

# On the Expansion of the Multidimensional Universe

*Henk van Riemsdijk*

*Tilburg University (CLS/GM) and Collegium Budapest*

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## 1 Introductory remarks

Almost twenty years ago, Riny Huijbregts and I conducted a series of tape-recorded discussions with Noam Chomsky which later appeared as *The Generative Enterprise* (Chomsky (1982)). One of the topics addressed rather extensively was the issue of tree-representability of syntactic objects. Lasnik & Kupin (1977) had appeared a few years earlier and Edwin Williams had just published his formalization of Ross' (1967/1986) notion of across-the-board (ATB) rule application in Williams (1978). Here are some passages about the analysis of coordination, the Lasnik & Kupin formalism and related matters:

Q: Do you think that [Lasnik & Kupin's] version of reduced phrase markers which cannot always be represented in the form of trees is more promising than the LSLT version of reduced phrase markers which can?

A: I've thought about it some, and I think that they are right. I think they have a better theory. For one thing, one nice property of it is that it does restrict the possibilities. There are fewer reduced phrase markers than unreduced phrase markers, and that means that there are some statements that you can express within the framework of *The Logical Structure of Linguistic Theory* [Chomsky 1955/1975] that you can't express with theirs. For example, if ? uniquely dominates ?, that is different from ? uniquely dominating ? in the LSLT theory, but not in their theory, and that is all to the good. I don't know of any evidence that you need the richer theory. I think that their theory is a very good one really. I think it works very nicely for idiom rules, which in their formalism amounts to just adding another string to a phrase marker. I'd also like to see somebody work on things like coordination from their point of view. The idea of reduced phrase markers for things like coordination and some notion of set union may very well be right. There are also interesting implications for restructuring [...] which really ought to be pursued.

[...]

Fundamentally there are two different ideas about coordination, only one of which has been intensively explored. One is that, say, *John saw Bill and Tom saw Mary* is base generated as a long phrase marker with two parts, one to the left of the other, with each being an S or something. That is the standard approach. Another would be to say that you really have three-dimensional phrase markers. That is that *John saw Bill* and *Tom saw Mary* have no order, each is just a phrase marker. If we think of phrase markers in the Lasnik & Kupin way, they're just in different dimensions, and then there's a rule that says: Put them in the same dimension. That would be one of the properties of

coordination. And that could be true for internal (phrasal) coordination too. It could be, for example, and occasionally this shows up in the literature, that you might have some parts of phrase markers in another dimension, such that certain constituents are unordered with respect to one another, rather in the manner of branching quantifiers [...]. In the Lasnik & Kupin approach you might try formalizing this by saying that these three-dimensional trees are just sets which don't happen to be reducible to a single tree. It is not necessarily the case that every phrase marker in their sense has to be tree-represented, and you can imagine a union of two phrase markers, one for *John saw Bill* and the other for *Tom saw Mary*, which will have certain strings in common, like S in this case. And in that bigger set it might be quite possible to define all the grammatical relations. Then you can imagine maybe a phonological rule, which at some point gives them an order. That's just a rather different approach, not only to coordination, but to the whole mass of phenomena that go along with it, such as gapping. That I think would be really worth exploring. (Chomsky 1982: 102-104)

In a field which has seen an enormous explosion of work in a great variety of areas, coordination and what Chomsky calls "the whole mass of phenomena that go along with it" have attracted remarkably little attention, and furthermore Chomsky's idea's of which way to go have been followed up by only a few researchers. In the domain of coordination proper, the main exceptions are Goodall (1987), Muadz (1991) and Moltmann (1992). One example of this is that Riny Huijbregts, who I am sure could have taken this idea further than anyone (although, like virtually everything else he probably would not have published it anyway), dropped this line of inquiry because, as he put it, "nobody believes in this stuff anyway." Another telling example in this respect is Progovac (1998), a state-of-the-art article on coordination in which multi-dimensional or non-tree-representable approaches are only briefly mentioned and quite summarily dismissed. Apart from the problem of the occasional asymmetry among conjuncts, which Moltmann addresses extensively and adequately, in my view, the basic ground for disapproval seems to be the second half of the following sentence:

Unfortunately, a multi-dimensional approach faces problems with respect to other data, in addition to *constituting a considerable enrichment of the theoretical apparatus* (italics mine -- HvR). (Progovac I:p6)

As the Chomsky points out in the quote above, formalisms which define syntactic objects that are not tree-representable are not *ipso facto* richer and in fact they can be more restrictive in certain ways. As in the case of the standard tree-formalization, the real issue is how such a formalism is substantively constrained. The matter is reminiscent of the discussion about representing reanalysis in terms of three- or multi-dimensional structures, again an option readily available under a Lasnik & Kupin type formalization. When we suggested to analyze verb clusters in the Continental West-Germanic languages in Haegeman & Van Riemsdijk (1986) instead of using Evers' original proposal in terms of head adjunction, we were confronted with massive criticism, among others from Koster (1987): using multi-dimensional structures amounts to increasing the richness of the formalism. In this particular case, however, it is easy to see that reanalysis is in actual fact more restrictive in one crucial sense: reanalysis presupposes adjacency, while adjacency must be stipulated under any kind of head raising approach, cf. Van Riemsdijk (1998a).

It is true, of course, that in most cases alternative analyses can be constructed in terms of

the standard formalization, and often they are. The Progovac article cited above, for example, implicitly concludes that a tree-representable analysis of coordination must be correct. Similarly, Wilder (1997, 1998) argues in favor of analyses of ellipsis under coordination and transparent free relative clauses in terms of tree-representable structures in combination with backward deletion processes. What is most remarkable in the few works dealing with the matter is that the fundamental choice of the formalism in question is generally hardly argued at all. To cite just one typical example: "A third approach not considered here utilizes multi-dimensional phrase-structures [...]" (Wilder (1997: note 2 p. 103).

I will not pretend to make up for this lack of argumentation here. My modest purpose in the present contribution is to present an overview of constructions which are potential candidates for an analysis in terms of multi-dimensional or non-tree-representable structures. And the main reason for doing that is that, in my opinion, the range of constructions that avail themselves of these extended formal means is far broader than has hitherto been suspected.

## 2 The logical possibilities

There are two main ways in which the standard tree-representation formalism has been thought to be insufficient. For one thing, a single terminal string has sometimes been assumed to be simultaneously structured by two or even more trees. (In what follows, whenever I say two, what I really mean is two or more.) This is the case of reanalysis. Take the classical case of verb-preposition combinations which allow (pseudo-)passives.

1. John talked to Bill
2. Bill was talked to by John

The reanalysis proposal, going back to Chomsky's (1974) Amherst Lectures, is to say that (2) has two structures associated with it, one a VP with a V and a PP, the other a VP with a V and an NP. To represent this linearly, two different types of brackets can be used, [...] for one dimension and {...} for the other dimension, resulting in the following abbreviated structure.

3. Bill<sub>i</sub> was [VP {V [V talked ] [PP [P to ] } [NP e ]<sub>i</sub> } by John ]

The second major type of non-tree-representable structure is that of two strings (or substrings) associated with a single tree structure. This is the classic case of fully parallel coordinated structures. On such a view, a sentence like 4. would have a structure like 5.

4. John and Mary learn Spanish and Portuguese respectively
- 5.

[IP NP	[VP V	NP	AP ] ]
John	learn	Spanish	respectively

Mary

Portuguese

Structure 5. would then be linearized to 4. Also, omitting the adverb *respectively*, 5. could be linearized to 6.

6. John learns Spanish and Mary Portuguese

This, then, would be one way of dealing with gapping.

Once we turn to constructions like Right Node Raising, things become more complicated. In the RNR construction, we have a shared part of the string and a non-shared part. While the shared parts may be thought to not only share the terminals but also the relevant part of the structure, the non-shared part can diverge greatly in structure, as is know from such examples as 7.

7. John loves, but he knows even more people who hate, opera

While the common part of the string is a direct object in both conjuncts, the strings that each end in this direct object are greatly different in their own structure. The fact that the shared string does not have to be a constituent is by now well-established, witness examples of the following type from German.

8. ....weil Peter den Pálinka vor und Susi den Tokayer nach [dem Essen trinkt]  
because Peter the pálinka before and Susi the Tokay after the meal drinks  
'because Peter drinks the pálinka before and Susi the Tokay after the meal'

Structures such as 7. or 8. could be characterized as two full-fledged trees, each with its own string of terminals and its own tree structure, which stand in conjoined relationship with one another and which share the rightmost parts of their strings (with associated structure). The image of siamese twins comes to mind, but for various reasons I prefer the term 'grafts' to refer to such cases. This, then, leaves us with the following overall classification of syntactic representations.

Name	Description	Examples
Trees	one string -- one tree	most simple syntactic sentence structures
Reanalysis	one string -- two trees	pseudo-passives (cf. ex. 3.), double passives
Parallel Structures	two strings -- one tree	constituent coordination, gapping
Grafts	two strings -- two trees	Right Node Raising, <i>wh</i> -prefixes, transparent free relatives

## 3 Grafts

### 3.1. Right Node Raising

In the case of Right Node Raising (RNR), it is well-known that while the structure is coordinated, the two conjuncts need not be identical in structure. The only parallelism requirement is that the common part of the string (which need not be a constituent, cf. i.a. Wilder (1997)) be a structurally and semantically well-formed continuation of each of the conjuncts. Consider, for example, 9.

9. [It is well-known that Poulsen has found a language with 37}, but [I actually learned yesterday that Lodovici has discovered a language which he thinks has 43} *vowels in its phonological system*

The common part of the string is in italics while the non-identical parts of the strings are indicated as [...]. The structure of the latter is clearly quite different. This is what suggested the metaphor of 'graft' to me: two tree structures with some similarity but by no means identical in structure which are joined to form a single organism. Another metaphor that came to mind is that of siamese twins. Siamese (or conjoined) twins can be symmetric or asymmetric. In the latter case, one of the two is called the host and the other is the parasite. But then, the same asymmetry is found in grafts, where we distinguish the stock and the scion. And furthermore, grafting can actually be applied to trees, which is why I prefer this terminology.

I should emphasize again, that the notion of grafting is rejected by some researchers. Wilder (1997) proposes a backward deletion solution, not in the least because he wants to preserve tree-representability. He also suggests that backward deletion is intimately linked to another property of RNR which is well-established, viz. the fact that the deleted string (or the common part in a graft) is right peripheral. This is not, however, a logical connection: deletion, just like grafting, can in principle be initial, medial and final. What I will argue in the remainder of this paper is that the number of constructions that lend themselves to an analysis in terms of grafting (or backward deletion) is much larger than has hitherto been assumed and that indeed left peripheral, medial and right peripheral grafts exist. The terminology is somewhat tricky here. I will refer to RNR as 'lefthand grafting' because if the shared part of the string is on the right, the graft is on the left. The opposite case, in which the shared part is on the left I will call righthand graftin for the same reason. The remaining cases, in which the shared part is somewhere in the middle I will call medial or 'saddle' grafting. I will first briefly discuss a number of cases which receive more extensive treatment elsewhere in the literature and then turn to transparent free relatives at greater length.

### 3.2. *Wh*-prefixes, matching free relatives, and Dutch/German parasitic gap constructions

A first case of grafting, lefthand grafting as it happens, is found in certain constructions which I have referred to as (syntactic) *wh*-prefixes. These are also discussed in Lakoff (1974), McCawley (1988) and Wilder (1998) as 'sluice parentheticals'. The following exemplify this construction:

10. a. God knows who

- b. The devil knows why
  - c. You know what
11. a. The devil knows why God knows who has stolen you know what
- b. Why the hell has God knows who stolen you know what?
  - c. Why has who stolen what?

Particularly revealing is a case which I have studied in some detail in Van Riemsdijk (to appear). The Swiss German form *wäisch* 'do you know' can be used as a regular main clause introducing an embedded *wh*-question, as shown in (12a). That this is the correct analysis for (12a) is shown by the fact that the second clause actually has the verb in the final position, hence it is an embedded clause. However, with this particular form (as well as a number of others, depending on various dialects etc.), main clause word order in the second clause is also possible, as shown in (12b). (13) illustrates the fact that we have a case of a sluice which is, in a sense, prefixed, grafted, onto the *wh*-word. In this case there is a special meaning optionally associated with examples like (12b), viz. could be described as a 'rhetorical exclamation.'

12. a. Wäisch wän de Hans geschter häi choo isch? (V-Final)  
 know-you when Hans yesterday home come is  
 'Do you know when Hans came home yesterday?'
- b. Wäisch wän isch de Hans geschter häi choo? (V2!)
13. a. De Hans isch geschter häi choo  
 Hans is yesterday home come  
 'Hans has come home yesterday'
- b. Wäisch wän ~~de Hans geschter häi choo isch~~ ? (sluicing)

Turning to a second case now, consider again the long debate in the late 70s and early 80s about the position of the relative pronoun in free relatives (cf. Bresnan & Grimshaw (1978) and Groos & Van Riemsdijk (1981) along with a large number of later publications). Two main facts were established. First, the relative pronoun must be assumed to be in the Spec,CP position of the relative clause because when the relative clause is extraposed, as is possible in Dutch and German, the relative pronoun moves along with the rest of the clause. Second, the relative pronoun must nevertheless satisfy contextual requirements (selection, case) in the matrix clause as well. This was called the matching phenomenon and is exemplified by the following type of examples.

14. a. Ich hasse<sup>ACC</sup> wen<sup>ACC</sup> du lieb<sup>ACC</sup>  
 I hate whom you love
- b. \*Ich hasse<sup>ACC</sup> wen<sup>ACC</sup>/wem<sup>DAT</sup> du vertraust<sup>DAT</sup>  
 I hate whom you trust

In view of our current discussion about shared strings and grafting, we may hypothesize that free relatives of the matching kind are grafts in which the relative pronoun is directly

dominated by whatever its category is in the matrix clause while it is dominated by Spec,CP in the graft. In other words, the question as to whether the relative pronoun is in Spec,CP position **or** in the position of the head of the relative clause may well be fundamentally misguided and imposed by the wrong kind of theory about syntactic representations, since in a multidimensional theory such as the one under discussion, the relative pronoun could be **simultaneously** in both positions. The syncretism found in examples like (15) is then interpretable as the kind of purely phonological identity requirement familiar from RNR as in (16), which is from Wilder (1997: (122)). Cf. also Van Riemsdijk (1998b) for discussion of further cases of morphophonological effects in free relatives.

15.

Er	hat	[was <sub>NOM/ACC</sub>	dort	passierte <sup>NOM</sup> ]	gefilmt <sup>ACC</sup>
he	has	what	there	happened	filmed

16.

a.	[nicht nur dass	ich}	[sondern auch dass	sie}	krank	*bin <sub>1sg</sub> / *sind <sub>3pl</sub>
	not only that	I	but also that	they	ill	am / are
b.	[nicht nur dass	wir}	sondern auch dass	sie}	krank	sind <sub>1pl/3pl</sub>
	not only that	we	but also that	they	ill	are

The final case I would like to briefly discuss in the present section is that of parasitic gaps of the type found in Dutch and German. The main difference, as has been noted many times, is that parasitic gaps in these languages need not be licensed by some A-bar binder. Instead, it appears as if *in situ* direct objects can license parasitic gaps. This is shown in (17).

17. Er hat das Buch<sub>i</sub> [ohne [...] <sub>i</sub> gelesen zu haben] zurückgebracht  
 he has that book without read to have brought back  
 'He brought the book back without having read \*(it)'

One way of dealing with this is to assume that the direct object has been scrambled across the adjunct, as in (18).

18. Er hat das Buch<sub>i</sub> gestern [...] <sub>i</sub> zurückgebracht (scrambling)

However, it is clear that the chain created by scrambling must have properties of an A-chain, in view of the absence of any weak crossover effects in examples like the following.

19. Er hat Susi<sub>i</sub> [ohne ihren<sub>i</sub> Freund zu fragen] [...] <sub>i</sub> eingeladen  
 he has Susi without her friend to ask invited  
 'He has invited Susi without asking her boy-friend'

In Huijbregts & Van Riemsdijk (1985), an alternative is explored and argued for in terms

of what we then suggested might be called Left Node Raising, where, as in the case of RNR, there is no raising at all but just some constituent *in situ* which is shared by two strings, the matrix and the adjunct clause. The main arguments, which I will not review here, had to do with (a) phonological identity effects and (b) a leftward peripherality condition (the shared constituent has to be left peripheral in each of the separate parts of the string, a fact entirely unexplained on a scrambling analysis.

This concludes my brief overview of three plausible candidates for grafts. In the next section I turn to a more detailed examination of transparent free relatives and will argue that they instantiate another construction that is profitably treated in terms of grafts.

## 4. Transparent Free Relatives

### 4.1. Main properties

The most complete and interesting description and analysis of transparent free relatives, to my knowledge, is found in Wilder (1998). The following summary follows his article in its essentials, even though I will suggest a number of alternative interpretations below.

In the normal case, free relatives come in two semantic varieties: with a definite reading or with a universally quantified reading, as in the following examples. This corresponds to what Grosu & Landman (1998) call 'third type relatives.'

- 20. a. I ate [what you put in the refrigerator for me] (def.)
- b. I eat [what(ever) the cafeteria has on the menu] (universal)

It is a characteristic of Transparent Free Relatives (TFRs) that they can be and often are indefinite. The following are typical examples of TFRs.

- 21. a. I ate what they (euphemistically) referred to as a steak
- b. What appears to be a meteorite has fallen on the roof
- c. His car is what I would call flashy
- d. He drives what I would call a flashy car
- d' He drives a what I would call flashy car

(21a) means that I ate a steak (or something that they referred to as a steak). Similarly, (21b) means that a meteorite has fallen on the roof, and (21d) that he drives a flashy car. The adjectives in (21c/d') cannot be literally indefinite, of course, but they are similar in that they introduce a new quality, not one already given in the discourse.

In addition to this, Wilder (1998) gives the following further properties as characteristic of TFRs.

**1.** In accordance with their potential indefiniteness, TFRs can appear in positions in which only indefinites can occur – FRs cannot:

- 22. a. there was a meteorite on the front lawn
- b. \*there was the meteorite on the front lawn



- c. \*there was what fell down from heaven on the front lawn
- d. there was what experts decided had to be a meteorite on the front lawn

2. When used as a subject, the bare *what* of a TRF can trigger plural agreement on the verb – in FRs it cannot:

- 23. a. what pleases /\*please me most adorns /\*adorn the living room wall
- b. what \*seems /seem to be several meteorites \*was /were lying on the lawn

3. In TFRs, *what* can refer to humans, which it cannot do in FRs:

- 24. a. \*she invited what was giving a talk that afternoon for lunch
- b. she invited what I took to be a policeman (Wilder's (21))

4. *-ever* cannot be attached to *what* in TFRs, in FRs it can:

- 25. a. I eat [what(ever) the Collegium has on the menu]
- b. she invited what(\*ever) I took to be a policeman

5. TFRs do not induce so-called island effects (constraints on the structural distance between a moved element and the place it came from), while FRs, like ordinary relative clauses, do:

- 26. a. \*Who<sub>i</sub> did Mary invite a colleague who used to be a student of [...]<sub>i</sub>
- b. \*Who<sub>i</sub> would Mary never invite whoever used to be a student of [...]<sub>i</sub>
- c. ?Who<sub>i</sub> did Mary invite what could be considered a student of [...]<sub>i</sub>

As a test of this, notice that the definite/indefinite ambiguity, i.e. the ambiguity between an FR-reading and a TFR-reading tends to disappear under apparent island violations:

- 27. a. Tonight Mary will finally cook what has tentatively been identified as a leg of a mongoose (ambiguous!)
- b. ??What will Mary cook what has been identified as a leg of? (TFR-reading only – if at all)

6. The TFR must contain a predicate nominal or adjective which could/can replace the relative clause construction in the matrix clause – a FR is not subject to such a constraint:

- 28. a. John is what can only be referred to as silly
- b. John is silly
- 29. a. We live in what they described as a nice apartment
- b. We live in a nice apartment
- 30. a. I ate what I found in the refrigerator
- b. ≠ I ate the refrigerator
- 31. a. They admire whoever scores the goal
- b. ≠ They admire the goal

Among these, the first, fourth and sixth properties might be called definitional, but the others are quite surprising and will provide crucial clues as to the analysis of these constructions. Another way of looking at TFRs is, indeed, in terms of 'shared constituents.' Where in regular FRs of the matching type the *wh*-word itself may well be a shared constituent, in TFRs it seems as if the predicate constituent is shared between the matrix clause and the free relative. And this is what makes the construction interesting in the present context of grafts or multidimensional representations.

#### 4.2. Backward deletion vs. grafts

As already pointed out above, alternative analyses which might preserve tree-representability can be and have been proposed. In the case of TFRs, Wilder (1998) has suggested that these, along with RNR-constructions, should be handled in terms of backward deletion. Under such an approach, a TFR like (32a) would be analyzed as (32b).

32. a. John drank what he assumed to be pálinka  
 b. John drank [what he assumed to be ~~pálinka~~] pálinka

Wilder offers two arguments for this proposal:

##### A. String identity

There are indeed cases with TFRs in which phonological identity seems to be a stronger condition than full categorial identity. Observe the following contrast.

33. a. ?John is what I'd call snoring  
 b. \*John what I'd call snores

It is the *ing*-form which can show up as the small clause predicate (the category labels are Wilder's):

34. I'd call that [<sub>AP</sub> boring] / [<sub>NP</sub> snoring] / \*[<sub>VP</sub> snores]

Note now that (33a) we have a category clash, and still the sentence is (reasonably) good, while in (33b), where there is fully categorial but no morphophonological identity is bad.

35. John is [ what I'd call [~~NP snoring~~] ] [<sub>VP</sub> snoring]

This argument is neutral because it suggests that string identity is crucial and not categorial/syntactic identity, but this is exactly what the graft approach says. A property (phonological string identity) is attributed to backward deletion which is not independently established. Furthermore, this property does not seem to be applicable to Right Node Raising (RNR) which Wilder takes to be the 'classical' case of backward deletion.

36. \*Nobody would call the noise you make [...], but there is no question that John definitely is, snoring

##### B. The right edge property

It is well-known that RNR is subject to the right edge property, in other words that the shared part of the two conjuncts must be right-peripheral in each of the two conjuncts. Wilder furthermore assumes that TFRs are subject to the same right edge property. This is also a non-argument. If the right edge property is a real property, then again right peripherality is simply a property stipulated for backward deletion. There is no reason why it could not be stipulated as a property of string sharing in a theory of grafts. But I will argue below that the right edge phenomenon is spurious and that internal string sharing (grafting) does occur with TFRs, not only in German and Dutch but also in English. Note also that the right edge property plays a crucial role in a theory such as the one developed in an incremental left-to-right structure building theory such as the one proposed in Phillips (1996, 1998). The arguments for internal (or 'saddle') grafts to be presented below argue against such an approach as well.

The alternative is the 'graft' approach, which follows (roughly) Lakoff (1974), Goodall (1987), McCawley (1988), Muadz (1991), and Moltmann (1992), and in which the constituent is truly shared by two tree structures and two strings. The consequences are far-reaching and cannot be developed here beyond some initial suggestions and, in particular, the establishment of the fact that there may very well be grafts of every positional type:

- lefthand grafts (i.e. shared string on the right): RNR;
- righthand grafts (i.e. shared string on the left): matching FRs, Dutch and German parasitic gap constructions, some TFRs;
- 'saddle' grafts (i.e. shared string in the middle): some TFRs and possibly (see below) internally headed relative clauses.

Let us now turn to some evidence that saddle grafts of the TFR variety exist.

#### 4.3. Internal Transparent Free Relatives: "Saddle" Grafts

It is true, of course, that the predicate XP (a DP or an AP in the cases considered so far) is at the right edge of the free relative it is in. In order to check the extent to which this is an essential property, the obvious next move is to check whether SOV languages such as Dutch or German, in which the predicate XP precedes the verb, have TFRs. Wilder (1998) does precisely this and concludes, erroneously as I will argue, that German does not have any TFRs, while Dutch does, but only by virtue of extraposing the predicate XP into the right peripheral position. Here are the examples Wilder gives (his (46-49), with his grammaticality judgments).

37. a. Dies ist [was ich als dumm bezeichnen würde] (German)  
       this is what I as stupid describe would  
       'This is what I would describe as stupid'
- b. \*Dies ist [was ich bezeichnen würde als dumm]

38. a. \*eine [was ich als dumm(e) bezeichnen würde] Entscheidung (decision)  
 b. \*eine [was ich bezeichnen würde als dumm-e] Entscheidung
39. a. Dit is [wat ik beschouw als tamelijk stom] (Dutch)  
 b. een [wat ik beschouw als tamelijk stomme] beslissing

Note first that (37b) purports to show that predicate XPs cannot be extraposed. Actually, in my own judgment extraposed predicate XPs are not that bad (for me: '?') when, as in (37b), they are introduced by a preposition-like element such as *als* ('as'), *für* ('for'), etc. The corresponding example in Dutch (39a) is fully grammatical though examples lacking a predicate introducer such as *als* ('as') are entirely ungrammatical. The question then is first whether (37a) can be interpreted as a TFR, and second whether either of the examples in (38), which would have to be TFRs, are grammatical.

Starting with the latter question, the initial evidence appears to be conflicting. The Dutch example in (39b) is fully grammatical. In German, the ungrammaticality of (38a), with the predicate XP not extraposed, is unsurprising given the general requirement that pronominal adjectives be adjacent to the head noun. I personally find (38b) better than (38a), though still about '??' or '?\*'. This would be more or less in line with my judgment on extraposed predicate XPs introduced by a preposition. Once we take predicate XPs which are not introduced by prepositions into consideration, things become more straightforward. Take the following examples from Dutch:

40. a. Hij is niet wat ik zou willen noemen stinkend rijk  
 he is not what I would want-to call filthy rich  
 b. Hij is niet wat ik stinkend rijk zou willen noemen
41. a. \*Wie door sommigen wordt genoemd stinkend rijk is vaak zielig  
 who by some is called filthy rich is often pitiful  
 b. Wie door sommigen stinkend rijk wordt genoemd is vaak zielig

What these examples show is that the bare AP cannot extrapose in the case of a normal FR, but that it can in the case of a TFR. This is first of all an indication that the right peripheral AP in (40a) is possible only because it is shared with the matrix clause and is not purely inside the FR, as it is in the case of (41a). And this is confirmed by the corresponding examples where the shared adjective is pronominal:

42. a. Hij is een wat ik zou willen noemen stinkend rijk (-e) man  
 b. Hij is wat ik zou willen noemen stinkend rijk (\*-e)  
 c. \*Hij is een wat ik stinkend rijk(-e) zou willen noemen man

The pronominal adjective has to inflect (-e), which it never does in predicative position, as (42b) shows. In order to be able to inflect at all, the adjective has to be adjacent to the noun, as in (42a). If the adjective remains *in situ*, which (40b) shows is normally possible, the sentence is out, whether the adjective is inflected or not, witness (42c). As Wilder correctly observes, the fact that the adjective inflects shows that it is a shared constituent. What Wilder fails to point out, however, is that if the (T)FR is a true and full

free relative from which a right peripheral adjective is deleted, we have two serious problems. First, how does the adjective-to-be-deleted get into the final position inside the free relative in the first place? And second, how come a free relative is tolerated at all in what is presumably something like a premodifier position of the attributive adjective?

Turning now to the interpretation of (37a), I disagree with Wilder. I believe these examples can be shown to be TFRs by several of the criteria listed in 4.1. Criteria 2/3/4 are not applicable in German or Dutch for independent reasons, and 6 is satisfied by definition. Consider, therefore, criteria 1 and 5.

Criterion 1 says that, unlike a definite FR, TFRs can occur in positions in which only indefinites can occur. Consider now an example like the following, in which an indefinite predicate DP (or NP) internal to the free relative apparently makes the whole free relative indefinite:

43. Ich habe gestern [was man (euphemistischerweise) als ein Steak bezeichnen  
I have yesterday what one euphemistically as a steak call  
'Yesterday I ate what one could euphemistically call a steak'  
könnte] gegessen  
could eaten

Observe that this does not mean 'I ate the thing that they were talking about and which they called a steak' but rather 'I ate an alleged steak.' Semantically, then, this is a TFR. Consider then a *there*-insertion type context.

44. a. Gibt es dort auch [was man obszöne Bilder nennen müsste]?  
are there there also what one obscene pictures call would-have-to  
'Are there also what one would have to call obscene pictures there?'
- b. \*Gibt es dort auch die Mona Lisa?  
is there there also the Mona Lisa  
'Is there also the Mona Lisa there?' (\*)

By the indefiniteness criterion, then, these free relatives with an internal predicate XP are TFRs.

Let us now turn to criterion 5, the extractability of elements from the predicate XP. Unfortunately, the evidence seems to be somewhat conflicting in this case. In a German example like (45), a PP as a whole is apparently extracted from the predicate DP in the free relative. The same extraction from a regular FR yields a sharply ungrammatical result, as (45b) shows.

45. a. Von wem<sub>i</sub> hast Du [was man einen guten Freund [e]<sub>i</sub> nennen kann getroffen  
of whom have you what one a good friend call can met  
'Who did you meet what one can call a good friend of?'
- b. \*Von wem<sub>i</sub> ist [was einen guten Freund [e]<sub>i</sub> beeindruckt] meistens teuer?  
of whom is what a good friend impresses usually expensive

'Who is what impresses a good friend of usually expensive?' (\*)

A Dutch example with extraction of *waar* from the predicate DP, exemplified in (46a) is ungrammatical, however. This seems to go against my argument that internal TFRs exist. There are reasons to assume, however, that even in the simple case, *waar*-extraction from the PP is only possible if the PP has been right-extracted out of the DP in the first place, cf. Van Riemsdijk (1997) for detailed argumentation. The question then is, of course, where the PP extraposes to in a case like this. The general fact is that the PP moves rightward but to a position preceding the verb cluster at the end of the clause. This is why the extraposition is usually string-vacuous. Suppose now that the apparently embedded predicate DP is in fact shared with the matrix. Then would not be surprising to find that the extraposition is across the remainder of the TFR to the position preceding the final verb of the matrix clause. (46) shows that this is exactly what happens. Instead of being conflicting, the evidence is actually very much in favor of my position, which is that the internal predicate XP is a shared constituent and hence that these are true TFRs, which in turn argues in favor of the existence of saddle grafts.

46. a. \*Waar<sub>i</sub> heb je [wat hij een conceptversie [e]<sub>i</sub> van noemde] afgewezen?  
what have you what he a draft version of called rejected  
'What did you reject what he called a draft of?'
- b. Waar<sub>i</sub> heb je [wat hij een conceptversie [e]<sub>j</sub> noemde] [[e]<sub>i</sub> van]<sub>j</sub> afgewezen?

Returning now from this excursus on German and Dutch to the issue of the right edge phenomenon, consider again the statement that in English the predicate XP is right peripheral in its free relative. Actually, this turns out not to be true either. The following examples show that a predicate XP can be followed by an experiencer PP. This is true in the normal case, as shown in (47), but it is equally true in (48), which exemplifies the case of TFRs.

47. a. These people seem to me to be tourists / nervous  
b. These people seem to be tourists / nervous to me
48. a. What seem to me to be tourists are lying on the lawn  
b. What seem to be tourists to me are lying on the lawn

The fact that (49b) is ungrammatical is again not attributable to the alleged right edge property of TFRs, but to the usual adjacency condition on prenominal adjectives which also excludes the ungrammatical examples in (50).

49. a. a what seems to me to be nervous person  
b. \*a what seems to be nervous to me person
50. a. \*a proud *of his son* father vs. a father proud of his son  
b. \*a taller *than most* man vs. a taller man than most

#### 4.4. Internally Headed Relative Clauses

Having gone this far, let me extend these ideas yet a little bit further. It is a well-known though ill-understood fact that some languages, including Japanese, Lakhota, Quechua, and Mojave, have relative clauses with so-called internal heads. (51) exemplifies such constructions as found in Japanese.

51. [John-ga **ronbun-o** kaita-no]-ga Linguistic Inquiry-ni notta  
John-nom article-acc wrote-NM-nom Linguistic Inquiry-loc appeared  
'The article that John wrote appeared in Linguistic Inquiry'

These have constituted a considerable problem for pretty much any theory about the structure of relative clauses. Cf. Grosu (to appear) and references cited there for a recent discussion. To the extent that TFRs have a predicate XP which is shared with the matrix, we might say that that XP is in a sense more of a head, semantically and syntactically, than the spurious empty head if there is one in the first place. And this conclusion immediately leads us to wonder if the internal head of internally-headed relative clauses could not be considered a shared constituent in the same way. Such internally-headed relative clause constructions would then constitute yet another source of evidence for saddle grafts. I will not pursue this idea, which is preferably studied by experts on the languages in question, any further here.

## 5. Concluding Remarks

The quest for a restrictive theory of syntax is a noble one. And a theory of syntactic representations which admits only tree-representable structures may well be such a restrictive theory, though the reader is reminded of Chomsky's cautious words in this regard in the quote given at the outset of this article. It has been my purpose here to review the scattered and often bashfully hidden evidence in favor of a theory which admits (certain but not all) non-tree-representable structures and to add new materials to the evidence which has been accumulating at least since Lakoff (1974). I believe that a theory of syntactic representations along the lines of the one developed in Moltmann (1992) is probably best suited to deal with the whole variety of grafts as they have been discussed here and will undoubtedly yet come to light. That such a theory will then be in dire need of substantive restrictions goes without saying. We may lose the tree as we knew it, but grafting opens up new dimensions and exciting ranges of biological organisms. And if biology is unrestrictive enough to permit certain (but not all) botanical organisms to enter into a grafting relationship, why shouldn't we expect the same thing to be true in the case of syntactic organisms.

## 6. References

Bresnan, J.W. & J. Grimshaw (1978) 'The syntax of free relatives in English' *Linguistic*

*Inquiry* 9.3.

Chomsky, N. (1974) *The Amherst Lectures*. Distributed by *Documents linguistiques*, Université de Paris VII.

Chomsky, N. (1982) *The Generative Enterprise -- A discussion with Riny Huijbregts and Henk van Riemsdijk*. Dordrecht: Foris.

Goodall, G. (1987) *Parallel Structures in Syntax*. Cambridge: CUP.

Groos, A. & H.C. van Riemsdijk (1981) 'Marching effects in free relatives' in A. Belletti et al. (eds.) *Theory of Markedness in Generative Grammar*. Pisa: Scuola Normale Superiore.

Grosu, A. (to appear) 'The semantic diversity of internally-headed relative clauses.'

Haegeman, L. & H.C. van Riemsdijk (1986) 'Verb projection raising, scope, and the typology of rules affecting verbs' *Linguistic Inquiry* 17, 417-466.

Huijbregts, M.A.C. & H.C. van Riemsdijk (1985) 'Parasitic gaps and ATB' in *Proceedings of the NELS XV Conference*, pp 168-187. GSLA, University of Massachusetts, Amherst.

Koster, J. (1987) *Domains and Dynasties*. Dordrecht: Foris.

Lakoff, G. (1974) 'Syntactic amalgams' *Chicago Linguistic Society (CLS) 10 Proceedings*, pp. 321-344.

Lasnik, H. & J. Kupin (1977) 'A restrictive theory of transformational grammar' *Theoretical Linguistics* 4.3.

McCawley, J.D. (1988) *The Major Syntactic Phenomena of English*. Chicago: Chicago University Press.

Moltmann, F. (1992) *Coordination and Comparatives*. Ph.D.Dissertation, MIT. Distributed by MIT Working Papers in Linguistics.

Muadz, H. (1991) *Coordinate Structures: A Planar Representation*. Ph.D. Dissertation, University of Arizona.

Phillips, C. (1996) *Order and Structure*, Ph. D. Dissertation, MIT. Distributed by MITWPL.

Phillips, C. (1998) 'Linear order and constituency,' unpublished manuscript, University of Delaware.

Progovac, L. (1998) 'Structure for coordination,' Parts I and II. *GLOT International* 3:7, pp 3-6, and 3:8, pp 3-9.

Riemsdijk, H.C. van (1997) 'Push chains, and drag chains: complex predicate split in Dutch' in S. Tonoike (ed.) *Scrambling*. Tokyo: Kurosio Publishers.



- Riemsdijk, H.C. van (1998a) 'Head movement and adjacency' *Natural Language and Linguistic Theory* 16, 633-678.
- Riemsdijk, H.C. van (1998b) 'Syntax driven (crazy) by morphology' in A. Bruyn & J. Arends (eds.) *Mengelwerk voor Muysken*. Publicaties van het Instituut voor Algemene Taalwetenschap #72. University of Amsterdam.
- Riemsdijk, H.C. van (to appear) 'Wh-prefixes: the case of *wä isch* in Swiss German.'
- Ross, J.R. (1967) *Constraints on Variables in Syntax*. Ph.D. Dissertation, MIT. Published as Ross (1986).
- Ross, J.R. (1986) *Infinite Syntax!* Norwood, NJ: Ablex.
- Wilder, C. (1997) 'Some properties of ellipsis in coordination' in A. Alexiadou & T.A.Hall (eds.) *Studies on Universal Grammar and Typological Variation*. Amsterdam: John Benjamins.
- Wilder, C. (1998) 'Transparent free relatives' *ZAS (Berlin) Working Papers in Linguistics* pp. 191-199.
- Williams, E.S. (1978) 'Across-the-board rule application' *Linguistic Inquiry* 9, 31-43.
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## Author's address:

until February 1 1999:

Collegium Budapest; Szentháromság u. 2; H-1014-Budapest; Hungary  
tel. +36 1 4577614/4577600; fax. +36 1 4577610; e-mail: [riemsdyk@colbud.hu](mailto:riemsdyk@colbud.hu)

after February 1 1999:

Tilburg University; Department of Language and Literature -- Grammar Models Group (CLS);  
P.O. Box 90153; NL - 5000 LE - Tilburg, The Netherlands  
tel. +31 13 4662642/4662773; fax. +36 1 4663110; e-mail: [riemsdyk@kub.nl](mailto:riemsdyk@kub.nl)

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