that, unlike some definitions in the Minimalist approach, he dispenses with the Numeration; see the chapter for his motivation.

In Fewest Steps, only checking operations are counted:

- (75) If two derivations D1 and D2 are in the same reference set and D1 involves fewer checking operations than D2, then D1 is to be preferred over D2

Finally, in Last Resort, not only checking positions count, but also “typical checking positions” (e.g., the raising of [+WH] to Spec,CP in an embedded *dass*-clause); further he assumes a hierarchy of features, namely [+wh] > [top] > [scr] > [Case] on a stack<sup>60</sup>, which have to be checked off in order:

- (76)  $\alpha$  is raised to a position  $\beta$  only if  $\beta$  is a typical checking position for the lowest-ranked unchecked morphological feature of  $\alpha$ .

Although he subsequently makes little use of the hierarchy to explain RM facts in this book, it is crucial for the approaches of Stabler (1997, 1999), Grewendorf (2003, 2015), Abels (2007) and Müller (2014). Basically, they all rely in varying ways on an insight due to Edwin Williams (1974, 2003) that the checking of features is ordered in a hierarchy; we discuss the latter three authors in § 6.

### 5.2.3 Violation of the PBC in RM – why is this allowed?

As noted above (p.5, footnote 10) the Proper Binding Condition (PBC) was introduced to account for examples which have since been explained by other means. It nevertheless captured, as noted above, the intuition that traces (variables) need to be bound. A moment’s reflection, however, shows that this intuition, like many “common sense” intuitions, can’t possibly be correct: for any theory which countenances traces, sentences like (15b), which have made the rounds in the linguistic literature since the 1970’s, show that the PBC, taken literally, must be false. Hence much recent discussion invoking the PBC as a means of accounting for various phenomena is a reminiscent of “The Emperor’s New Clothes”.

That having been said, we might still look briefly at Mü’s demonstration that the PBC, in the cases where it might be assumed to apply, is derivable from other considerations, a welcome result in light of the previous remarks. While an account of detailed discussion in Mü’s Chapter 3 is beyond the scope of this chapter, we can indicate his general line of attack.

German, unlike Dutch, allows V-2 embedded sentences; suppose instead of moving the subject *up* to fill the Spec,CP, we move the dative from the matrix clause *down*?

- (77) a. ... dass Fritz [dem Peter] sagte [CP keiner<sub>i</sub> habe [IP e<sub>i</sub> die Claudia  
that Fritz the<sub>Dat</sub> Peter said no-one has the<sub>Acc</sub> Claudia  
gesehen]]  
seen  
“That Fritz said to Peter, no one saw Claudia”  
b. \* ... dass Fritz e<sub>j</sub> sagte [CP [dem Peter]<sub>j</sub> habe [IP keiner die Claudia gesehen]]

The result is, as expected, ungrammatical, allegedly due to the PBC. Another example is the derivation in (78), where Lasnik & Saito (1992) suggest that it evades the *that-trace*

<sup>60</sup>NB: the lowest feature in the hierarchy is actually on the top of the stack, and the lower features on the stack are inaccessible. (Müller makes this clear in recent work.)

prohibition and hence requires a derivational interpretation of the PBC to prohibit it (since in the surface form, all traces are bound):

$$(78) \quad * \text{Who}_i \text{ do you think } [_{\text{CP}} e_i' \text{ that } [_{\text{IP}} e_i [_{\text{VP}} e_i' [_{\text{VP}} \text{left} ]]]]$$

Mü considers deriving the ungrammaticality of (77b) and the impossibility of derivation (78) using the minimalist principles of Last Resort and Fewest Steps, and revising the PBC to require only that traces be bound at LF, but concludes that this is still both too weak and too strong. There is, however, a candidate for ruling out the illicit derivations above but allowing remnant movement, namely the venerable Strict Cycle Condition, or as Chomsky put it recently “no tampering” with already built structures. That is, all movement is upward, i.e. no movement can target a (cyclic) node already passed, and no movement can affect only an already completed structure. The remainder of his Chapter 3 is devoted to fine-tuning of the formulation of the SCC so that it has no unexpected adverse effects (and presumably allows Richards-style “tucking in”<sup>61</sup>). Again, we refer the reader to Mü’s discussion of the various cases.

#### 5.2.4 Freezing (& Anti-freezing)

Having dispensed with the PBC, Mü turns his attention in chapter 4 to “Freezing” and “Anti-Freezing” effects, the latter involving RM.<sup>62</sup>

**5.2.4.1 Deriving the basic facts** As discussed in § 4.1, one needs to distinguish between “Diving” and “Surfing” constructions, the former being RM and the latter being typical freezing constructions, cf. (20), repeated here:

$$(20) \quad \begin{array}{ll} \text{a. } [_{\text{B}} \dots e_{\text{A}} \dots] \dots [_{\text{X}} \dots \text{A} \dots e_{\text{B}} \dots] & \text{“Diving”} \\ \text{b. } \text{B} \dots [_{\text{X}} \dots [_{\text{A}} \dots e_{\text{B}} \dots] \dots e_{\text{A}} \dots] & \text{“Surfing”} \end{array}$$

As noted above, Mü’s rather idiosyncratic definition of “freezing” makes some of the initial discussion in this chapter seem irrelevant. A typical definition (cf. Chapter Corver “Freezing”) is the following:

$$(79) \quad \textit{The generalized Freezing Principle:} \\ \text{A node is frozen if (i) its immediate structure is non-base, or (ii) it has been raised.}$$

Mü begins the chapter with a similar definition:

$$(80) \quad * \dots \alpha_1 \dots [_{\beta} \dots e_1 \dots]_2 \dots e_2 \dots \approx (20\text{b}) \text{ above}$$

but later in the discussion, Mü switches to a version of the problematical definition, as in (19) above, when discussing the “anti-freezing” effects of RM [his (37), p.137]:

$$(81) \quad \textit{Freezing:} \text{ At S-structure, a trace may not be included in a moved XP (i.e., an XP that binds a trace) if the antecedent of t is excluded by XP.}$$

The motivation for this is unclear (other than to raise the expectation that RM should involve freezing, which it doesn’t) — other cases of freezing follow the pattern in (80)<sup>63</sup>:

<sup>61</sup>N. Richards (1997)

<sup>62</sup>For a discussion of freezing in general, see SynCom chapter Corver “Freezing”.

<sup>63</sup>Recall the disclaimer about freezing judgements footnote 24, as well as numerous comments throughout. Judging by Chomsky (2008), one suspects a German-speaking Chomsky might find (82b) acceptable. Cf. discussion in footnote 24, and of (137) in § 6.1.

- (82) a. \*Da<sub>i</sub> hatten wir [<sub>PP</sub> e<sub>i</sub> mit]<sub>j</sub> nicht e<sub>j</sub> gerechnet = (52)  
 b. \*Worüber<sub>i</sub> ist [<sub>DP</sub> ein Buch e<sub>i</sub>]<sub>j</sub> von keinem e<sub>j</sub> gelesen?  
 c. \*What<sub>i</sub> did Sam say [<sub>CP</sub> [<sub>PP</sub> with e<sub>i</sub>] that Susan drew the picture e<sub>j</sub>]?

Nevertheless, the revised definition forces a fruitful comparison of freezing and RM constructions. Freezing has an obvious explanation, as Mü notes, in various versions of the Huang's (1982) CED<sup>64</sup>, namely extraction is exclusively from base (complement) positions, and something which has been moved is by definition in a non-base (non-complement) position. This correctly excludes "Surfing" and allows "Diving"; that is, as noted above in § 4.1, there is no reason to expect RM *per se* would involve freezing.<sup>65</sup>

Since Mü is working in the Minimalist paradigm, he can't rely on Huang's CED directly to explain the freezing effect. He shows that it is derivable from his version of Fewest Steps and Last resort. However, one should note that he retains the notion of Barrier, and his definition of Barrier encodes the CED. So for an example like the following<sup>66</sup>

- (83) \*Worüber<sub>i</sub> hat [<sub>DP</sub> ein Buch e<sub>i</sub>] keiner e<sub>j</sub> gelesen? = (21b)

he notes there are actually three potential derivations: (i) moving the DP first with the PP, and then moving the PP: but the DP is then a Barrier [CED violation]; (ii) moving the PP first and then raising the remnant DP [SCC violation]; (iii) moving in short steps: first the PP to VP (vP), then adjoining the remnant DP to IP, and finally moving the PP to Spec,CP (based on Collins' (1994) "Chain-interleaving"). Each step is legal, but this fails on Fewest Steps or Last Resort: either there is a shorter derivation, or unmotivated steps: cf. the discussion following (78) above.

(While Chain-interleaving is not permitted in this case, it will turn out to be an important concept in Mü's explanation of non-freezing with extraposition.<sup>67</sup>)

Mü argues that his approach favors a derivational over a representational account of RM, but this goes beyond the scope of this chapter. See his arguments in his chapter 4, section 3 and comments in Thiersch (*in prep.*). For completeness, he also devotes a section to discussing why RM does not create non-islands, but in view of the discussion, this seems a foregone conclusion.

**5.2.4.2 Extraposition of CPs** Nevertheless, there are constructions discussed by Mü in this chapter which *do* look like they should involve freezing by definition (80), but are grammatical, as mentioned earlier in § 4.2.3.<sup>68</sup> Extraposition in German clearly looks as if it involves movement:

- (84) a. Gestern hat Maria das schon gesagt  
 yesterday has M. that already said  
 "Maria already said it/that yesterday."  
 b. \*Gestern hat Maria schon gesagt das.  
 c. Gestern hat Maria schon gesagt, dass Hans Hilda geküsst hat.  
 "... that Hans kissed Hilda."  
 d. ??Gestern hat Maria (schon) dass Hans Hilda geküsst hat (schon) gesagt.

<sup>64</sup>Cf. footnote 24. This is not directly derivable in the Minimalist approach; e.g. efforts by Uriagereka (1999), Müller (2010).

<sup>65</sup>One should note the discussion in the chapter somewhat obscures this straightforward conclusion.

<sup>66</sup>He actually uses a passive example in his book: chap. 4, § 2.3. [It's not clear to this author why this is ruled out in a *Phases* framework: the two movements could apply in parallel.]

<sup>67</sup>Cf. § 5.2.4.5 on multiple extraposed CPs.

<sup>68</sup>See also discussion in SynCom chapter Corver "Freezing".

- e. Wen<sub>i</sub> hat Maria e<sub>j</sub> gesagt, [CP dass Hans e<sub>i</sub> geküsst hat]<sub>j</sub>?

In (84a), *das*, the direct object of *gesagt*, is obligatorily to the left, cf. (84b); in (84c) the direct object CP appears (more or less obligatorily) to the right of *gesagt*; in the Mittelfeld it is marked unless very short, cf. (d). That is, finite CPs to the left of the verb and DPs to the right are highly marked, indicating that the CP has been extraposed. Nevertheless, as noted earlier, for the German speakers who accept long distance extraction, extraction from (84c) is the unmarked case, cf. (84e), and there is no freezing effect.

The same reasoning, by the way, applies to English:

- (85) a. Susan (already) said it / everything yesterday.  
 b. \* Susan (already) said yesterday it / everything.  
 c. ? Susan (already) said [that we would invite him] yesterday.  
 d. Susan (already) said yesterday [that we would invite him].

The sentence in (d) is clearly extraposed (it's in the Heavy-NP Shift position), yet extraction is unproblematic: "Who<sub>i</sub> did Susan say yesterday that we should invite e<sub>i</sub>?"<sup>69</sup>

Mü's answer is that the extraposition involves RM. The strategy to derive (84e) is to extract the direct object *wen* first; the remnant CP is then extraposed:

- (86) Ich weiss nicht ...  
 a. ... [CP<sub>2</sub> wen<sub>i</sub> [IP er [CP<sub>1</sub> e'<sub>i</sub> dass Claudia e<sub>i</sub> geküsst hat] gesagt hat]]  
 (no violation of locality)  
 b. ... [CP<sub>2</sub> [CP<sub>2</sub> wen<sub>i</sub> [IP er e<sub>j</sub> gesagt hat]] [CP<sub>1</sub> e'<sub>i</sub> dass Claudia e<sub>i</sub> geküsst hat]<sub>j</sub> ]  
 (no violation of SCC)

Note here that *all* the WH-movements must be done before extraposition of the CP<sub>1</sub> as in (86a), or else it would become an island and *wen* could not be extracted from its Spec. This in turn implies that the CP<sub>1</sub> is adjoined to CP<sub>2</sub> in (86b), not IP or VP, or a violation of the SCC would result. This would seem to contradict well-known examples like the following (as noted in footnote 43):

- (87) Gesagt, dass Hans Frieda liebt, hat er nicht.

*Presumed structure:* [VP [VP e<sub>j</sub> gesagt]<sub>i</sub> [CP dass Hans Frieda liebt]<sub>j</sub>] hat er nicht e<sub>i</sub>

Here the CP is obviously adjoined to VP, as it fronts together with the participle, presumably forming a VP<sup>70</sup>. Mü solves this problem by allowing extraposition, like scrambling, to adjoin to *any* constituent, as long no other considerations prohibit it. For example, in (86) adjoining to the IP (after the WH-movement) would be SCC violation, and adjoining to the VP ending in *gesagt* would hinder forming the verbal complex.

Note that the explanation carries over to the SVO (English) examples in (85), which Mü discusses later in the chapter<sup>71</sup>.

This strategy will be used to explain DB&W's observation that intermediate unbound traces seem to cause extreme ungrammaticality; cf. discussion in § 5.2.6.

<sup>69</sup>Note that extraction from the clause-internal position in German as opposed to English is quite bad:

- (i) ? Who<sub>i</sub> did Susan say [that we should invite e<sub>i</sub>] yesterday?  
 (ii) \* Wen<sub>i</sub> hat Maria [CP dass Hans e<sub>i</sub> geküsst hat] gesagt?

Mü returns to this problem in Chap. 6.

<sup>70</sup>NB: strictly speaking even though the VP contains a trace of the CP, it isn't a *remnant* VP in the sense, since the trace e<sub>j</sub> is bound by the CP within the VP.

<sup>71</sup>The exact details, of course, depend on how many projections one assumes are in the clause. Basically this is like Collins' "Chain-Interleaving" example mentioned in the discussion of (83) above.

**5.2.4.3 Extrapolation of PPs (& DPs)** A similar problem involves the PP which is extraposed from the VP; this PP *may* be transparent for extraction of its R-pronoun. The data are interesting (and controversial).

As noted above, German and Dutch to various extents allow extraction of “R-pronouns” from PPs, cf. (36a)-(36d) in the discussion of DB&W:

(88) Hans hat da<sub>i</sub> nicht [<sub>PP</sub> e<sub>i</sub> mit] gerechnet = (36b)

We know that PPs can be “extraposed” over the participle in both languages, including the pronominal postpositional form:

(89) Hans hat nicht e<sub>i</sub> gerechnet [<sub>PP</sub> mit solchen Umständen]<sub>i</sub> / [<sub>PP</sub> damit]<sub>i</sub>

If “extraposed” XPs as Mü assumes, can be right adjoined to any category as long as no constraints are violated, the PP in (89) could be adjoined to IP or CP, predicting that there is a suitable derivation involving extracting the R-pronoun and then extraposing, just as in the CP case, and extraposed PPs are predicted to be transparent [Mü’s (70a,b) p.175]:

(90) a. Wo<sub>i</sub> hat keiner e<sub>j</sub> gerechnet [<sub>PP</sub> e<sub>i</sub> mit]<sub>j</sub>  
 b. ... dass da<sub>i</sub> keiner e<sub>j</sub> gerechnet hat [<sub>PP</sub> e<sub>i</sub> mit]<sub>j</sub>

Unfortunately, while these are grammatical in certain North German dialects (cf. Fleischer 2002a,b), affirming Mü’s judgements, they are completely unacceptable in Dutch and presumably in Southern varieties of German as well. Note this patterns together with the (non-)acceptability of examples like (36f), to which DB&W and Dutch informants give a star and Mü and German informants a question mark, repeated here:

(91) \*/? [<sub>VP</sub> [<sub>PP</sub> e<sub>j</sub> Mit (e<sub>j</sub>)] gerechnet]<sub>i</sub> hat Hans da<sub>j</sub> nicht = (36f), (65b)

However, although the extraposed PP can be fronted with the participle, the version where the R-pronoun has been extracted is claimed to be ungrammatical [Mü’s (91)-(92), p. 185]:

(92) a. [<sub>VP</sub> [<sub>VP</sub> e<sub>i</sub> gerechnet [<sub>PP</sub> damit]] hat der Fritz nicht  
 b. \* [<sub>VP</sub> [<sub>VP</sub> e<sub>i</sub> gerechnet [<sub>PP</sub> e<sub>j</sub> mit]] hat da<sub>j</sub> der Fritz nicht

Although Mü states that (92b) is completely parallel to the case of a fronted CP with an unbound intermediate trace as in (48d) — see his explanation in § 5.2.6, it’s not really: the later also involves extraction out of an argument-WH island. Indeed, some informants (who agreed that (48d) was completely ungrammatical) found (92b) perfect. These were the same informants who allowed extraction from extraposed PPs in general, and also allowed the P+V topicalization, so there would seem to be a connection<sup>72</sup>. Mü himself notes that unlike the CP cases, which have a water-tight explanation, there seems to be nothing wrong with a “chain-leaving” derivation of (92b) and he excludes it with a stipulation. In light of this, as well as the speaker variation, there clearly needs to be more careful examination of the (dialectal) data here, testing the behavior of other prepositions, and rethinking of the analysis.

A similar but somewhat more complex problem to that posed by the R-pronoun extraction in (90) above is posed by observations of DB&W [cf. their (44) = (53a) above, Mü’s (121)–(124)]<sup>73</sup>:

(93) a. [<sub>VP</sub> e<sub>i</sub> Gerechnet]<sub>j</sub> hat wie immer [<sub>PP</sub> damit]<sub>i</sub> keiner e<sub>j</sub>  
 b. \* [<sub>VP</sub> e<sub>i</sub> Gerechnet]<sub>j</sub> hat da<sub>k</sub> wie immer [<sub>PP</sub> e<sub>k</sub> mit ]<sub>i</sub> keiner e<sub>j</sub>

<sup>72</sup>Cf. discussion in Thiersch (*in prep*).

<sup>73</sup>We discuss only the VP case here, similar remarks apply to the remnant DP/PP cases, cf. Mü p.203ff.

- c.  $[_{VP} e_i \text{ Gerechnet}]_j \text{ hat wie immer keiner } [_{PP} \text{ damit}]_i e_j$   
d.  $[_{VP} e_i \text{ Gerechnet}]_j \text{ hat da}_k \text{ wie immer keiner } [_{PP} e_k \text{ mit}]_i e_j$

As expected, when the PP is scrambled over the subject *keiner* as in (b), freezing applies and the sentence is bad. But (d) is unexpectedly good; yet some (string-vacuous) movement must have occurred, since the P is stranded and not pied-piped with the VP. By now the reader can probably see that there is a legitimate derivation for (d): extraction of *da*, then extraposition of the remnant PP to some higher position than the landing site of *da*, and finally fronting of the remnant VP (to the highest position, Spec,CP).

Note that we have seen that extraction from an extraposed PP is grammatical (for many speakers of German, as opposed to Dutch) in the examples (90) above where the *mit* is to the right of a clause-final verb or auxiliary. If the PP is not extraposed, the construction is less than optimal [Mü (134)a]:

- (94) ??  $[_{VP} e_j \text{ Gerechnet}]_k \text{ denke ich } [_{CP} \text{ dass da}_i \text{ keiner } [_{PP} e_i \text{ mit}]_j e_k \text{ hat}]$

(See remarks on (171) in §9.)<sup>74</sup>

**5.2.4.4 The “third construction”** In the same vein, the third construction must involve remnant extraposition of the infinitive to a higher projection (IP/CP) *after* the argument has been scrambled out, and hence will be ungrammatical if fronted, just like the finite CP examples in the previous section, since it would be forced to attach to the VP, violating the SCC:

- (95) \*  $\text{Versucht } [_{\alpha} \text{ dem Peter } e_i \text{ zu geben}] \text{ hat die Claudia } [_{\text{das Buch}}]_i \text{ nicht}$ <sup>75</sup>

**5.2.4.5 Multiply embedded CPs** What about sentences involving multiple extrapositions? For example, “Multiply embedded” CPs:

- (96)  $(\text{Ich weiss nicht})[_{CP_m} \text{ wen}_i \text{ er } e_j \text{ gesagt hat } [_{CP_j} e''_i \text{ dass Peter } e_k \text{ denkt } [_{CP_k} e'_i \text{ dass Claudia } e_i \text{ liebt}]]]]$

Note that it will not do to simply extract the object *wen* to its final position in Spec,CP<sub>m</sub> as in (97) and then begin extraposing the other CPs:

- (97)  $\dots[_{CP_m} \text{ wen}_i \text{ er } [_{CP_j} e''_i \text{ dass Peter } [_{CP_k} e'_i \text{ dass Claudia } e_i \text{ liebt}] \text{ denkt}] \text{ gesagt hat}]$

If we extrapose CP<sub>j</sub> (which includes CP<sub>k</sub>) first, then it becomes an island and we can't extrapose CP<sub>k</sub>; if we extrapose CP<sub>k</sub> first, then we have to “tuck in” CP<sub>j</sub> beneath CP<sub>k</sub>. While this looks like it should be a SCC violation in some sense (we are “tampering” with a built structure<sup>76</sup>), Mü argues that this doesn't follow from his definitions and suggests that extraposing the deeply embedded CP<sub>k</sub> first violates Ross's Right Roof Constraint, however this is to be formulated. But there is a way out: we note that the remnant extraposition strategy looks a bit like Chain Interleaving which was earlier ruled out by the interaction of Mü's version of Last Resort and Fewest Steps, cf. discussion following example (83). Here, however, it works:

<sup>74</sup>This would seem to imply that the speakers who find extraposition as in (90) unacceptable (e.g. speakers of Dutch) should also find the equivalent of (93d) bad as well, but this is hard to test due to other differences in placement of the clitic; see Thiersch *in prep.* for some discussion of Dutch examples.

<sup>75</sup>Given current assumptions about the number of (functional) projections in the clause, it's not clear that a Chain-interleaving solution might licitly generate sentence. Both this and further investigation of the judgements are topics for future research.

<sup>76</sup>*pace* Richards (1997), who would presumably also allow this.

- (98) a. *wen* → Spec,CP<sub>j</sub>:  
 [CP<sub>j</sub> *wen*<sub>i</sub> dass Peter [CP<sub>k</sub> *e*'<sub>i</sub> dass Claudia *e*<sub>i</sub> liebt] denkt]  
 b. Extaposition of CP<sub>k</sub> to CP<sub>j</sub>, above *wen*, so there is no SCC violation:  
 [CP<sub>j</sub> [CP<sub>j</sub> *wen*<sub>i</sub> dass Peter *e*<sub>k</sub> denkt] [CP<sub>k</sub> *e*'<sub>i</sub> dass Claudia *e*<sub>i</sub> liebt] ]

The process is then repeated, moving *wen* further up to Spec,CP<sub>m</sub>, and the adjoining the entire structure in (98b) to CP<sub>m</sub>. Note that the resulting structure is as in

- (99) a. [CP<sub>1</sub> [CP<sub>1</sub> Ich weiss nicht]<sub>l</sub> [CP<sub>m</sub> [CP<sub>m</sub> *wen* ...]<sub>m</sub> [CP<sub>j</sub> [CP<sub>j</sub> dass ...]<sub>j</sub> CP<sub>k</sub> ]<sub>j</sub> ]<sub>m</sub> ]<sub>l</sub>  
 b.
- 

We leave thinking about the implications of this as an exercise for the reader.

### 5.2.5 Movement asymmetries explained

We now turn to one of the puzzles discussed earlier under “Movement type asymmetries” in §5.2.1.4, p.22, the solution of which forms the core of Mü’s approach and the springboard for subsequent analyses. Recall that RM to the Vorfeld, either as a [+WH] phrase or a [−WH] topic (100a)<sup>77</sup> is unproblematic; scrambling of a whole VP in the Mittelfeld from is also acceptable with the right intonation and topic/focus properties (100b). But combining DP-scrambling with (remnant) VP-scrambling is unacceptable (100c):

- (100) a. [VP *e*<sub>i</sub> Zu lesen]<sub>j</sub> hat [DP das Buch]<sub>i</sub> keiner *e*<sub>j</sub> versucht  
 b. weil [VP das Buch zu lesen]<sub>j</sub> keiner *e*<sub>j</sub> versucht hat  
 c. \*Weil [α *e*<sub>i</sub> zu lesen]<sub>j</sub> [das Buch]<sub>i</sub> keiner *e*<sub>j</sub> versucht hat, ... cf. (71b)

Mü shows the same holds for remnant DPs as for VPs; the remnant fronting of the DP combined with scrambling of the PP in (101a,b) is fine but unacceptable if both are scrambled as in (101c,d), regardless of where *ein Buch* is scrambled to [Mü (12)-(13), p.218]<sup>78</sup>:

- (101) a. [DP Ein Buch *e*<sub>i</sub> ]<sub>j</sub> hat Antje [PP über die Liebe]<sub>i</sub> *e*<sub>j</sub> gelesen cf. (62d)  
 b. [DP Ein Buch *e*<sub>i</sub> ]<sub>j</sub> hat [PP über die Liebe]<sub>i</sub> keiner *e*<sub>j</sub> gelesen.  
 c. \*...dass niemand [DP ein Buch *e*<sub>i</sub>]<sub>j</sub> gestern [PP über die Liebe]<sub>i</sub> *e*<sub>j</sub> gelesen hat  
 d. \*...dass [DP ein Buch *e*<sub>i</sub>]<sub>j</sub> niemand [PP über die Liebe]<sub>i</sub> *e*<sub>j</sub> gelesen hat

(Mü also discusses the same effect with scrambled participles and predicates, but since the scrambling in these cases is already marked, the effect is not as clear-cut, so we omit these cases.)

Suppose we have a potential remnant constituent α containing β, and two probes potentially attracting α and/or β.<sup>79</sup> Since Mü assumes scrambling is feature-driven, there is

<sup>77</sup>Note that Mü considers the latter movement to TopP.

<sup>78</sup>Here as in the previous set of examples, the reservations about the data noted in footnote 58 apply.

<sup>79</sup>Minimalist approach terminology. *Probe*: the constituent with the feature which attracts a “goal”, the constituent which moves to check its corresponding feature; cf. Chomsky (1995a).

no problem if the constituent  $\alpha$  in (102) has a feature [top] and the constituent  $\beta$  has a feature [scr] as in (100a/101a); but if both have the feature [scr] as in (100c/101c), there is a competition for the same probe:

- (102) a. Probe<sub>1</sub>[top] ... Probe<sub>2</sub>[scr] ... [ $\alpha$ <sub>[top]</sub> ...  $\beta$ <sub>[scr]</sub> ...] = (100a), (101a)  
 b. Probe<sub>1</sub>[scr] ... Probe<sub>2</sub>[scr] ... [ $\alpha$ <sub>[scr]</sub> ...  $\beta$ <sub>[scr]</sub> ...] = (100c), (101c)

This looks like it can be explained as a minimality violation<sup>80</sup>: the typical minimality violation is in (103a), where Y cannot be attracted to X if there is an intervening Z with the same feature. As Mü notes, it is reasonable to assume the same applies to (103b) where Z is “closer” to X since it dominates Y (reminiscent of the old A/A constraint, as Mü notes later in the chapter) :

- (103) a. X ... [ ... Z ... [ ... Y ... ] ]  
 b. X ... [<sub>Z</sub> ... Y ... ]

The latter, (103b), is the configuration we have in (102). In (102a), as we have seen,  $\beta$  can move first to Probe<sub>2</sub>, and the remnant  $\alpha$  secondly to Probe<sub>1</sub> without violating any constraints. But in (102b) if  $\beta$  moves first, it violates minimality (which Mü incorporates into his Last Resort condition); hence  $\alpha$  must move first: if it moves to Probe<sub>2</sub>, it becomes an island (and would generate the wrong surface order); if it moves to Probe<sub>1</sub>, there is a subsequent SCC violation (downward movement of  $\beta$ ).<sup>81</sup>

This can be summarized in the following constraint (in various incarnations in the course of the chapter), which is derivable from the above considerations, given here in a somewhat streamlined version:

(104) **Unambiguous Domination (UD)**

(*Derivational version*:) In a structure [<sub>A</sub> ... B ...], A and B may not undergo the same kind of movement.

[where “movement” ranges over movement to Spec,CP, SpecTopP, XP-Left-Adj (scrambling), XP-Right-Adj (extraposition), SpecF/F-Adj (e.g. Wackernagel clitic position), Spec,XP (where X is a Case assigner)].

Although the application of the UD principle is straightforward (and derivable from the above considerations) for the scrambling case, the Left Dislocation (LD) case is more problematic, as we will see below.

**5.2.5.1 Remnant WH-movement** Do these considerations hold for other cases? Many are difficult to construct. We have already seen that remnant WH-movement (when the remnant is evacuated by scrambling) patterns with non-WH topicalization (Vorfeldbesetzung), cf. (72), in being acceptable. If we have [WH] within [WH], there will be an additional factor: movement of the lower [WH] constituent will create a WH-island; the question is then, is this more severe than a violation where the one WH is not contained in the other? This seems to be the case for English:

<sup>80</sup>Rizzi (1990)

<sup>81</sup> At this point, the reader may be wondering about other configurations than the one in (102a), for example; suppose the  $\alpha$  had the feature [scr] and  $\beta$  had the feature [top]? Given the assumptions about the clause-internal hierarchical order of the Probes in (102a), this would induce either a freezing configuration (if  $\alpha$  moved first), or a SCC violation (if  $\beta$  did). But the order of the Probes is not a foregone conclusion — suppose they belong to different clauses? What about features other than [scr] and [top]? This presages the convoluted discussion of Grewendorf’s (2003, 2015) and Abels’ (2007) hypotheses in § 6.1.

- (105) a. \*? [Which picture of John]<sub>i</sub> did you ask who wanted Mary to buy *e<sub>i</sub>*?  
 b. \*\* [Which picture of *e<sub>j</sub>*]<sub>i</sub> did you ask who<sub>j</sub> they wanted Mary to buy *e<sub>i</sub>*?

Example (105a), the wh-island — a standard minimality violation = case (103a) — is indeed unacceptable, but adding the RM — a UD violation = case (103b) — makes it almost uninterpretable.

Since both are quite bad, Mü suggests testing English examples with infinitive complements yielding a stronger contrast [my examples]:

- (106) a. Which car doesn't Fred know how/?when to fix?  
 b. \* [Which book *e<sub>i</sub>*] doesn't Fred know [about whom]<sub>i</sub> to read?  
 c. \*\* [Which book about *e<sub>i</sub>*] doesn't Fred know whom<sub>i</sub> to read?

Since German doesn't have non-finite WH-complements one needs to test with finite complements, but the results are not as sharp<sup>82</sup>.

**5.2.5.2 Relative clauses** At this point Mü has a potentially interesting argument in support of the non-availability of RM scrambling involving pied-piping in German relative clauses. Due to limitations of space, we refer the reader to Thiersch (*in prep.*) for discussion.

**5.2.5.3 Remnant Left Dislocation** Recall that Mü noted that RM with left dislocation (LD) is unacceptable:

- (107) \* [<sub>VP</sub> *e<sub>i</sub>* gelesen]<sub>j</sub>, das<sub>j</sub> hat [das Buch]<sub>i</sub> keiner *e<sub>j</sub>* *cf.* (73b)<sup>83</sup>

Recall from (73a) that fronting a full VP is fine, so the problem can't be a featural mismatch between the fronted VP and the DP pronoun *das*. Abstracting away from the data problem noted in the footnote, the idea here is that LD constructions are cases of adjunction to CP, hence the ill-formedness can be explained in a similar fashion: two instances of the same process. We ignore here the many structures proposed in the literature for LD constructions, and give Mü's, which is relevant for his argument [Mü's (56)]:

- (108) (dass ich glaube) [<sub>CP</sub> [den Fritz]<sub>i</sub> [<sub>CP</sub> den<sub>i</sub> hat keiner *e<sub>i</sub>* gesehen ]]

Hence the structure for (107) would be:

- (109) ... [<sub>CP</sub> [<sub>VP</sub> ... *e<sub>i</sub>* ... ]<sub>j</sub> [ CP das<sub>j</sub> ... DP<sub>i</sub> ... *e<sub>j</sub>* ... ] ] ...

This is essentially the structure as in (103b), but with a few added kinks, particularly the intervening coreferent pronoun *das*:

- (110) α<sub>[scr]</sub> ... das<sub>j</sub> ... δ<sub>[scr]</sub> [γ ... β<sub>i</sub> ... ]<sub>j</sub>

In essence γ (VP) and β (DP) are goals competing for probes α and δ bearing the [scr] feature.

This seems a somewhat unlikely scenario: the mysterious presence of the pronoun has motivated a number of linguists to analyse an LD as constituent as being generated *in situ*

<sup>82</sup>In his chap. 5, § 3.3, Mü takes examples from the literature and doesn't control for the effect of the negation island. My examples *all* have a negative; ideally one should find examples of which *none* contain negative islands.

We refer the reader to discussion of more examples in Thiersch (*in prep.*), Mü's original text, and the discussion of similar examples below in § 6.1.

<sup>83</sup>Mü notes that several Dutch linguists consider remnant LD acceptable, which is a problem. In fact, there is general disagreement about the data here, see discussion of Fanselow (2002) in § 7.1. My German informants, however, found (107) unacceptable, as does Mü.

in the left position<sup>84</sup>. Mü assumes movement “for the sake of concreteness” (his footnote 31) since it is irrelevant for “the analysis in this subsection” whether the trace  $e_j$  in (107) is the trace of the VP or of *das*. But it would seem that this *is* relevant, since the *das* is not in a scrambling (adjoined) position. As Mü himself notes, this analysis, while obeying the restriction in (103b), raises many questions, not the least among them that CP is not normally an adjunction site in German, and it is unclear why the pronoun should change this (under Mü’s analysis):

- (111) a. \*\* $[_{CP} [_{DP} \text{Den Hund}]_j [_{CP} [\text{ein Junge}]_i \text{ hat } e_i \text{ heute vormittag schon } e_j \text{ gefüttert}]]$ .  
 b.  $[_{CP} [_{DP} \text{Den Hund}]_j [_{CP} \text{den}_j \text{ hat ein Junge heute vormittag schon } e_j \text{ gefüttert}]]$ .

Given the problems with the data for German discussed by Fanselow (2002) (cf. § 7.1) and the lack of ungrammaticality for Dutch, one should perhaps seek another explanation for the LD judgements. See also discussion in Mü and Thiersch (*in prep.*) for the cases with ditransitive verbs.

**5.2.5.4 X<sup>0</sup> traces** An interesting consequence of the UD condition is that unbound traces of head movement are in fact allowed, *pace* Takano (2000) and Funakoshi (2012). Mü gives a large number of examples (80), some attested, concurring with the intuitions of Fanselow (2002), among others, and the data collected by the FU project [Bildauer (2011), i.a., mentioned earlier]. Some of his examples:

- (112) a. (Ich glaube,)  $[_{DP} \text{Kindern}] [_{DP} \text{Bonbons}]$  gibt man besser nicht. [80c]  
 b.  $[_{DP} \text{Die Borussia}] [_{PP} \text{in Führung}]$  schoss dann Effenberg<sup>85</sup> [80d]  
 c.  $[_{AP} \text{Hilfos}] [_{PP} \text{auf dem Platz}]$  irrte Möller umher. [80f]

(The latter two from attested sources.) The trace of head-movement is by definition different from that of XP topicalization, and hence allowed under UD (104).

**5.2.5.5 Permissible scrambling?** As we noted in footnote 57, Müller, among others, have noted that unlike the ungrammatical (100c), where a full DP is scrambled out of a VP, the same sentence with a pronoun is considerably better (113a). Interestingly, the same is true with LD (113b):

- (113) a. ...dass  $[_{VP} e_i \text{ zu lesen}]_j$  es<sub>i</sub> keiner  $e_j$  versucht hat  
 b.  $[_{VP} e_i \text{ gelesen}]_j$ , das hat es<sub>i</sub> keiner  $e_j$

Although some linguists<sup>86</sup> have attributed this to prosody (the *es* and other pronouns can contract and cliticize with the preceding phrase), if we consider cliticization to be a process different from “scrambling”, then this also follows from UD (104). That the two are different processes is particularly clear in Dutch, which doesn’t have German-style scrambling (reordering of arguments) but nevertheless has fronting of unstressed pronouns.

A few final remarks: firstly, some cases blocked by UD are of course also ruled out by other conditions; for example

- (114) \* $[_{VP} e_i \text{ zu lesen}]_j$  glaube ich  $[_{CP} [\text{dieses Buch}]_i \text{ hat keiner } e_j \text{ versucht}]$

<sup>84</sup>Or as a case of ellipsis, as in Ott (2010, 2016).

<sup>85</sup>It seems to me that this could be what Pollard & Sag (1994) refer to as “true” Stowell structures and hence are a constituent. E.g. “It was [the PDS in complete control] that Schröder really feared.”

<sup>86</sup>See Gärtner & Steinbach (2003a), esp. footnote 51.

Sentence (114) is indeed blocked by the UD (two instances of “topicalization”), but it is of course also blocked by other assumptions (e.g. subjacency), since the Spec of the lower CP is occupied.<sup>87</sup> One might want to conclude that UD makes this violation worse than many subjacency violations, e.g. (105), but this is difficult to determine, as Mü notes, since subjacency violations with V-2 clauses, for whatever reason, are particularly severe in German.

Secondly, UD of course applies *locally* — we don’t want it to apply across clauses [Mü (102b)]:

- (115) Wieder hat [<sub>DP</sub> die Behauptung [<sub>CP</sub> [<sub>VP</sub>  $e_i$  zu lesen] habe keiner [<sub>das Buch</sub>] <sub>$i$</sub>  versucht]] <sub>$j$</sub>  nur Peter  $e_j$  geglaubt

And finally, one might suppose that one could just derive UD from (a proper version of) Last Resort. Mü discusses several cases purporting to show that Last Resort is both too strong and too weak; as the cases are rather complex and problematic, we refer to Mü’s original discussion in Chap. 5, §7 and the critique in Thiersch (*in prep.*).

### 5.2.6 Unbound intermediate traces revisited

In his final chapter, Mü addresses the data from DB&W concerning unbound *intermediate* traces. Recall examples like (48g)=(116) and a similar example in (117)<sup>88</sup>:

- (116) \* [<sub>VP</sub> Gesagt [<sub>CP<sub>2</sub></sub>  $e'_j$  dass er  $e_j$  lesen will]] <sub>$i$</sub>  weiss ich nicht [<sub>CP<sub>1</sub></sub> **was** <sub>$j$</sub>  er  $e_i$  hat ]  
(117) \* [<sub>CP<sub>2</sub></sub>  $e'_j$  dass er  $e_j$  lesen will]] <sub>$i$</sub>  weiss ich nicht [<sub>CP<sub>1</sub></sub> **was** <sub>$j$</sub>  er  $e_i$  gesagt hat ]

Since unbound argument traces in preposed XPs are perfectly acceptable, the question rises as to why unbound *intermediate* traces should cause extreme ungrammaticality. As Mü is working in the Minimalist framework, he again derives the ungrammaticality of (116)–(117) from the usual economy conditions as in the previous chapters, coming to the somewhat startling conclusion that under this view, the seemingly similar examples have completely different explanations — and have nothing to do with the unbound intermediate trace, but rather with (his analysis of) extraposition.

The first case, (116), is the easy one. Recall the discussion of extraposition and WH-extraction: if the CP extraposes to the VP ending in *gesagt*, it will be an island and *was* is stuck in its Spec. If we employ the strategy previously discussed for WH-extraction from dass-clauses and extract it first, the CP has to extrapose to some higher projection to avoid a SCC violation; hence there is no possible derivation.

Note that similar cases, which involve a fronted participle with an extraposed XP, which contain an unbound trace, but apparently no unbound *intermediate* trace, can be explained in the same way, suggesting that the intermediate trace is not the problem<sup>89</sup>:

- (118) \* [<sub>VP</sub> [<sub>VP</sub>  $e_i$  gerechnet [<sub>PP</sub>  $e_j$  mit]] hat da <sub>$j$</sub>  der Fritz nicht  
*Extraposed PP* = (92b)  
(119) \* Versucht [ <sub>$\alpha$</sub>  dem Peter  $e_i$  zu geben] hat die Claudia [<sub>das Buch</sub>] <sub>$i$</sub>  nicht  
*Extraposed Infin.* = (95)

The second case, (117), is trickier. Recall that under the previous assumptions about extraposition in §5.2.4.2, the extraposed CP ends up higher than the WH-phrase to avoid

<sup>87</sup>Recall that Mü considers these movement to TopP, and some have considered these parentheticals. But cf. discussion in Pankau *et al.* (2010).

<sup>88</sup>Cf. Mü’s Chap.6: (1)–(2); he presents them in reverse order, but deals with them in the order (116), (117), as we do. He presents a different solution to these data in Mü (1999): “Imperfect checking”, *q.v.*

<sup>89</sup>We overlook the possibility that there may be an unbound intermediate trace, modernizing the structure, adjoined to vP: [<sub>vP</sub>  $e_i$  [<sub>vP</sub> ...]]

a SCC violaton, cf. structures in (86) and tree in (99). Since simple WH-extraction from extraposed CPs is good, the unbound intermediate trace in the Spec,CP can't be the problem, at least under Mü's assumptions. Although base-position (internal) CPs are awkward at best without special intonation, extraction from this position is completely impossible [cf. Mü's (19a), p.303]:

(120) \* (Ich weiss nicht) wen<sub>i</sub> er [<sub>CP</sub> e'<sub>i</sub> dass Claudia e<sub>i</sub> geküsst hat] gesagt hat

From embedded infinitivals, which can appear before or after the verbal complex, on the other hand, extraposition is unproblematic from the clause internal position (as well as from the extraposed position).

(121) (Ich weiss nicht) wen<sub>i</sub> er [<sub>CP<sub>2</sub></sub> e'<sub>i</sub> C<sup>0</sup> PRO e<sub>i</sub> zu küssen] abgelehnt hat  
 I know not whom<sub>acc</sub> he to kiss refused has

Thus it seems that extraction from *finite* clauses is only possible when they are extraposed, and Mü notes this holds across a variety of SOV languages. He assumes that extraposition is triggered by an uninterpretable feature, say [**extr**], which can usually be assigned freely to PPs, infinitivals, but in the case of finite CPs it is *obligatorily* assigned to C<sup>0</sup> if movement affects the Spec,CP [Mü's (30)]:

(122) Derivational [**extr**] Instantiation (revised):

An [**extr**] feature is instantiated on a finite non-root clausal functional category X if the minimal residue of X is affected by movement.

(Revised here to accommodate topicalization, since he assumes topicalization passes through a different position from Spec,CP.)

We are then set to seek an explanation in the usual way, by comparing derivations: the proper derivation for (117) then necessarily includes an extraposition step, whereas there is an alternative derivation yielding the same LF, which has fewer steps: namely moving the WH in one fell swoop to Spec,CP<sub>1</sub> skipping Spec,CP<sub>2</sub>, which results in CP<sub>2</sub> remaining *in situ*, but of course this violates subadjacency.<sup>90</sup> Hence there is no acceptable derivation.

In the case of infinitives, extraposition is optional, so there is always a derivation — Mü gives these a “??” — the infinitival can topicalize directly from its base position.<sup>91</sup> This derives the ungrammaticality of (116) and (117) from Mü's previously assumed general conditions without the mysterious “unbound intermediate trace”, albeit with the special proviso specific to finite CPs that they must undergo extraposition if affected by movement<sup>92</sup>.

Mü concludes with a short discussion of DB&W's other case of unbound intermediate traces allegedly causing ungrammaticality [cf. (40c)], showing that too, is dependent on general restrictions on extraction from the *was-für* construction and has nothing to do with

<sup>90</sup>In the interests of space, we leave this as an exercise for the reader, who has seen several examples already; the worked-out solution is Mü (39), p.312-3.

<sup>91</sup>Mü gives them the structure in (i) [Mü Chap. 6, (15a)]:

(i) ?? [<sub>CP</sub> e'<sub>i</sub> PRO e<sub>i</sub> zu lesen]<sub>j</sub> weiss ich nicht [<sub>CP</sub> was der Fritz e<sub>j</sub> abgelehnt hat]  
 to read know I not what the Fritz refused has

It's not entirely obvious to the author that the fronted constituent could not be a remnant VP, since material before the e<sub>i</sub> is phonetically null; it depends on one's analysis of *zu*: if it is INFL then the fronted material is a CP if IPs don't move, *pace* Kayne (1994).

<sup>92</sup>Note that if topicalization and WH-movement to the Vorfeld are the same “type”, then Mü's UD rules out (117) straightforwardly. However, he seems to consider them different, as do Abels (2007) and Grewendorf (2003), who rate similar examples “??” and place them with the “good” examples. See discussion in § 6.1.2 and Thiersch (*in prep.*).



(Note that one can “scramble” CPs in Japanese, as well scrambling DPs out of finite CPs — recall German scrambling is typically clause-bound<sup>94</sup>)

The fact that the second example (“diving”/RM) is ungrammatical originally led some Japanese linguists to invoke the PBC (i.a. Saito 1985, 1992), but since this gives the wrong result for German (RM to the topic/Vorfeld is fine), there have been efforts to eliminate invoking the PBC to account for the Japanese facts (e.g. Hiraiwa 2003).

Since it would seem that (124) would be ruled out by Mü’s UD condition as instances of the same kind of movement, namely “scrambling”, one might ask why not just leave it at that and turn one’s attention to the surprising non-freezing example (123). The reason for Grewendorf to focus on (124) is that it is arguably a case of two different movement types, and should be ruled *in* by Mü’s UD.

Grewendorf & Sabel (1999), henceforth G&S, argue that Japanese scrambling is in fact heterogeneous, short scrambling being a case of A-movement and long scrambling (absent in German, discounting I-topicalization) A’-movement, whereas German scrambling (only short) is A-movement, based chiefly on (weak) crossover facts. Since these judgements are notoriously subtle, we give here an argument from Kuwabara (1998), cited by Gr, involving the negative polarity item *-sika*. The argument shows that long scrambling proceeds in two steps, short and long [Gr’s (44)–(47), Kuwabara’s examples]. WH-phrases “cannot occur inside the C-command domain of negative polarity items such as *sika*-phrases” (‘only’), but can be repaired by scrambling of the WH-phrase:

- (125) a. Dare-ga sono hon-sika yomanakatta no  
 who-NOM that book-SIKA read-not Q  
 “Who read only that book?”  
 b. \*Taroo-sika nani-o yomanakatta no?  
 Taro-SIKA what-ACC read-not Q  
 “What did only Taro read?”  
 c. √ Nani-o<sub>i</sub> Taroo-sika e<sub>i</sub> yomanakatta no?

(125c) is good on the assumption that short scrambling is A-movement and does not reconstruct. But if we do long scrambling, it is grammatical if the *sika* commands only the base position (126a), but ungrammatical if higher, presumably C-commanding an intermediate trace e’<sub>i</sub> of A’-movement (126b), which presumably reconstructs:

- (126) a. Dare-ni<sub>i</sub> Taroo-wa e’<sub>i</sub> [Hanako-sika e<sub>i</sub> awanakatta to] omotteiru no?  
 who-DAT Taro-TOP Hanaka-SIKA met-not COMP think Q  
 “Who does Taro think that only Hanako met?”  
 b. \*Dare-ni<sub>i</sub> Taroo-sika e’<sub>i</sub> [Hanako-ga e<sub>i</sub> atta to] omotteinai no?  
 who-DAT Taro-SIKA Hanako-NOM met COMP think-not Q  
 “Who does only Taro think that Hanako met?”

This argument lends plausibility to regarding Japanese long and short scrambling as different types of movement: A’- and A-movement, respectively.

<sup>94</sup>See footnote 40 note on I-topicalization with references. I-topicalization in German, unlike simple scrambling *can* cross clause boundaries [Fanselow (2024), (44b):

- (i) Er hat [<sub>DP</sub> `ne /Prinzessin]<sub>i</sub> verlangt dass er e<sub>i</sub> heiraten\ darf  
 he has a princess demanded that he marry may  
 “He demanded that he may marry a princess” ( “/ ... \” indicates the special intonation.)

This probably indicates, as noted by Hinterhölzl (2006), that it is a different “type” of movement.





can't first be WH-moved and *then* check Case in a higher project (cf. traditional improper movement from an A'-position to an A-position). Where things get tricky under such an approach is in the ordering of the top of hierarchy (bottom of the stack): long and short Scrambling, Topicalization, WH-movement, etc.; cf. the discussion in the literature since Rizzi's (1997) study of the left periphery, and G&S's discussion of long and short scrambling (to which we return below). While Abels' and Grewendorf's versions of the hierarchy are the same at the bottom (e.g. A-movement lower than Scrambling), they diverge toward the top.

The application of the hierarchy to two "related" constituents, i.e. where one dominates the other, is quite straightforward for monoclausal structures, given the correct assumptions about the relation of movement types to functional structure, but not for multiclausal structures. For example, in a RM source [<sub>A</sub> ... B ...], the movement type of B needs to be strictly lower than that of A. (See comments in footnote 81.) So within a clause, given that movement types are linked to functional projections (e.g. CP, TP), this guarantees a proper resulting RM structure within a single clause, namely that B moves first and ends up lower. Equality results in a minimality violation as described Mü's UD, and type(B) > type(A) results in A moving first (and freezing).

But for movements higher in the hierarchy, RM (and freezing) examples will necessarily involve two clauses, as we saw in (123) and (124). It's unclear how and why the hierarchy should apply here. Many of Grewendorf's and Abels' examples contain movement over clause boundaries. Neither Gr nor Abels seem to distinguish between monoclausal and multiclausal structures, and sometimes Abels has monoclausal and multiclausal sentences in the same comparison set, e.g. his (28), which is like comparing apples and oranges.

At this point, it's helpful to examine the logic of the argumentation: in order to distinguish between Mü's UD and the Grewendorf/Abels proposal, one needs to look at examples of RM where in [<sub>A</sub> ... B ...] the movement of B is of a *higher* type than A, and the sentence is ungrammatical. In other words,

Movements:	Mü predicts	G/A predict	potential problems?
A > B	Mü → good	G/A → good	sentence = *
A = B	Mü → bad	G/A → bad	sentence = √
A < B	Mü → good	G/A → bad	← <i>This decides!</i>

So deciding between Mü's and G/A's approach is in principle straightforward, only the last case decides. Abels summarizes his predictions in a table, which is helpful for comparing the his and Grewendorf's approaches. Abels' table combines movement of a single constituent, surfing (freezing) and diving (RM). If we split the table into its three components for per-spicity, and make a similar table for Grewendorf's examples by way of comparison, an interesting pattern appears (in Surfing & Diving tables, the column is the first movement, the row is the second). Abels' and Grewendorf's original example numbers have been added to illustrate the pattern, as well as to allow the industrious reader to check the examples not discussed in this chapter — see Thiersch (*in prep.*). Also, Abels is agnostic about the values along the diagonal, leaving these blank, but the diagonal in the Diving table have been marked (\*), since these are already ruled out by Mü's UD.

#### Abels' tables:

(132)

Single const.	A-mvt	Scramb	WH-Mvt	Topic.
A-mvt		√	√	√
Scramb.	*		√	√
WH-mvt	*	*		√
Topic-mvt	*	*	*	

(133)

Surfing table	A-mvt	Scramb	WH-Mvt	Topic.
A-mvt		√(23)	√(24-25)	√(26)
Scramb.	*		% (28ab)	% (29a)
WH-mvt	* (27)	* (28c)	(13b)	?? (30a)
Topic-mvt	*	* (29b)	* (30b)	

(134)

Diving table	A-mvt	Scramb	WH-Mvt	Topic.
A-mvt	(*)	? (32ab)	√(31a)	√(31b)
Scramb.	*	(*)	√(33)	√(34)
WH-mvt	*	*	(*)	?? (35b)
Topic-mvt	*	*	(*) (135)	(*)

For comments on specific examples, see Thiersch (*in prep.*). Since Abels doesn't have an example for Topic > WH in the diving table, an example might be:

- (135)  $[_{DP} \text{ Welches Buch } e_i ]_j$  meint Karl,  $[_{PP} \text{ über die Liebe}]_i$  hat keiner  $e_j$  gelesen?  
 which book means Karl over the love has no one read  
*Intended meaning:* "Which book about love does Karl think no one has read?"

Unfortunately, a survey of several informants found only two who rejected it outright, others found it awkward, but not ungrammatical, probably because they interpreted it as a parenthetical instead of extraction from a verb-second CP; see Pankau *et al.* (2010) and references therein to this problem. We leave this as a problem for future research, since Abels has no concrete examples for the crucial lower part of the Diving table, and as we will see immediately below, Grewendorf's examples (with one possible exception) suffer from a similar problem.

If one makes a similar table for Grewendorf's diving (RM) and annotates it with his examples, one sees a similar pattern:

- (136) **Table for G's hierarchy:** left-right order in the hierarchy reversed so that it matches Abels' table, omitting head mvt.; Int. = internal movement, Rem. = remnant movement

Int. ↓ Rem. →	A-mvt	Scramb	NonOp A'-Mvt	Op A'
A-mvt	*	√(21b)	√	√(6b)
Scramb.	*(1b)[(30)]	*(52),(30), (20b),(10)	√(53)	√
NonOp A'-Mvt	*	*[(41b)]?	*	?? (25)
Op A'	*	*[(41b)]?	*	*(41b),(69)

Some of Gr's examples seem to be misanalysed, which I've indicated as [(30)], moving the number to the correct box. He counts the following [his (12b)/(30)] as scrambling of *ihn*, followed by passivization of the infinitive clause:<sup>97</sup>

<sup>97</sup>In Grewendorf (2015) he has *den Studenten* 'the student (*acc.*)' instead of *ihn*; movement of *ihn* might be interpreted as low-ranked clitic/head movement, incorrectly predicting the sentence to be good. But in light of the following discussion here, using *den Studenten* makes the point more forcefully, it's just a case of Mü's UD.

- (137) a. weil Maria ihn<sub>i</sub> vergeblich [PRO e<sub>i</sub> zu küssen] versuchte ...  
 because Maria him.ACC in vain to kiss tried
- b. \* weil [PRO e<sub>i</sub> zu küssen]<sub>j</sub> ihn<sub>i</sub> von Maria e<sub>j</sub> vergeblich versucht wurde ... Gr  
 (12b)

But it has been known since Lenerz (1977)<sup>98</sup> that passive in German does not involve obligatory movement to the subject (Spec,TP) position, and indeed there is extensive literature beginning with Den Besten (1981/82) trying account for the occurrence of nominative case to a low position. So the unmarked order would be *vergeblich zu küssen versucht wurde*, and this would be two instances of scrambling, falling under Mü's UD.<sup>99</sup>

Another problem is Hiraiwa's example of *wa*-topic mentioned above as (127) and repeated here [Gr's (69)]:

- (138) \* [<sub>CP<sub>3</sub></sub> [<sub>CP<sub>1</sub></sub> Jiro-ga e<sub>i</sub> at-ta to]<sub>j</sub> (-wa) [<sub>TP</sub> Taro-ga [<sub>CP<sub>2</sub></sub> Jiro-NOM meet-PAST COMP TOP Taroo-NOM  
 gakusei-to<sub>i</sub> (-wa) [<sub>CP<sub>2</sub></sub> Hanako-ga e<sub>j</sub> omotte-iru to] it-ta]]  
 students-with TOP Hannako-NOM think-PRES COMP say-PAST  
 "Taroo said that Hanako thought that Jiro met with students."  
 [Hiraiwa (2003), (7)]

Hiraiwa intended this to be a case of two *different* movements, scrambling and *wa*-topicalization, making it a problem for Mü's UD; if they indeed occupy different positions in the hierarchy, then it is a problem for Gr as well, since one of the two orders is predicted to be good, all other things being equal. Gr says they are both adjunction which under G&S's theory means they are both instances of Op,A' and would fall under Mü's generalization, as indicated in the table (136).

The examples distinguishing the two approaches are in the triangle of \*'s in the lower left of the RM tables, so if this line of thinking is correct, then there is only one example which distinguishes between Mü's UD and the hierarchical approach, namely Gr's original (1b) = (124) above, with the (not entirely uncontroversial) interpretation that the two types of scrambling are different. Abels doesn't have any examples, but just says they are all bad without argument, hence my added (135) which I assume is ungrammatical — Mü notes that such examples are particularly bad in German (extraction from V-2 embedded clauses) presumably due to the island effect of filling the lower Spec,CP; cf. Pankau *et al.* (2010). In the other order, Topicalization out of a WH-island, both Grewendorf and Abels argue that the judgement of ?? belongs in the upper triangle, since the remnant movement doesn't add to the already present island effect [ $\approx$  Gr's (24a), (25a)]:

- (139) a. ?? [Den Fritz zu überreden]<sub>j</sub> weiß ich nicht warum sie e<sub>j</sub> versucht hat.  
 b. ?? [e<sub>i</sub> zu überreden]<sub>j</sub> weiß ich nicht wen<sub>i</sub> sie e<sub>j</sub> versucht hat.

This contrasts with English:

- (140) a. \*? That book about Goethe, Fred didn't know why he should read.  
 b. \*\* That book about e<sub>i</sub> Fred didn't know who(m)<sub>i</sub> he should read.

Since embedded topicalization is marked in English, and not obviously the same construction as German Vorfeldbesetzung — see Frey (2005) — this hard to test. In general, a great deal more needs to be said about the examples, but for reasons of space, we refer to the discussion in Thiersch (*in prep.*) and leave the matter to future research.

<sup>98</sup>See many references and discussion in Haider's chapter, this volume.

<sup>99</sup>As to the problem with Gr's (41b), see Thiersch (*in prep.*).

Hence it would seem there is still work to be done in verifying the hierarchical approach for the RM case. For the surfing case, Abels *does* have a number of intriguing examples for both parts of the diagram, but since this chapter is about RM and not freezing, we leave this to future investigation (see Thiersch *in prep.*), but with the following comment: the diagonal for the RM chart is all \*, as predicated by Mü’s UD, and supported by several examples<sup>100</sup>, but the status of the diagonal in the surfing case is open: cases of A’ + A’ seem to be relatively good, cf. Rizzi (2006), his (36b):<sup>101</sup>:

- (141) ? [<sub>CP</sub> [<sub>PP</sub> di quale autore]<sub>i</sub> ti domandi [<sub>CP</sub> [<sub>DP</sub> quanti libri e<sub>i</sub>]<sub>j</sub> siano stati censurati  
e<sub>i</sub> ]]  
“Of which author did you ask how many books had been censored?”

## 6.2 Müller (2014, 2015) “Buffers”

We conclude the section on movement approaches with a discussion of Müller’s recent work, building on Grewendorf and Abels, which incorporates the Williams hierarchy; i.e., suggesting an answer to the question raised earlier as to why the hierarchy restricts constructions involving *two* independent movements. While Müller uses his “buffers” approach to solve several syntactic puzzles, we restrict our attention here to RM constructions.

Of the two publications by Müller, *Syntactic buffers* (2014) is the more accessible, since the details of his system are explained with explicit examples (Chap. 3 on Remnant Movement together with the preceding Chap. 2, sections 2 and 3, which explain his proposal). In addition, in the Appendix to Chap. 3, Müller compares his approach with that of Grewendorf and Abels, as well as with non-movement approaches.

As mentioned, the recent movement approaches of Müller, as well as Abels and Grewendorf (as noted in § 6.1) all rely in varying ways on some version of the Williams hierarchy — see comments in § 5.2.2, above example (76) — not just A-movement before A-bar, but involving movement to Specifiers of all major projections in a clause; movement then has to be *upward* in terms of the hierarchy as well as in terms of tree structure. Müller refers to this use of the hierarchy as the “Williams *Cycle*”, since if it defines improper movement as moving to a *lower* position in the hierarchy, then clearly it has to somehow start over again in the next clause up, otherwise movement from, say Spec,CP to a higher Spec,vP (as in Russian or Persian) would *always* be illicit. As noted earlier, Müller is interested in implementing an explanation as to why the interleaved movements of *two* constituents also obey the hierarchy.

The trick then, is how to make this work: Müller’s solution is to move (internally merge) categories repeatedly, and, as they climb the tree, to save the categorial features of the host in a buffer, whose value is a *list* that is a *queue* (not a stack!), and to periodically remove categorial features when they are again encountered. By this means one has a very local record of the constituent’s history of movements. Movement is triggered by inserting edge features; cf. Chomsky (2001). The crucial part is that movement is halted by the presence of an *inherent* probe feature (i.e., from the lexicon) at the moved constituent’s final position (the  *criterial*  position; see Rizzi (2006)). It is at this point that the Williams hierarchy is checked with remaining categories in the buffer.

<sup>100</sup>Presumably A-mvt+A-mvt is out, since the movement would have to be from a non-Case position inside a Case-marked constituent.

<sup>101</sup>This — and similar examples from Torrego (Spanish), Starke (French) — would seem to be counter-examples for Bošković’s (2016) proposal that allows only left peripheral elements to escape freezing (cf. footnote 24). (Note that the English translation is good as well, but bad with *by which author*, also with P-stranding. –CT)

The reader can easily verify that this works for excluding, for example, long distance scrambling in German: in a sentence like

(142) \*... weil ich [das Buch]<sub>i</sub> sagte, dass Karl *e<sub>i</sub>* lesen soll

there will be a sequence like  $\boxed{vVCT\forall V}$  indicating a violation of the Williams hierarchy.

The questions for us: (i) how does this work in a typical Remnant Movement context to rule the appropriate cases in and out and coincidentally (ii) what about long distance scrambling in languages like Russian, where (142) is grammatical? Going through all the cases would go beyond the scope of this chapter, so we give typical examples and refer the reader to the discussion in Müller (2014). Dealing with the latter case first, namely how does one parameterize for language differences, Müller suggests that since categorial labels are really feature bundles, some languages (like German) would cancel the features under strict identity, others (like Russian) would only require partial matching, and *v, V* could also so cancel *C, T* respectively, allowing a DP to stop in Spec,vP. There are other cases discussed in his text.

As to remnant movement, clearly something needs to be added: it won't do to have the propriety of *one* moved constituent checked, because the restrictions apply to evaluating the propriety of moving *two* related constituents,  $\alpha, \beta$ , in the configuration  $[_\alpha \dots \beta \dots ]$ . (See comments in section 6.1 on Grewendorf's and Abels' proposals.) Müller links the two constituents by adding the *index* (not the category) of a moved constituent to the buffer feature (list) of the dominating constituent, thereby "contaminating" it.

The basic intuition is not unnatural: extracting something from a constituent "contaminates" it and the result is ungrammaticality unless this is "fixed" — one imagines an unresolved SLASH<sup>102</sup> in an HPSG structure. In a normal extraction in HPSG the SLASH gets locally unified with a sister. In Müller's "Buffers" approach, the contamination is undone when the extracted element reaches the criterial landing site. Its own buffer is checked against the Williams hierarchy, and the index removed from the source constituent. It's important to note that Müller assumes that the movement of the two related constituents after the first move is in general order preserving (cf. Fox & Pesetsky (2005a), the remarks in (ii) at the beginning of §6, and the discussion in §6.3.1). The dominating constituent (e.g., the remnant constituent) moves first, and the internal constituent is "tucked in" (Richards 1997). (See his article for motivation and several sample derivations.)

In other words, if  $\beta$  moves out of  $\alpha$ ,  $\beta$ 's index is added to  $\alpha$ 's buffer, and if the offending index is not removed by the time  $\alpha$  reaches its criterial position, the derivation crashes. For example, if  $\beta$  reaches *its* criterial position, then it decontaminates (eliminates its index from) all of the *c*-commanding constituents, which include the host from which it was extracted. In the case of standard RM,

(143)  $[_{VP} e_i \text{ gelesen}]$  hat  $[_{DP} \text{ das Buch}]_i$  keiner ...

it's intuitively clear that *das Buch* will reach its final landing site first and will remove its index from the VP *gelesen* which has moved above it. In the case of freezing

(144) \*Was<sub>i</sub> denkst du  $[_{CP} [_{VP} e_i \text{ gelesen}]]$  hat keiner ...

it's clear that the VP has already "landed" long before *was* reaches its criterial position. That is, it has no chance to be decontaminated before checking the Williams hierarchy — here, rather than finding an order violation, it finds gibberish: an index amidst the categories.

The tricky case is the Müller-Takano generalization (UD). Recall that in Müller's approach the interleaved movements are always order preserving (except for the first cycle),

<sup>102</sup>A bit like a GB trace, but in a different metatheory.

and it’s crucial that this is done by “tucking in”: the top constituent reaches its criterial position *first* and has its buffer checked *before* the extractee is “tucked in”, so the buffer is not (yet) decontaminated and checking fails. So this approach crucially relies on the ordering of operations and “tucking in.” We leave as an exercise to the interested reader checking this and other cases (with the help of Müller’s article), which involve some intricate assumptions about details of the derivations.

## 6.3 Other movement analyses

### 6.3.1 Saito & Takita

As noted above, in recent work Saito (2015), building on work by Takita (2010) and Ko (2007) has advanced the idea of applying Fox & Pesetsky’s (2005a), henceforth F&P, structure preservation for explaining the restrictions on remnant movement in Japanese<sup>103</sup>. (Oddly, Mü (2000), “Shape conservation and remnant movement” advocates this approach, but for *secondary* remnant movement.)

The original idea in F&P was that once a constituent is sent to PF (Spell Out) the order is fixed and subsequent movements have to preserve this order. However, unlike what is assumed in many phase-based accounts, e.g., Chomsky (2008/2004), where the spelled-out material is unavailable to the syntax, in F&P-type approaches the material is not literally sent *in toto* to PF (& LF) when leaving a “spell-out domain” and is henceforth still available. Rather, Spell-Out creates a set of ordering statements, and further operations are not allowed to contradict these. So in the case of Skandinavian object-shift (Holmberg’s generalization) at the end of the VP domain, the order  $V < DP$  is established, and if the object subsequently moves to the left of a higher Adverb, then the sentence is ungrammatical unless the verb moves as well. The same applies to other intervening material contained in the VP: if not moved to restore the order, the derivation crashes. See discussion in SynCom chapter Vikner “Object shift”. In the case of WH-object questions, on the other hand, the WH-phrase must move to the edge before spell-out to continue to be available for further movement, ultimately reversing the order of verb and object (the cyclic edge effect in WH-movement). As Fox & Pesetsky (2005b) note in their reply to some criticisms, they make no claim as to what allows movement to the edge of a “spell-out” domain<sup>104</sup> — for example, if the DP object in Skandinavian were able to move, one would have a reversing effect, contrary to fact. Trying to account for the differences between languages and constructions with respect to order preservation has generated considerable controversy in the literature. For example, as we will see below, whether VP or vP is a “spell-out” domain, and concepts such as whether to allow “Late Merge” (a.k.a. “Covert Merge”): e.g., the subject is merged later (or covertly) in vP, so it does not have to take part in linearization, but does have to move to a higher domain (e.g. TP) to be linearized and pronounced. These parameters will play a role in accounting for RM phenomena<sup>105</sup>.

How will this work in Japanese in the simple case? (CP remnant created by long DP scrambling as in (124), repeated here):

$$(124) \quad * [_{\text{AgrsP1}} [_{\text{CP2}} e'_i \text{ Hanako-ga } e_i \text{ yonda to}]_j [_{\text{AgrsP1}} [\text{sono hon-o}]_i [\text{Taroo-ga } e_j \\ \text{H}_{\text{Nom}} \quad \text{read} \quad \text{COMP} \quad \text{that book}_{\text{Acc}} \quad \text{T}_{\text{Nom}}]$$

<sup>103</sup>Since Saito advocates Takita’s approach for Japanese, as well as English binding data, but doesn’t discuss German, which Takita does, we draw most of the material from Takita’s dissertation.

<sup>104</sup>“What we did not attempt was a comprehensive explanation of which movements do or do not target the edge of [a spell-out domain]” p.237

<sup>105</sup>It should be noted that F&P’s proposal was originally taken up for Korean and Japanese by Ko (2007, and earlier) to explain the classic puzzle of stranded quantifiers: from object but not from subject. Due to lack of space and relevance to RM we refer the reader to Ko’s article.

itta]]]  
said

Here the first “spell-out” occurs within CP<sub>2</sub>: presumably [<sub>vP</sub> sono hon-o [<sub>vP</sub> Hanako-ga e<sub>i</sub> yonda-to] — yielding the order [<sub>DP</sub> sono hono] < [<sub>vO</sub> yonda] with a second spell-out. Even assuming as in Grewendorf & Sabel (1999) and Grewendorf (2003) that the scrambled DP moves step-wise through a higher projection in CP<sub>2</sub>, it still generates an order which doesn’t contradict DP < V(P). But the fronting of CP<sub>2</sub> to its final position creates a linear order CP<sub>2</sub> < DP, which implies V < DP since CP dominates [<sub>vO</sub> yonda], generating a contradiction<sup>106</sup>.

One’s immediate reaction might be that this won’t work for German (and English), which essentially have the same configuration in RM as in (124). The difference, according to Takita, is that there is a parameter, namely for Japanese and Korean the spell-out domain is the entire vP, whereas for English and German it is VP<sup>107</sup>:

(145) English: [<sub>vP</sub> Criticized e<sub>i</sub> by his boss]<sub>j</sub>, John<sub>i</sub> has never been e<sub>j</sub>.

*Derivation:*

- a. [<sub>vP</sub> John<sub>i</sub> criticized by his boss] → *Order*; criticized < PP (i.a.)
- b. [<sub>TP</sub> John<sub>i</sub> has never been [<sub>vP</sub> e’<sub>i</sub> criticized e<sub>i</sub> by his boss]] → (*no change*)
- c. [<sub>vP</sub> e’<sub>i</sub> criticized e<sub>i</sub> by his boss]] [<sub>TP</sub> John<sub>i</sub> has never been e<sub>j</sub>  
→ *Now the order vP < TP can be finalized*

(146) German: [<sub>vP</sub> PRO e<sub>i</sub> Zu lesen]<sub>j</sub> hat [<sub>DP</sub> das Buch]<sub>i</sub> keiner e<sub>j</sub> versucht<sup>108</sup>

~ (100a)

- a. [<sub>vP<sub>1</sub></sub> PRO [<sub>vP<sub>1</sub></sub> [<sub>DP</sub> das Buch] zu lesen]] → *das Buch* avails itself of movement to the edge of vP before spell-out:
- b. [<sub>vP<sub>1</sub></sub> [das Buch]<sub>i</sub> [<sub>vP</sub> PRO e<sub>i</sub> zu lesen ]] → no ordering of *das Buch* w.r.t. *zu lesen* at this stage;
- c. [<sub>vP<sub>2</sub></sub> keiner [<sub>vP<sub>2</sub></sub> [<sub>vP<sub>1</sub></sub> [das Buch]<sub>i</sub> [<sub>vP</sub> PRO e<sub>i</sub> zu lesen ]] versucht]  
→ *das Buch* will have to “scramble” again to avoid being linearized within VP<sub>2</sub>:
- d. [<sub>vP<sub>2</sub></sub> [das Buch]<sub>i</sub> [<sub>vP<sub>2</sub></sub> keiner [<sub>vP<sub>2</sub></sub> [<sub>vP<sub>1</sub></sub> e’<sub>i</sub> [<sub>vP</sub> PRO e<sub>i</sub> zu lesen ]] versucht]]

This leaves *zu lesen* free to topicalize to the Vorfeld, as there are no more VPs so *keiner* and *das Buch* have not been ordered with respect to it<sup>109</sup>.

The English case works straightforwardly, but as one can see from the German derivaton, the DP will have to repeatedly avail itself of the otherwise unmotivated movement to the edge to avoid being linearized in the wrong order. Without drawing a final conclusion here, we simply remark that this is a general property of German and other SOV scrambling languages, which are characterized by massive reversals of what is assumed to be the base order, to say nothing of the changes wrought by obligatory V-2 and Vorfeld topicalization. Cf. Müller (2007) for further discussion. (Note Japanese and Korean will have to use the edge strategy, and not just for the quantifier puzzle, but regularly, as they are also free scrambling languages.)

At this point, the reader may be wondering about the German examples falling under Mü’s UD generalization: two instances of the same movement, which is ungrammatical:

<sup>106</sup>Takita and Saito use an example with a PP scrambled from the CP, but otherwise parallel; Saito is agnostic as to where the linearization if fixed, and has an odd structure for the base, which may be a typo, so for concreteness, we base the derivation on Takita’s p.35. Note the DO has scrambled in the vP, reversing the order of subject and object, which also violates the ordering restrictions in the final spell-out. See also the discussion of Hiraiwa’s passive example in Thiersch (*in prep*).

<sup>107</sup>F&P (2005a) originally assumed this for Swedish, but cf. F&P (2005b) for discussion of the distinction.

<sup>108</sup>Takita’s example; I’ve fixed the order, for felicity, cf. (100a), and changed VP to vP.

<sup>109</sup>We ignore for simplicity the possibility of a CP requiring linearization above vP<sub>1</sub>.

(147) \*Weil [<sub>α</sub> e<sub>i</sub> zu lesen]<sub>j</sub> [das Buch]<sub>i</sub> keiner e<sub>j</sub> versucht hat, ... = (100c)

Since the order is the same as (146/100a), whatever accounts for the acceptable order in the latter should make this example acceptable as far as the linear order is concerned. Takita remarks on p.42 that this is so, and in this case it is indeed a Minimal Link Condition violation (as in the derivation of his UD condition).

However, for a Müller-style MLC analysis to work, scrambling must be feature driven, but Saito and others have argued against this, and indeed Takita himself seems to argue against this, on the basis of the following examples.

- (148) a. Sono hon-o<sub>i</sub> Hanako-ni<sub>j</sub> Taroo-ga [<sub>CP</sub> Ziroo-ga e<sub>j</sub> e<sub>i</sub> age-ta to]  
 that bookACC H.-DAT T-NOM Z-NOM give-PAST COMP  
 omottei-ru (koto)  
 think-PRES fact  
 “(lit.) That book<sub>i</sub>, to Hanako<sub>j</sub>, Taroo thinks [that Ziroo gave t<sub>i</sub> t<sub>j</sub>]”  
 b. Hanako-ni<sub>j</sub> sono hon-o<sub>i</sub> Taroo-ga [CP Ziroo-ga e<sub>j</sub> e<sub>i</sub> age-ta to] omottei-ru (koto)

Both orders of (long) scrambling are perfectly acceptable, which should not be possible if they are triggered by probes with some scrambling feature  $\Sigma$ : Takita, p.20: “The fact that (17a-b) are equally grammatical thus suggests that scrambling is not feature-driven, inducing no MLC violation.” Saito (2015) also remarks that it is unlikely that (Japanese) scrambling is feature-driven. Of course, the same observation as in (148) is true of German (short) scrambling and so if the argumentation is true, German scrambling can’t be feature driven either. So while consistency may be the hobgoblin of small minds, we leave the reader to puzzle over this apparent contradiction<sup>110</sup>.

For a complete discussion of how the Takita/Saito approach works for the more complicated Japanese cases, see discussion in Thiersch (*in prep*) and the works cited above. We next turn to a few brief comments on other approaches and conclude the chapter with a short discussion of some non-movement approaches.

### 6.3.2 Others

**6.3.2.1 Putnam (2007)** Putnam explains the “Müller-Takano Generalization” (= UD) using the concept *prolific domains* from Gromann’s (2003) book. Recall UD: the two types of movement can’t be the same, or “too similar”; Putnam is attributing the restriction instead to the *environment* rather than the type of movement. Basically in (149a) topicalizing the remnant VP is OK because the Vorfeld and Mittelfeld are different domains. In (149b) = (71b) in § 5.2.1.4, repeated here, the VP and displaced DP are in the same (prolific) domain, so it is deviant even though “scrambling” of the VP is permitted :

- (149) a. [<sub>α</sub> e<sub>i</sub> zu lesen]<sub>j</sub> hat [<sub>DP</sub> das Buch]<sub>i</sub> keiner e<sub>j</sub> versucht.  
 b. \*Weil [<sub>α</sub> e<sub>i</sub> zu lesen]<sub>j</sub> (das Buch) keiner (das Buch) e<sub>j</sub> versucht hat, ...

**6.3.2.2 Hunter** A similar approach is followed by Hunter (2011, 2012), developed from his dissertation. His “Just Outside Constraint” (JOC) requires the source remnant’s base position to be in the same (extended) maximal projection as the target position (criterial position) of the extracted subconstituent. A comparison of this and Putnam’s approach with the Mü’s UD and approaches using the Williams Hierarchy unfortunately goes beyond the scope of this chapter.

<sup>110</sup>Note that Ko (2007) assumes scrambling *is* feature driven, but solves the problem of “optionality” in (148) by allowing one feature to attract multiple specifiers.

**6.3.2.3 M. Kuno (2006a,b)** Masakazu Kuno (2006a/b) has a very different movement approach to the Japanese facts, suggesting that the restrictions on remnant movement (and other phenomena) are a result of restrictions on *reconstruction*, i.e., downward movement in LF, similar to those on upward movement in overt syntax. Limitations of space preclude discussing this here, but see discussion in Thiersch (*in prep.*) or Kuno’s works.

## 7 Objections and alternatives: Non-movement solutions

At this point we turn to one of the other lines of attack for the remnant movement problem: the strategy we have been discussing so far assumes that an entire XP is fronted which has been evacuated (either by scrambling, or as in Hinterhölzl (2006) by other Mittelfeld movement). In this approach one has to deal with the unbound trace, which, as Mü demonstrated, can be circumvented, but it has the alleged advantage of explaining why languages which lack scrambling also lack Germanic style remnant VP preposing<sup>111</sup>, although, as we have seen, languages may have other kinds of primary RM. However, but a movement analysis does give one a handle on explaining the restrictions. That having been said, we need to separate out several issues:

### 1. Scrambling:

- (a) Does scrambling involve movement or base generation? The latter implies that there is no RM analysis available, unless by “licensing movement”.
- (b) There is scrambling by movement, but it doesn’t feed RM.
- (c) Then there are several alternatives.
  - i. The fronted constituent is still an XP: either all V projections count as maximal (Fanselow 2002) or there is possibly “movement and regeneration” as in van Riemsdijk (1989)
  - ii. Or do we countenance a non- $X'$  BPS approach (Ott 2010, see § 7.2)?
  - iii. Or do we have distributed deletion? (also Ott 2010, 2016, following Fanselow & Ćavar 2002)?

### 2. Restrictions:

We have seen above that there are several apparent restrictions on incomplete category fronting noted by DB&W, Mü and others. Do any of the non-movement approaches (Fanselow, Ott or De Kuthy & Meurers, etc.) deal with the apparent restrictions?

We look at two examples of non-movement approaches here: Fanselow (2002) and Ott (2010), who take rather different tacks. Fanselow’s main concern here, as in Fanselow (2001), is that scrambling does not involve movement, which implies that there can be no RM analysis of partial VP fronting, unless by some other movement, for which there are no good candidates. Ott (2010, 2016), on the other hand, is agnostic about the analysis of scrambling<sup>112</sup> and argues on the basis of empirical data that a BPS solution is to be preferred.

<sup>111</sup>Note that the kind of  $V^0$  preposing discussed Vicente, Trinh, i.a. in § 4.2.1 seem, as noted, to be a different phenomenon.

<sup>112</sup>I take it from his dissertation that he views scrambling as movement; as Mü (2014) notes, there are too many movement related phenomena (binding, scope, alleged PGs, etc.) associated with scrambling to be ignored. Of course, this conflicts with the view of Fanselow and others.

Some of his arguments for a non-movement approach were addressed in Mü (2014), but others are genuinely new, and need to be addressed in movement solutions. Unfortunately, there are some resistant cases, for which Ott offers a Distributed Deletion solution. He unifies this ellipsis approach in Ott (2016).

We discuss these two in more detail below, and mention some other non-movement approaches.

## 7.1 Fanselow (2002)

The classic article in the non-movement approach is Fanselow (2002), henceforth GF, who argues, building on the non-scrambling approach in Fanselow (2001), that each of the projections of  $V^0$  counts as a maximal projection for *Vorfelddbesetzung*<sup>113</sup>. Although he doesn't employ BPS directly, he relies on Chomsky (1995a) chapter 4.3, which contains the core of the BPS concept.

This approach to scrambling assumes that variant orders in the *Mittelfeld* are not created by movement, but rather base-generated.<sup>114</sup> Fanselow (2001) contains arguments against a movement analysis of scrambling and a working out the formal details of a base-generation approach.

This alternative yields the remnant VP construction with no unbound trace, but then with what appears to be a less than maximal projection in the *Vorfeld*. We give a short summary of GF's approach in the following.

### 7.1.1 Scrambling Basics

Remnant VP fronting in German (*RM(vp)*<sup>115</sup>) requires another verb to occupy the V-2 position, and GF notes that in German auxiliary verbs like modals are fully inflected verbs and, unlike English modals and auxiliaries, can be interchanged (with the respective change in meaning):

- (150) a. Er muss den Hund gefüttert haben  
           he must the dog fed have  
           ‘‘He must have fed the dog’’  
       b. Er hat den Hund füttern müssen = ‘‘He was obliged to feed the dog’’

Hence, if one could overcome the objection that  $\theta$ -roles have to be checked locally, objects could be merged in a higher VP projection, and the lower one could be fronted in partial VP fronting, without an unbound trace:<sup>116</sup>

- (151) a. ... dass sie [<sub>VP<sub>1</sub></sub> dem Fritz [<sub>VP<sub>2</sub></sub> ein Buch geschenkt] hat]<sub>1</sub>  
           that she the.DAT Fritz a.ACC book given has

<sup>113</sup>Ironically this appeared in the same volume as Müller's ‘‘Two types of remnant movement’’.

<sup>114</sup>See Haider (1993) Chap.8 for an early discussion of the evidence against scrambling as (A') movement. For further discussion of scrambling, see Chapter Haider ‘‘Scrambling ...’’ *this volume* and Fanselow (2001); also Haider (2010), who in his chapter 4 has a lucid description of many of the reordering phenomena in the ‘‘Mittelfeld’’ of Germanic languages which have different characteristics and cannot be lumped together under the rubric ‘‘scrambling’’ as well as a comparison of various approaches. He notes that there is a lack of consensus due to the conflating of these phenomena, and a lack of in-depth studies in enough languages to generalize. See however Broekhuis (2008) chap. 3, for an attempt to unify the Germanic scrambling types (including German) in a framework which combines the Minimalist Program and Optimality Theory.

<sup>115</sup>In Fanselow's article he notes that his remarks only apply to Germanic VP preposing, hence *RM(vp)*; we return at the end of the section, as does Fanselow, to whether these considerations apply to *RM* in general.

<sup>116</sup>Notice the use of *schicken* ‘to give as a gift’ here as opposed to unmarked *geben* as in previous examples. The difference will turn out to be crucial to the judgements below, cf. (165)–(166).

- b.  $[_{VP_2} \text{ ein Buch geschenkt}] \text{ hat sie } [_{VP_1} \text{ dem Fritz } e_2 ]$

Note that given binary branching, this already implies that a verb (*including auxiliaries!*) would have multiple verbal shells; since verb *hat* selects  $VP_2$  in (151a), the structure for  $RM(vp)$  might be something like the following<sup>117</sup> [cf. GF’s (7b)]:

- (152) ... dass sie  $[_{VP_1} \text{ dem Fritz } [_{VP_1} \text{ ein Buch } [_{VP_2} \text{ geschenkt}]_2 \text{ hat}]_1 ]_1$

- (153)  $[_{VP_2} \text{ geschenkt}]_2 \text{ hat sie } [_{VP_1} \text{ dem Fritz } [_{VP_1} \text{ ein Buch } e_2 ]_1 ]_1$

Here  $VP_2$  could front stranding both *dem Fritz* and *das Buch*. GF observes that the objection to checking  $\theta$ -roles locally is spurious, as one really doesn’t need to have  $\theta$ -roles checked until they are interpreted at LF. Hence one could have the relevant features of the main verb raised to the next projection at LF (this is a bit reminiscent of HPSG accounts, see § 7.3.1); since it is often assumed that, depending on the base order, that either Dutch or German or both involve  $V^0$ -raising to form a verbal cluster, it seems not implausible. (GF notes that this is often the analysis for transparent (“coherent”) infinitives.) More precisely, he views this as an incorporation of the formal features of the lower verb into the higher, which can then license a DP in the higher projection.

While the reader is referred to Fanselow (2001) for technical details, Fanselow (2002) has an intuitive derivation for (151b) (omitting the second upper VP shell and some detail):

- (154) a.  $C^0 \text{ sie } [_{VP} \text{ dem Fritz } [_{VP} \text{ ein Buch geschenkt}] \text{ hat}]$  ← *from Merge*  
 b.  $[_{C^0} \text{ hat}] \text{ sie } [_{VP} \text{ dem Fritz } [_{VP} \text{ ein Buch geschenkt}] \text{ hat}]$  ← V-2  
 c.  $[_{CP} [_{VP} \text{ ein Buch geschenkt}] [_{C^0} \text{ hat}] \text{ sie } [_{VP} \text{ dem Fritz } [_{VP} \text{ ein Buch geschenkt}] \text{ hat}]$  ← *Preposing VP, Spell-Out*  
 d.  $[_{CP} [_{VP} \text{ ein Buch geschenkt}] [_{C^0} \text{ hat}] [_{VP} \text{ dem Fritz } [_{VP} \text{ ein Buch geschenkt}] \text{ hat}]$  ← *Reconstruction of VP at LF*  
 e.  $[_{CP} [_{VP} \text{ ein Buch geschenkt}] [_{C^0} \text{ hat}] [_{VP} \text{ dem Fritz } [_{VP} \text{ ein Buch geschenkt}] \text{ geschenkt+hat}]$  ← *Verb-raising at LF & checking  $\theta$ -roles*

At this point, one might wonder why SVO languages don’t have SOV-style scrambling and hence remnant VP preposing, cf. (13) in § 3. Fanselow replies that in these languages the relevant features are strong and need to be checked immediately in the lowest projection, hence there is no possibility of deferring checking, allowing neither “scrambling” (i.e. delayed merge) nor “remnant VP” fronting. Since feature strength is presumably independent of OV/VO order one could imagine an SVO language with scrambling and  $RM(vp)$  — Russian and other Slavic languages come to mind.<sup>118</sup>

### 7.1.2 Arguments against (movement) scrambling feeding RM

GF then turns to the question as to whether or not scrambling, conceived for the sake of argument as movement, is in fact the source for  $RM(vp)$ .

One argument that the assumption that  $RM(vp)$  is fed by scrambling is false, is that items which resist scrambling are stranded by  $RM(vp)$ ; an example are predicates [his (17)–(18)]:<sup>119</sup>

- (155) a. ... dass er das Haus rot anmalte  
 that he the hous red painted

<sup>117</sup>We note in passing that this conflicts with GF’s assumption of Larson’s (1988) structure for ditransitives.

<sup>118</sup>Unfortunately an examination of potential  $RM$  in Slavic is beyond the scope of this chapter, but see Bański (2002), in footnote 27 and the earlier remarks on Migdalski (2006) in § 4.2.1.

<sup>119</sup>Similar arguments are found in other authors such as Haider *op cit.* and Hinterhölzl (2006), and Ott (2010) i.a; to which Müller(2014) replies in his Appendix to Chap. 3.

- b. \*?... dass er rot das Haus anmalte
- c. Angemalt hat er sein Haus rot

Similarly for WH-words used as indefinite pronouns [example from Ott (2010)]:

- (156) a. weil (\*wen) sie (\*wen) bestimmt (√wen) geküsst hat  
 because (whom) she (whom) certainly whom kissed has  
 “Because she certainly kissed someone, ...”
- b. Geküsst hat sie bestimmt wen!

Also certain adverbial PPs and indefinite negative objects like *niemanden* ‘no one (ACC.)’. (see Fanselow (2002) and Ott (2010) for more examples).

While this would seem to imply two different operations, it could just be that the word order is free, and conditions (discourse, phonology) only apply to *divergent* orders, Vorfeldbesetzung not being subject to the same conditions as the Mittelfeld; e.g. predicate adjectives follow other arguments in the Mittelfeld. So vacuous scrambling that preserves the order is allowed. GF notes: If such representational approaches are not successful, the claim that *scrambling* feeds RM(vp) must be rejected, and there must be some other movement. On the other hand, if they are successful, “scrambling” doesn’t fit into the Minimalist Program, not being feature-driven. F’s suggestion that there is no movement-based scrambling avoids this conundrum. And the interface conditions could apply to the base-generated variant orders.

He then considers, parenthetically, yet another possibility of a movement analysis, namely extraposition, as tentatively broached by Mü; cf. discussion in §5.2.4 above. GF claims this can’t be adopted as a general solution, since elements that resist scrambling also resist extraposition [his (23), a WH-pronoun]:

- (157) \*?... dass gestern Antje  $e_i$  gelesen hat was <sub>$i$</sub>   
 that yesterday A read has something

Most tellingly, the allegedly unscramblable but allegedly extraposed element surfaces in the Mittelfeld if there is another auxiliary:

- (158) Geküsst durfte er schon öfter wen haben  
 kissed might he already often+*er* whom have  
 “He might well have kissed someone quite often”

A further consideration is that English has preposing following extraposition but no RM(vp) — the examples cited, however, involve an extraposed PP with a fronted partial VP with objects; the relevant examples would involve extraposition of a DP (i.e., “Heavy NP Shift”) and these seem dubious, and the judgements murky; cf. (14b) and footnote 14 above. We leave English native speakers to ponder the data.

GF discusses further complications, for which we refer the reader to his article. In any case, GF notes, extraposition seems not an antidote to the failure of these constituents to scramble for RM — although the issue is taken up again in the works referred to in footnote 119.

There follows a discussion of  $\theta$ -assignment (checking), but it is in part based on examples like

- (159)  $\square$  Shown the book though he may have to many of the students, ...

which GF crucially gives a \*; but it seems acceptable to this author, probably because of the acceptable extraposition of the (heavy) PP which makes subsequent fronting of a remnant VP possible:

- (160) He had (already) shown the book yesterday to several of the students in his class.

### 7.1.3 Freezing revisited

A second argument to decide between the movement and non-movement approaches would seem to come from the absence of freezing. If elements extracted from the remnant were moved, then they should be frozen. But DPs merged in higher VP positions count as being in their base position, so are not expected to be islands.

We have already seen data suggesting this in DB&W and Mü. Recall DB&W's example (53a), repeated here:

(53a) Gerechnet hatte Peter da nicht mit

The stranded P under RM(vp) is, on face-value, evidence either that “moving” doesn't cause freezing, or that the PP hasn't moved (as DB&W noted, and we've discussed in previous sections). Note that one has a similar problem with DPs [GF's (45)]:

- (161) a.  $[_{DP} \text{ welche Ansichten dazu}]_k$  hat er  $e_k$  denn geäußert?  
           which opinions there-to has he then uttered  
           “Which opinions has he expressed on that?”  
       b.  $[_{DP} \text{ welche Ansichten } e_i]_k$  hat er denn dazu  $e_k$  geäußert?  
       c.  $[_{DP} \text{ welche Ansichten } e_i]_k$  hat er da  $j$  denn  $[e_j \text{ zu}]_i$   $e_k$  geäußert?

Here we again see a familiar pattern: the PP *dazu* has evidently left the fronted DP in (b), but it can itself be split (c). We leave as an exercise to the reader, having seen similar examples in the discussion of Mü'98, to show that if there is movement of the PP out of the DP, all of the possible derivations should involve either an SCC violation or freezing.

How does the predicate raising analysis solve this? The answer is straightforward: the DP containing the PP adjoins outside of the lowest projection, V raises, and no freezing is expected. For the DP-PP case with extraction of *da* from the PP, arguments of N can also adjoin outside. F notes that this is no problem if the formal features of N raise to V-complex, forming a N+V complex à la Baker (1988).<sup>120</sup> Quite apart from RM, as we have seen in previous sections, the freezing data are problematic. Here is an example from De Kuthy & Meurers (1998) attributed to Fanselow (1991) [their (18)]:

- (162)  $[_{PP} \text{ Worüber}]_i$  kann  $[_{DP} \text{ einen Südkurier-Artikel } e_i]$  selbst Peter nicht  
           what-about can a-ACC Südkurier article even Peter-NOM not  
           am Strand verfassen?  
           at-the beach compose  
           “For which topic is it the case that even Peter cannot write an article about it for  
           the Südkurier while being at the beach.” (paraphrase – CT)<sup>121</sup>

Note that the direct object here appears *before* the subject. Also note, however, that it *does* obey Abels' hypothesis. Clearly, future research on RM will be intimately tied to “freezing” phenomena.

### 7.1.4 Restrictions revisited

How would such an approach handle some of the restrictions noted on RM? We give one suggestive example cited by Fanselow, namely Mü's UD. Recall that one can scramble a

<sup>120</sup>GF notes that one has to limit such raising so no features leave Specifiers or Adjuncts, otherwise DP-internal XPs could adjoin elsewhere and it would *look* like movement from Spec: Spec-Head Agreement could still proceed from the top KP in the configuration  $[_{HP} \text{ KP H}]$ .

<sup>121</sup>NB: Fanselow compares this to a comparable sentence which is bad claiming that it's not the scrambling (freezing) that's the problem in Müller's sentences, and has to do with specificity effects; cf. Pafel(1993).

full VP in the Mittelfeld, but not a remnant VP (we disregard the problem with unstressed pronouns lessening the effect):

- (163) a. ?Dass [<sub>VP</sub> den Peter geküsst]<sub>i</sub> keiner  $e_i$  hat  
 b. \*Dass [<sub>VP</sub>  $e_j$  geküsst]<sub>i</sub> keiner [den Peter<sub>j</sub>]  $e_i$  hat

This seemed to be a problem for the movement approach (hence Mü's suggested UD), but not for the non-movement approach, since Fanselow's structure is

- (164) \*Dass [<sub>VP<sub>2</sub></sub> geküsst] keiner [<sub>VP<sub>1</sub></sub> [den Peter] hat]]

In the non-movement approach, GF notes, there is no trace for VP<sub>2</sub> (it has been merged directly), so there is no reconstruction (unlike movement to the Vorfeld), and it doesn't become part of the V-complex. This, however, raises a question: how does VP get interpreted in the well-formed (163a)? If it's by incorporation into the V-complex as GF suggests, then it's unclear why the same doesn't happen in (164).

As to the degenerate quality of Left-Dislocation (LD) with RM(vp) noted by Mü and discussed in §5.2.1.4 and 5.2.5, GF argues that the resuming word *das* cannot inherit selectional features from the fronted VP, hence only the meaning of the top node is inherited. This suggests a hierarchy of arguments: unlike simple RM(vp), RM(vp) with LD shows a sharp asymmetry w.r.t. arguments:

- (165) a. Ein Buch schenken, das würde ich der Claudia nie  
 a.ACC book give that would I the.DAT Claudia never  
 b. \*Der Claudia schenken, das würde ich ein Buch nie

If a higher argument is fronted without the lower argument, the VP cannot pass along information about the unsaturated  $\theta$ -position. While many of the examples are suggestive and the discourse topic approach seems to be on the right track, as GF himself notes, it cannot explain why his own example in (166b) is acceptable compared to unacceptable examples like (166a), cf. Mü's (73b) [GF's (46)–(47)]:

- (166) a. #Gegeben, das hat die Claudia dem Peter ein Buch  
 b. Schenken, das würde sie Peter ihre Lieblingsdecke<sup>†</sup> natürlich nie!  
 † favorite blanket

Clearly this has something to do with the “heavy” semantic content of *schchenken*; see footnote 116. We leave working out of the other cases of restrictions under GF's assumptions to future research by those who share these views.

Finally, GF notes that the arguments are only intended to show that RM(vp) is not remnant movement, and he cites examples like those in (35) and §5.2.5.4, where the head is missing from two DP arguments, as only being explicable as RM. To this we add English examples like (18), repeated here:

- (18) [How likely  $e_i$  to win the election] *is*  $he_i$ ?

We now turn our attention briefly to a second, rather different non-movement approach.

## 7.2 Ott (2010)

Ott (2010, 2016) pursues a different approach. He apparently accepts scrambling as movement, but argues that it does not feed RM.

Basically Ott argues here that, given “Bare Phrase Structure” and Internal Merge, the RM analysis of partial VP fronting is no longer necessary. One can freely front (internal merge) any constituent, since there is no longer any X-bar theory, e.g.:



Cf. his paper for examples and discussion of this and other cases. Since a BPS approach allows head movement to a specifier (Matushansky 2006), Ott adopts this here for  $V^0$  fronting

For cases of partial VP fronting, there seems to be an unexpected asymmetry (already noted in Mü and GF) which is particularly severe with Left Dislocation:

- (170) a. Ein Buch geschenkt (das) hat er seiner Schwester  
 a book.ACC given (it) has he.NOM his sister.DAT
- b. Seiner Schwester geschenkt hat er ein BUCH *RM-Topic*
- c. \*Seiner Schwester geschenkt, das hat er ein BUCH *RM-Left-Dis.*

The topic version needs focal intonation to be good, and the LD version is ungrammatical without special I-topic intonation. If RM were involved, this is unexpected since although the unmarked order is  $\text{Dat} < \text{Acc}$ , the DPs can scramble freely, reversing the order, and one could front  $[_{VP} \text{DP}_{\text{Dat}} e_{\text{Acc}} \text{V}_{\text{Part}}]$ . Superficially, it looks as if the preposed item has to be a complete constituent. Ott assumes these are cases of “Distributed Deletion”<sup>124</sup> (DD). The basic idea is that the scrambling, as is well known, is licensed (is acceptable) when certain discourse and phonological conditions (focus, etc.) are met. The same should be true of Spell-Out of the fronted constituent and parts of its trace/copy. If for example there is a structure  $[_{VP_2} \text{DP}_{\text{Dat}} [_{VP_1} \text{DP}_{\text{Acc}} \text{V}_{\text{Prt}} ]]$ , then either the bottom  $VP_1$  or the top  $VP_2$  may be fronted, but in the latter case, the  $DP_{\text{Acc}}$  may fail to be spelled-out only if spelling-out of the low copy satisfies the discourse/phonological conditions, e.g. as in I-topicalization.

Similar considerations apply to the case where a  $v^*P$  containing a low nominative DP is fronted. Ott discusses cases including PPs and adverbials as well as cases where the unmarked order of objects differs, showing how otherwise puzzling observations from the literature can be accounted for. Are all cases of fronting “hidden”  $v^*P$  preposing? Ott suggests they are not; what is preposed is the minimal constituent necessary.

### 7.3 Other non-movement approaches

#### 7.3.1 HPSG solutions

Needless to say, RM(vp) being a Germanic phenomena, and given the number of German practitioners of attribute-value approaches, there are a number of HPSG papers on remnant movement; the classic paper is De Kuthy & Meurers (2001). They pursue an approach of reanalysis and percolation of features; one might view it as a formalization of the suggestions in Fanselow (2002). More recently, S. Müller & Ørsnes (2013), analyse object shift in Danish, and although not about RM, it gives an idea as to how a RM analysis might be implemented in modern HPSG.

#### 7.3.2 Hale & Legendre

An entirely different approach to RM is found in Hale & Legendre (2004) where German and Japanese are compared (including the surfing data in Japanese) under an Optimality Theory approach. We include it under non-movement approaches even though they countenance displacement since OT is essentially static, but just mention it due to limitations of space.

#### 7.3.3 Thoms/Walkden

For completeness, we mention recent work by Thoms & Walkden (2015 i.a.). Their work focuses mostly on English, where they pursue a base generated topic analysis with distributed

<sup>124</sup>Fanselow & Cavar (2002).

deletion, similar to Ott (2010). For German, like Ott (2016), they assume movement of the topic, but assume base-generated scrambling (on the basis of Neeleman 2004), which creates the incomplete vP or VP.

## 8 Secondary remnant movement revisited

Last but not least, as noted in the Introduction, RM has been invoked theory-internally i.a. by advocates of Kayne’s Linear Correspondence Axiom (LCA, Kayne 1994) to account for various phenomena superficially ruled out by Kayne’s LCA. For those not familiar with Kayne’s hypothesis, the best short introduction consists of the first four chapters of his book. Basically he hypothesizes that all linearization is derived from hierarchical structure, forcing a universal [Spec [Head Complement]] structure (or its mirror image). Since languages in fact differ in surface order (VO vs. OV, for example), this means that analyses in this approach will involve enormous amounts of (leftward) movement (and the accompanying functional structure to induce the movement), much of it remnant movement.

As it turns out, trying to make this work has stimulated a vast literature which we cannot discuss here due to limitations of space. There have been fruitful analyses for many puzzling phenomena, and this could easily fill a critical chapter of its own. We give just one example: rather exotic so-called VOS languages like Malagasy seem to have a structure reminiscent of a mirror image of Germanic V-2, with a designated clitic position second from last. They have thus been analysed as raising the topic (like the German Vorfeld) and then raising the constituent containing the vP above that. For discussion see i.a. Pearson (2001) and much subsequent literature, also SynCom chapter Eby Clemens & Polinsky “VSO and VOS word order...” A similar approach to the allegedly OVS language Hixkaryana is found in Kalin (2014).

The structures produced by these analyses are enormously complex – cf. Koopman & Sabolcsi (2000)’s analysis of Hungarian and Dutch verb-clusters or Hinterhölzl (2006) among many others. This has drawn the attention (and concern) of many computational linguists. Hence there is considerable interest in trying to see if more modern versions of (derivational) generative grammar (the “Principles and Parameters” approaches and their successor “Minimalist” theories) can be modeled in a static approach. Stabler (1997, 1999) developed such a model for representing a type of Minimalist grammars, and in the latter he expands the model to include recognition and applies it to certain analyses involving remnant movement. Kobele (2010) shows that formal “Minimalist Grammars” *without* remnant movement are context-free; see references in his bibliography to other literature on the subject.

In view of this we should note that Abels (2007), discussed above, argues in the second part of his article that remnant movement is *not* the correct analysis for cross-serial dependencies as claimed by Koopman & Szabolcsi; somewhat disappointingly, however, he leaves the correct analysis to future research.

## 9 Conclusion and evaluation: Some residual issues

Where do we stand (roughly) today (with regard to *primary* RM constructions)? Basically there are two lines of approach to the problem of moved elements which appear to be constituents with an obligatory argument missing: evacuation by movement (represented, i.a. by Müller (2014, 2015 and earlier), Grewendorf (2015 and earlier), Abels(2007), etc., on the one hand, and on the other, invoking Chomsky’s Bare Phrase Structure and Distributed Deletion, for the various cases, going back (at least) to Fanselow (2002) and the works of Haider; recently summarized and explicated in Ott (2010).

The decision as to whether to treat RM as being created by “scrambling” still turns on the problematic data uncovered by DB&W: (i) categories that appear not to scramble can be stranded, and (ii) categories which have escaped the remnant seem not to be “freezing” islands. For a recent in depth evaluation of these points two points, see the Appendix to Chap. 3 of Müller (2014). Due to limitations of space we cannot include the details here, but basically Mü argues that (i) is only apparent, if one examines the data more carefully, and for (ii) there are two possible solutions: reviving the extraposition analysis or extending Huang’s CED to include extremely local criterial positions as non-opaque:

The solution employing extraposition is similar to Mü’s original, and would seem to be contradicted by Fanselow’s examples, like the following:<sup>125</sup>

- (171)  $[_{VP} e_i \text{ Widerlegt}]_j$  dürfte er sie da<sub>k</sub> ja wohl kaum  $[_{PP} e_k \text{ mit}]_i$  e<sub>j</sub> haben  
 refuted might he her there yes well barely with have

Müller (2014) counters (as he did in 1998) that extraposition could be to any V-projection as long as it doesn’t violate some condition, like the integrity of the clause-final V-complex.

As an alternative, he suggests changing the definition of the CED along the lines proposed in Müller (2002), adding condition (c):

- (172) An XP  $\gamma$  is a barrier unless there is a head  $\sigma$  such that  
 a.  $\sigma$  c-selects  $\gamma$ .  
 b.  $\sigma$  and  $\gamma$  are in the same minimal domain.  
 c.  $\gamma$  is not required in its position by an edge feature.

This is basically a formalization in modern terms of DB&W’s original insight. *Plus ça change, plus c’est la même chose.*

And as to the restrictions, while employment of the Williams hierarchy seems promising, there is still work to be done examining the evidence.

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*Abbreviations:* LI = *Linguistic Inquiry*, NLLT = *Natural Language and Linguistic Theory*

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<sup>125</sup>Not accepted by all speakers.

<sup>126</sup>Often mis-cited as 2008.

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<sup>127</sup>Webelhuth's first name is misspelled as Gerth in the published version.

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