

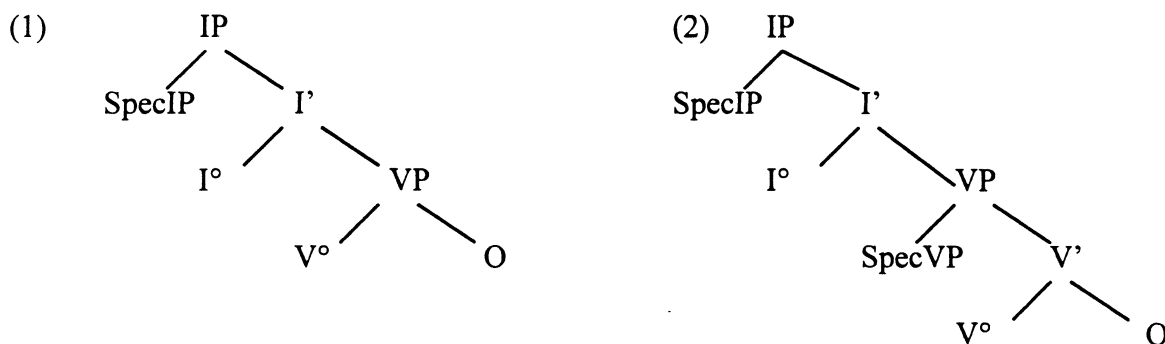
Prominence hierarchy and phrase ordering-

On why equidistance is not the right concept for explaining A-movement crossing and about how it can be accounted for in an alternative theory of relativized relativized minimality¹

André Meinunger
andre@fas.ag-berlin.mpg.de

1. Introduction, where some new proposals within the theory of generative grammar are presented which will later be used as tools for the aim announced in the above title of the paper

In the mid eighties, it was proposed by several authors that the subject should be base generated VP internally and then start from this position, which is presumably [Spec,VP], and raise to the specifier position of some INFL projection. The most convincing theoretic argument for such an analysis is theta-theory, insofar as under the VP internal subject hypothesis (VPISH) the subject starts in a position that is within the projection of the verb from which it gets a theta-role, though the external one. The most compelling empirical argument comes from languages that seem to provide more than one, usually two, positions which the subject may occupy. These two positions then are the derived position, something like the traditional [Spec,IP] on the one hand, and the base position [Spec,VP] on the other. Thus, the version in (1) is replaced by the more flexible one in (2):

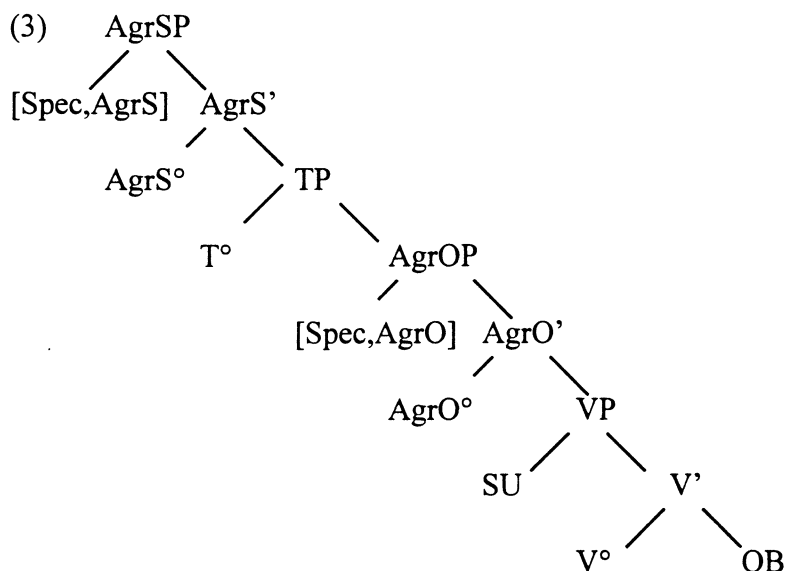


This proposal also had the desirable consequence of assigning unitary structures to both lexical and functional projections. Before the VPISH, there was no agreement whether VP should have a specifier position at all, nor were there reasonable proposals for what could be the specifier of VP.

The next standardization that is relevant for our purposes is the unitary treatment of Case assignment. To my knowledge, one of the first to propose that Case assignment to the object works parallel to Case assignment to the subject was Sportiche (1990) with his Strong

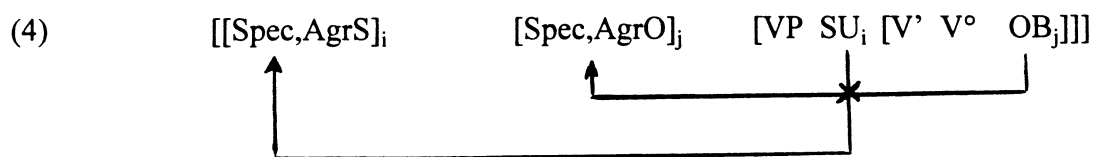
¹ I would like to thank several people. First, I thank Chris Wilder for checking my English and making insightful comments. Second, I am grateful to Enric Vallduví and Josep Quer for providing me relevant Catalan data. In further discussions I learnt from Artemis Alexiadou and Ilse Zimmermann.

Correlation Hypothesis (SCH). It says that structural Case is generally assigned in a Spec-head configuration of an argument NP with an agreement morpheme. Whereas formerly, nominative Case was assigned to the subject that was base generated under [Spec,INFL] (or had raised there in raising constructions) in a Spec head configuration with the inflectional element in INFL°, and accusative was assigned by the verb under c-command, structural Case is now uniformly assigned (or checked) in a spec head configuration between an Agr° head and an NP. Combining everything said so far, we get a tree that could be taken from Chomsky's minimalist paper:



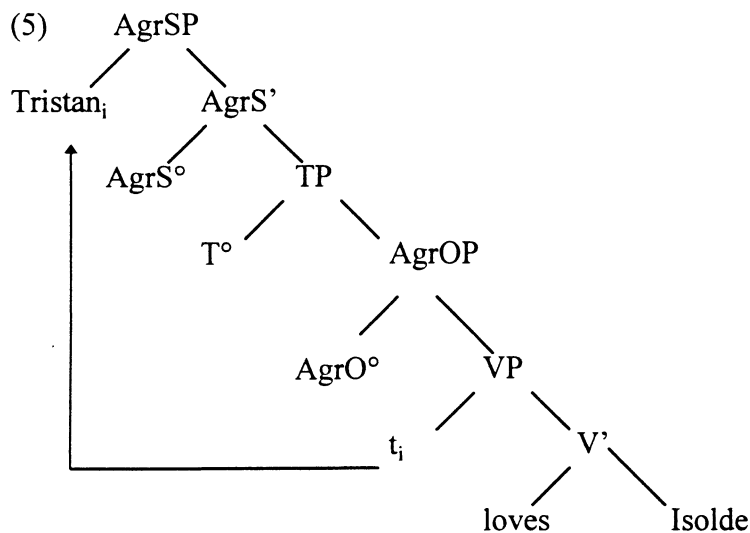
2. Equidistance and its problems

Now, the harmony and elegance of the tree in (3) is matched by the problem it poses. The minimalist paper develops the idea that the lexicon feeds the computational system with items which project according to X-bar theory. Generalized transformations (GT)² operate on them until a legitimate PF-object is created and Spell-out applies. After Spell-out, the work of GT continues until the final LF representation is achieved. The LF representation is supposed to be universal and thus languages should not (considerably) differ at that level. At LF, the subject of an (unmarked declarative) sentence has to stay in [Spec, AgrS], the object in [Spec, AgrO]. The problem is that, if both specifier positions are of the same type, presumably A-positions, we face a relativized minimality violation. Relativized minimality says that the closest potential governor blindly governs. That means, the object in [Spec, AgrO] interrupts the chain $C = \{[Spec, AgrS]_i, SU_i\}$:



² In the most recent Chomsky paper ('Bare Phrase Structure') GT does not play a role any more. The relevant operation is now called 'merge'.

Chomsky develops a theory to avoid this problem. His solution is based on a derivational view of structure creation. To see how Chomsky's theory works, let's start with an unproblematic case. For English, Chomsky assumes that the only thing that moves in overt syntax is the subject. With the further assumption that specifier positions are not necessarily projected, but only created when needed³, the VP internal subject may (and must) raise to [Spec, AgrS] without crossing any intervening element, and thus the Spell-out representation in (5) is well formed: which is the

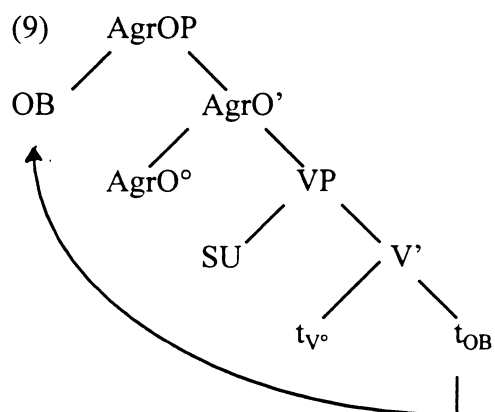
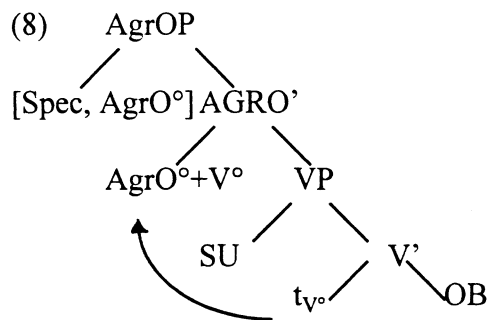
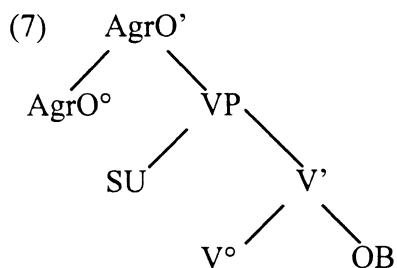


The RM violation only arises when also the object moves. Well, Chomsky's clever trick is the following. The verb has to move as well. At LF, at the latest, English verbs also have to have raised and adjoined to AgrS° (or possibly C°). The verb raises through head-to-head movement. That means the verb starts in its base position and adjoins to AgrO° (step (7) to (8)). This move creates the chain $C = \{V + AgrO^\circ, t_{verb}\}$ with the head in AgrO° and the foot as the trace heading the VP projection. This move enlarges the so-called minimal domain of the verb(al element). The minimal domain of V° is every node contained in VP, not including V itself, thus (SU, OB). When V° adjoins to AgrO°, the resulting head $V + AgrO^\circ$ has a minimal domain with one more member, namely [Spec, AgrO°]. Now, Chomsky introduces the following definition:

(6) If α, β are in the same minimal domain and c-command Γ , they are equidistant from Γ .

For our example in (8), that means that [Spec, AgrO°] and SU are equidistant from OB. Thus the object may leave its base position and raise to [Spec, AgrO°]. The subject trace does not count as an intervener as it is not closer, but exactly as close as [Spec, AgrO°] with respect to the object trace. Thus for this moment in the derivation, the output does not violate RM (9).

³ 'Needed' means 'present by virtue of being filled or targeted for movement within the derivation.'



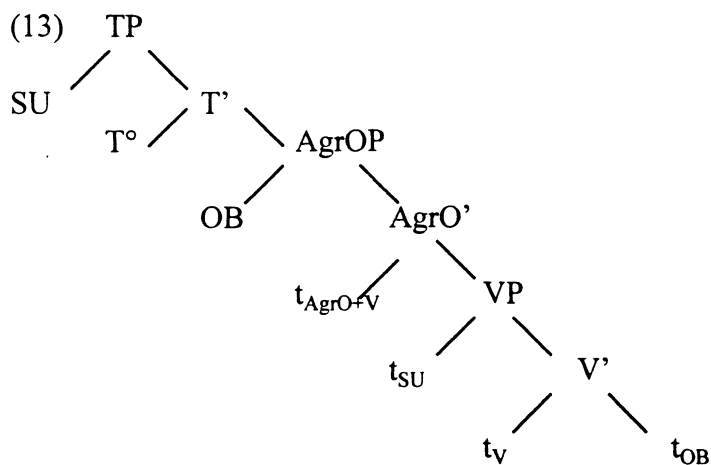
Consider that under such an analysis, overt movement of the object should be prohibited if no overt verb raising had taken place before. Only the moved verb makes the two relevant positions equidistant. This seems to be confirmed by the behavior of Scandinavian object shift. Since the Scandinavian languages are V2, the verb raises to the highest functional head (C°) in root clauses. Assuming HMC, this implies that the first steps in the derivation above must have been as described in the preceding paragraph. Thus in V2 sentences, object shift is allowed:

- (10) Peter læste den_i ikke t_i.
 Peter read-past it_i not t_i.
 (Peter didn't read it.)

In embedded sentences the verb does not move. Its position relative to the negation adverb indicates that no verb movement has taken place (11). In that case then, object movement is also impossible (12).

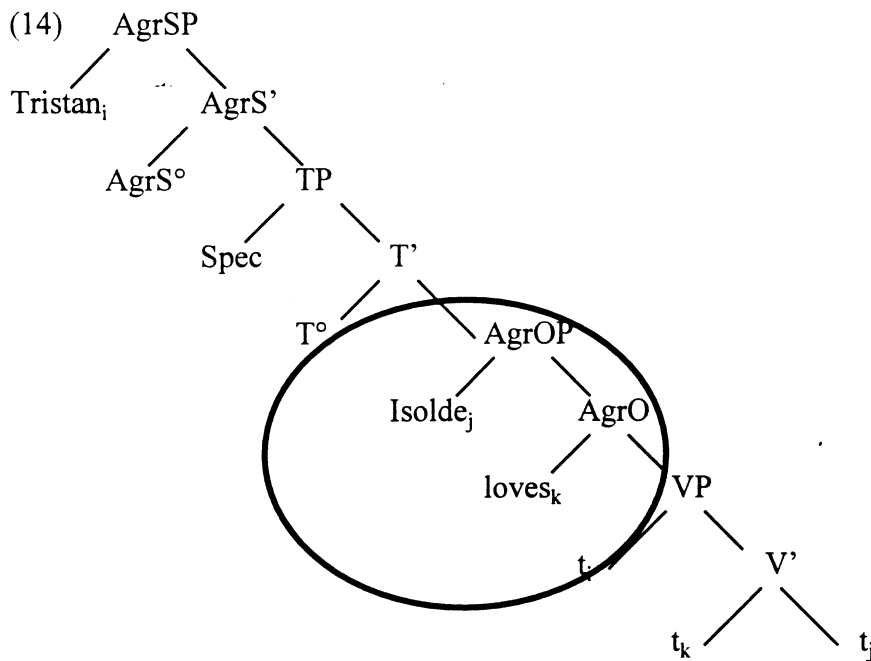
- (11) at Peter ikke læste den
 that Peter not read it
 (that Peter didn't read it)
 (12) *at Peter den_i ikke læste t_i
 that Peter it not read

The equidistance idea reminds of Baker's (1988) Government Transparency Corollary (GTC). However, as Jonas and Bobaljik (1993) observe, the equidistance concept is not transitive as GTC is. That means that further movement of the $V^{\circ}+AgrO^{\circ}$ complex does not render more positions equidistant. In a system of the order of functional categories Chomsky assumes, TP is the next higher functional layer above AgrOP. Thus obeying HMC, the $V^{\circ}+AgrO^{\circ}$ complex adjoins to T° . This step, however, does not render [Spec,TP] and [Spec,VP] equidistant. The head chain $C = \{[T[AgrO^{\circ}V]] , [AgrO^{\circ}V]\}$ is different from the very bottom chain $C' = \{[AgrO^{\circ}V] , V\}$. There is no chain for which more than two specifier positions are equidistant. What the further additional movement does is to render [Spec,TP] and [Spec, AgrO] equidistant. And this is what Chomsky needs. As soon as these positions both count as equidistant to VP and everything it contains, the subject is allowed to move from its original position without causing a RM violation, at least for the Scandinavian structure in (10).



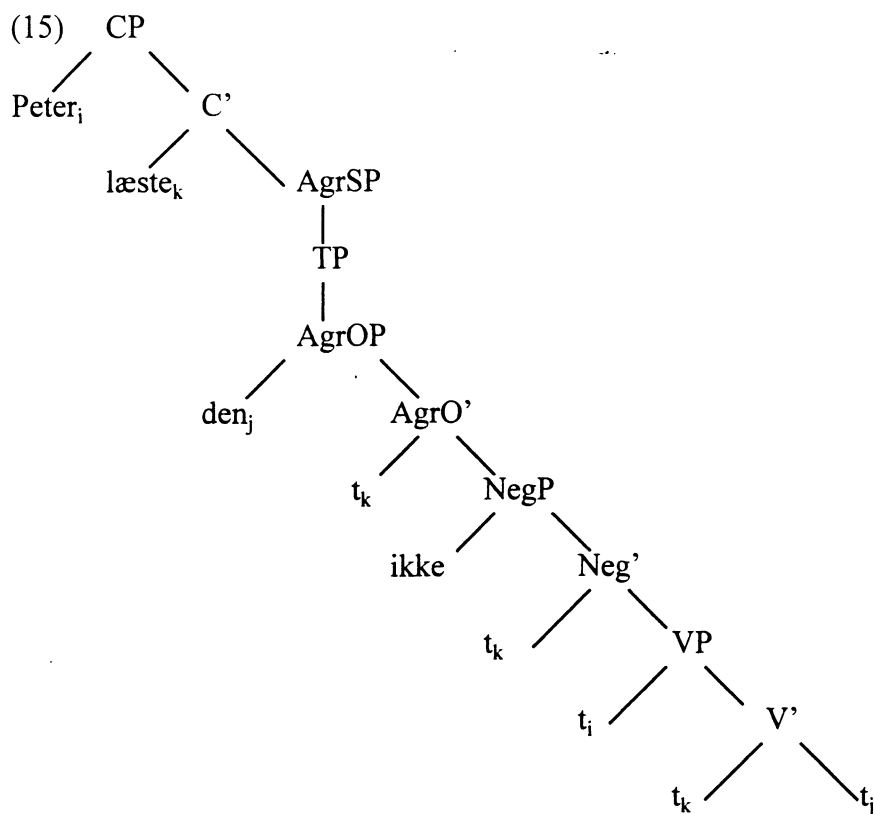
This way, the Danish sentence in (10) comes out as grammatical.

Now, if we don't ask further, we could be satisfied with what Chomsky has proposed. However, a closer look reveals some problems. Let's go back to the English example in (5). This is the spell-out or pre-spell-out structure. However, the derivation continues to obtain the final representation where every XP and X° is in its designated position, i.e. the verb under $AgrS^{\circ}$ (or even C°) and the object in [Spec,AgrO]. The derivation should go like this: V° raises to $AgrO^{\circ}$. That move renders [Spec,AgrO] and [Spec,VP] equidistant. This provides the chance for the object to move to [Spec,AgrO], as described above, no RM violation is triggered since [Spec,VP] does not count as an intervener. However, at this point in the derivation we get a RM violation.



Only [Spec,AgrO] and [Spec,VP] are equidistant with respect to what VP contains. That means that now the object in [Spec,AgrO] is an intervener. It interrupts the chain $C = \{\text{Tristan}_i, t_i\}$. Since the subject is already in [Spec,AgrS] in English, the equidistance relation between the subject position [Spec,AgrT] and the object in [Spec,AgrO] can never be obtained. I don't see any reasonable solution of the problem. I just see stipulations. The other thing is that the equidistance story crucially depends on a purely derivational view of structure generation. Under a representational perspective or a combination of derivation and representation the theory does not work at all. I think we should eliminate the equidistance story and think of a better explanation. Nevertheless, before I will try to do that I will show some empirical problems with the equidistance explanation.

One point that is also important for Chomsky's idea is that for his explanation to work it is crucial that VP is selected by AgrO. Only this configuration permits such a local relationship of a subject and a object position that these are potentially equidistant. If something else than AgrO (immediately) selects VP, this head would be the first target of the verb. Then its specifier would be equidistant with the subject, however without any advantage for the object. Then, there would be no way for it to raise out of its base position. Is there such a configuration? The most recent treatments of negation in syntax propose that negation follows X-bar syntax and projects according to it. Thus, negation is a head with a complement and a specifier that shares the negative property of the head (see Haegeman). The structure of negation is universal, languages differ in how they make use of it. There are languages that have a negative head (Italian, Russian); in those languages this head behaves like a verbal affix and cliticizes onto the verb. Then there are languages that have a morphophonological spell-out of both the negative head and the specifier. French is such a case. And finally, there are languages that only use a negative adverb to be base generated in [Spec,Neg]. Such languages are represented by German and Scandinavian for example. Nevertheless, there is a phonologically empty head, that hosts and licenses the specifier position of *nicht*, *net*, *niet*, *ikke*, *ekki* and the like. If we incorporate negation into the syntactic tree for the representation of (10), we get the following tree:



There we cannot get a equidistance creating structure where [Spec,AgrO] and [Spec,VP] have the same distance from the object.⁴

We face the same problem in the analysis for German. Nowadays there are two proposals for German sentence structure. The more traditional one, which I will adopt later, deals with head final structures. Except for order, which is {complement > head} for the verb and all functional heads (but C°), we get the same representation as in the Danish example in (15). The object has scrambled (shifted) and negation intervenes. This should cause the same RM violation as in Scandinavian.

- (16) Peter las das Buch nicht.
 Peter read the book not.
 (Peter didn't read the book.)

If we choose the other version and analyze German as SVO language, as it is fashionable now, we get into even more trouble. The analysis of Dutch in Zwart (1993), following the main idea of Kayne (1993), proposes that the Germanic pattern is {head > complement} throughout. In such analyses the verb occupies two positions. Either it raises and adjoins to

⁴ The problem becomes even more relevant if one adopts Kayne's (1993) or Hoekstra's (1991) X-bar theory. They propose that there is no adjunction anymore. A maximal phrase either has to be a complement or a specifier. Within this framework adverbials are licensed in specifier positions of functional heads (see also Alexiadou (1994)). Thus any adverb type that precedes the VP creates this equidistance blocking structure, like negation in example (15). Object shift always crosses those adverbs (formerly analyzed as VP adjoined) and should then introduce a RM violation. Interestingly, the evidence that is always given to show that object shift has taken place is adverb positioning.

C°, or it stays in its base position, i.e. exactly as in Scandinavian. The first case is triggered in V2 contexts, i.e. main clauses; the latter one in embedded sentences (Jan-Wouter Zwart p.c.). To account for the linear order of {object > verb} he is forced to say that, while the verb remains in situ, the object moves to [Spec,AgrO]. This is exactly what the equidistance story wants to rule out. Movement to [Spec,AgrO] is only possible when the verb has moved as well.

A more general problem is raised when we consider double object constructions with indirect objects. There is no consensus currently on whether dative should be analyzed as a structural Case. Nevertheless, it is claimed more and more often that dative should be regarded as such. The following arguments favor such an analysis. One important characteristic of oblique case is that it is lexical⁵. Dative, however, does not have a (completely) unpredictable occurrence. In the case of bitransitive verbs, a certain thematic structure automatically forces dative assignment. In that respect, dative patterns like nominative and accusative, the cases traditionally analyzed as structural ones. The second argument has to do with agreement. In the minimalist program and elsewhere, assignment or checking of structural Case is triggered under spec-head agreement (see above). Thus if we find morphological verbal agreement with dative objects, this should support the dative-as-structural-Case-hypothesis. There are indeed many languages whose morphology induces agreement morphemes for (nominative, accusative and) dative objects (Givón for Swahili (1976); Suñer for Spanish (1988)). The next point is, that dative is not more, or less, closely linked to any particular theta-role than nominative or accusative. Being associated with a theta-role is a characteristic of oblique cases, not one of structural ones⁶. The last, and maybe most compelling argument, is that (some) languages have a dative passive. Constructions where for certain reasons regular Case assignment is blocked and raising of the Case-less NP to some other Case position is forced to save grammaticality are an indicator that structural positions are involved. Lexical Case never allows for passive constructions; dative, like accusative, does. German illustrates that very nicely:

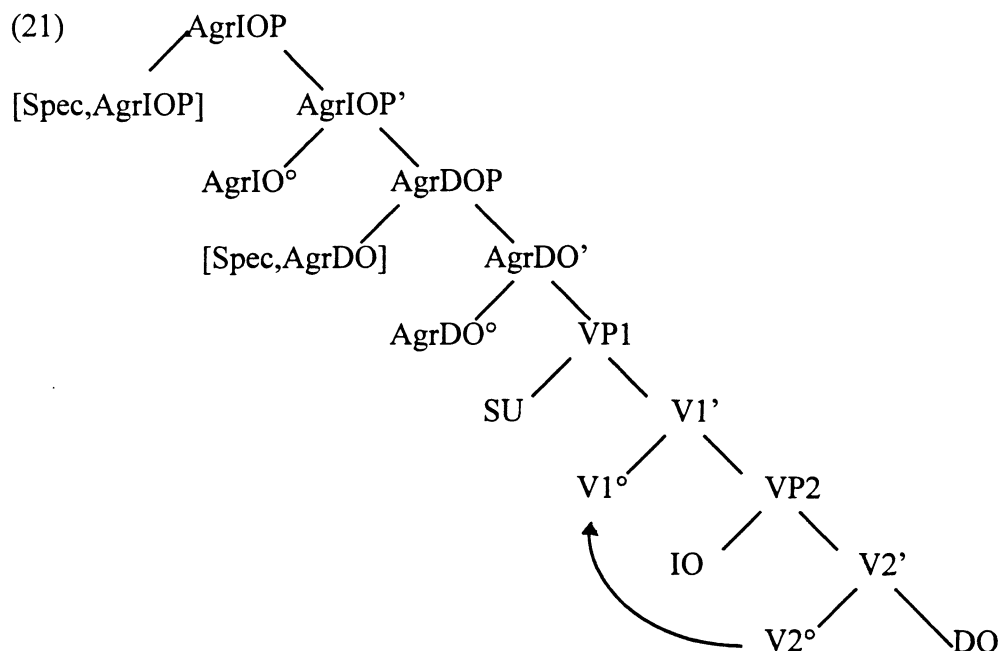
- (17) Wotan verhiess Siegmund ein Schwert.
 Wotan_{nom} promised Siegmund_{dat} a sword_{acc}
 Wotan promised a sword to Siegmund.
- (18) Siegmund bekam (von Wotan) ein Schwert verhiessen.
 Siegmund_{nom} pass_{aux} (by Wotan) a sword_{acc} promised
 Siegmund got promised a sword (by Wotan).
- (19) Alberich stiehlt den Rheintöchtern das Gold.
 Alberich_{nom} steals the Rhinemaidens_{dat} the gold_{acc}.
 Alberich steals the gold from the Rhinemaidens.
- (20) Die Rheintöchter bekommen (von Alberich) das Gold gestohlen.
 The Rhinemaidens_{nom} auxpass (by Alberich) the gold_{acc} stolen
 The Rhinemaidens were robbed of the gold (by Alberich).

If we now implement dative as structural Case into the minimalist framework we see again that Chomsky's trick is untenable. By combining X-bar theory, Larsonian structure and a

⁵ Sometimes, oblique Case and lexical Case are even used as synonyms.

⁶ Of course, there is some affiliation between dative case and goal. However, there is a comparable one between nominative and agent, an accusative and theme. Further theta-roles of dative bearing NPs are experiencer, bene-(male-)factive, agent (in causative constructions), and all the mysterious cases of the so-called free dative.

thematic hierarchy where goal is higher than theme (for justification thereof see below and references quoted there) we get a VP like that in (21). Furthermore, as cross-linguistic data show, the (relative) order of the arguments when outside the verb phrase parallels the one downstairs in the VP. Thus the lowest Agr head should be associated with the lowest object, i.e. AgrDO should select VP and should itself be selected by AgrIO. (We skip here possible intervening functional categories.)



V2° raises to V1° in order to link all arguments together. Within the equidistance theory this move would render SU and IO equidistant from DO. However, there is no position the object could move to. The next available one is its designated position [Spec, AgrDO], which, nevertheless, is too far away. The first step has already shown that the equidistance theory doesn't work here either. The problems multiply as the derivation continues.

3. chapter - within which Relativized Minimality is presented and criticized, and then an algebraic semantic account is adopted

In his book „Relativized Minimality“, Rizzi (1990) shows that movement of any sort obeys the same constraint: movement to position X cannot cross a position of the same type. This theory is a representational one, in that an output structure is ruled out if there is an intervening element between the moved element and its trace, with both the moved and the intervening element being of the same type. This explains the unacceptability of the following sentences.

- (22) *Why do you wonder [who left t]
 (23) *John seems that it is unlikely [t to win]

(22) is ruled out because *who* is in an A'-position and intervenes between *why* which also occupies an A'-position, and its trace, and thus blindly binds it. In (23) both *John* and *it* are in

A-positions. *it* is closer to the trace of *John*, binds it and thus causes the RM violation. To summarize: what is crucial for the further argumentation is that A'-movement and A-movement are restricted in the same way. For this reason, Rizzi gives a formulation that does not make reference to a special type of position.

Rizzi, Relativized Minimality (1990), page 7:

Relativized Minimality: X α -governs Y if there is no Z such that

- (i) Z is a typical potential α -governor for Y
- (ii) Z c-commands Y and does not c-command X

Rizzi was well aware of the fact that this formulation was too restrictive. In some cases, an element may intervene without inducing an ungrammatical structure. Compare (22) with (24):

(24) (?) Which paper do you wonder who reviewed t ?

Although *who* in an A'-position intervenes, *which paper* - also in an A'-position, but further away - remains capable of binding and thus identifying its trace. Rizzi stipulates that referential expressions are not subject to RM, they carry a referential index that renders them able to identify their trace from anywhere. For Rizzi, a referential index is linked to a referential theta-role. He modifies the classical argument/adjunct distinction and proposes that theta-roles like agent or patient make phrases referential whereas roles like manner do not. This way he explains the contrast between (25) and (26).

(25) Which linguist do you wonder whether I like t ?

(26) *How do you wonder whether Artemis behaves t ?

Thus, though the manner phrase is theta-marked by the embedded verb in (26), i.e. argumental, it cannot be extracted from a weak island since it lacks a referential theta-role. However, Rizzi's RM is still too rigid to explain all data. Within his theory of referential indices, only arguments can bear a referential index, since only arguments are linked to certain thematic roles. Nevertheless, extraction of adjuncts out of weak islands is possible. Normally, adjuncts do not extract (27a), (28a), however, if the context allows for a discourse linked interpretation, even an adjunct can be extracted without causing (sharp) ungrammaticality (27b), (28b).

(27a) *Why_i do you wonder [if they can fire you t_i]

(27b) For which of these reasons_i do you wonder [if they can fire you t_i]

(28a) *How_i were you not able to solve the problem t_i

(28b) (Our boss said that one could solve this problem with every computer here in this room. Now you are saying this is not true. So tell me:)
[With which of the computers here]_i were you not able to solve the problem t_i ?

On the other hand, if certain interpretations are forced, extraction of complements becomes ungrammatical:

(29) *How much wine_i did you not poison t_i ?

(30) *Who the hell_i do you regret that our aunt saw t_i ?

These data show that Rizzi's proposal is not completely correct. (27b) and (28b) should be ungrammatical, as the extractees do not get assigned a (referential) theta-role by the verb. On the other hand, if bearing a „referential“ theta-role like patient made a phrase referential, it is unclear what explains the binding failure of the extractees in (29) and (30).

One of the most promising theories that tries to explain extraction facts that has been recently elaborated is to be found in Szabolcsi and Zwarts (1991, 1993). Their idea is that phrases that (are supposed to) take scope are associated with Boolean operations. Then, when a wh-phrase (i.e. a potential scope taker) scopes over some intervening other scopal element, all relevant operations that are associated with the wh-phrase must also be associable with the intervening scopal element. If this condition is not met, the wh-phrase cannot scope over the intervener. That means, either that sentences become ungrammatical, or that only a subset of potentially possible scope readings is available. In order not to misinterpret the quoted authors, I cite their rule (57) from the 1993 paper

Scope and Operations:

Each scopal element SE is associated with certain operations (e.g., not with complements). For a wh-phrase to take wide scope over some SE means that the operations associated with SE need to be performed in the wh-phrase's denotation domain. If the wh-phrase denotes in a domain for which the requisite operation is not defined, it cannot scope over SE.

Let me explain how this works by giving some examples. Boolean operations are: taking complements, intersection and union. Now, let's apply this to the following questions.

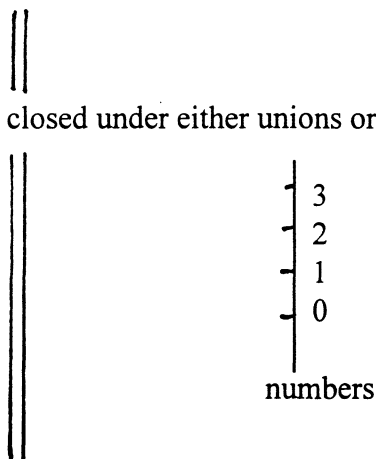
- (31) Which European countries do you like ?
- (32) Which European countries do you not like ?
- (33) Which European countries does every American like ?

Szabolcsi and Zwarts make the reasonable assumption that the interpretation of questions ensures that an exhaustive list is determined by the answer. So to answer (31), one has to list all relevant, i.e. liked European countries. What taking complements means becomes clear when answering (32). All European countries form a set. The countries from the answer to (31) also form one. This is a subset of the total set. The remainder which is not in this subset forms the complement to the set of liked countries. This complement is the answer to (32). For (33), one has to look at each American and list the European countries (s)he likes. Then the lists are intersected. Intersection singles out the names of European countries that show up in every American's list, and this intersection is the answer to (33).

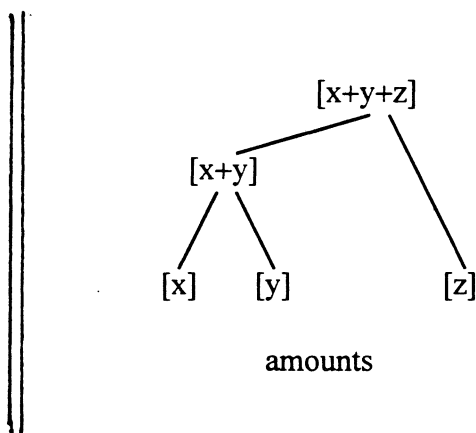
Reflections on the meaning (denotation) of potential extractees, Szabolcsi and Zwarts propose the following hierarchy:

(34)

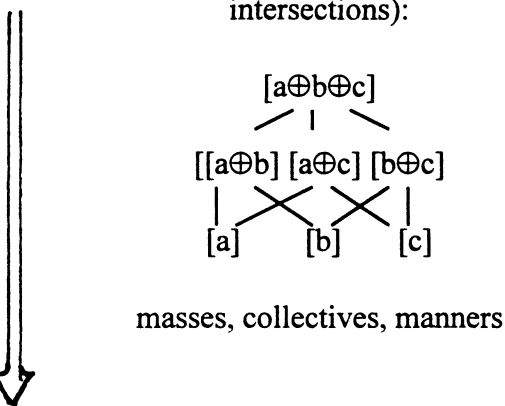
Chain (not closed under either unions or intersections or complements):



Join Semi-lattice (closed under unions, lacking closure under complements and intersections):



Free Join Semi-lattice (closed under unions, lacking closure under complements and intersections):



Set of unordered, discrete individuals (not restricted in the application of Boolean operations):

This hierarchy determines which scopers may scope over which others. Thus scope dependencies are relative. As the number of operations possible to be performed in a scopal element's domain decreases, the more difficult it becomes for that element to take scope. For an SE1 to take scope over some SE2, SE1 must at least allow for all the operations under which the domain of SE2 is closed as well. That means, the possible operations of an element with narrower scope must be a subset of the operations associated with the element that is supposed to take wider scope. The reason why discourse linked phrases are such good extractees is because they (usually) range over a domain of discrete individuals. However, non-discourse-linked phrases are also extractable from some weak islands, when they allow

for the necessary operations (for reasons of space I advise the reader to look at Szabolcsi and Zwarts (1991), (1993)). Now it is clear why (27a) and (28a) are grammatical, though they involve adjunct extractions. They range over concrete, salient reasons (27a); the computers from (28a) also form a set of unordered elements. The extracted object in (29) has an amount reading, and therefore denotes in a domain that forms a join semi-lattice, i.e. a partially ordered domain. Join semi-lattices are not closed under complements. This however is a condition for scope over negation. Thus the sentence is ruled out.

4. On hierarchies that are relevant for argument structure

In her book on argument structure, Grimshaw (1990) develops the idea of ordered argument structure. She argues that argument structure (AS) is not a collection of unordered thematic roles as had been assumed previously. She claims that AS is an ordered representation over which relations of prominence are defined. That means that the arguments of a verb (or of lexical categories in general) obey some principle that orders them, i.e. establishes a hierarchy, and that principle is prominence. Knowing that there are hypotheses of hierarchy that propose almost every permutation possible, she gives the following one with which I agree:

(Agent⁷ (Experiencer (Goal / Source / Location (Theme))))

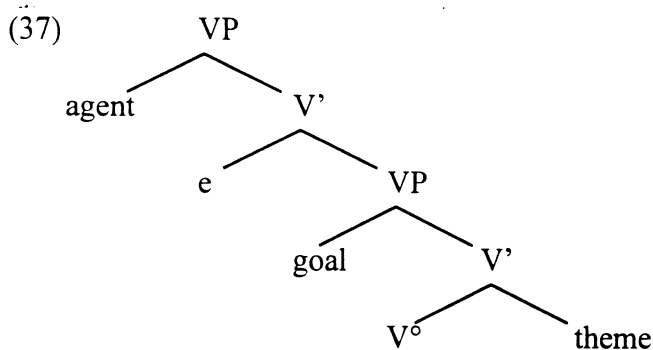
For her AS contains no information about particular theta roles, but only information about the relative prominence of the arguments. She explicitly states that she assumes the goal to be more prominent than the theme. This however is a point of debate. In the list of hierarchies Speas (1990) gives, only 3 ½ of 8 hierarchy proposals locate the goal argument higher than the theme. Since I agree with Grimshaw I first give her two main arguments and then add one by myself. Grimshaw refers to an earlier article by herself and Mester (1988) and brings evidence from a particular construction in Japanese. There is the light verb *suru* which does not have an argument structure. This verb however is accompanied by a direct object NP, and that NP in her example *shoomi* (= prove) brings arguments with it that integrate into the clause. The sentence is the grammatical only in case the goal argument precedes the theme.

(35) Sono deeta-ga wareware-ni [[kare-no riron-ga machigatteirru-to]-no shoomei]-o shiteiru
 that data-nom us -to he-gen theory-nom mistaken-be-C-gen prove-acc suru
 'That data proves to us that this theory is mistaken'

(36) *Sono deeta-ga [kare-no riron-ga machigatteirru-to] [wareware-e-no shoomei]-o shiteiru
 that data-nom he-gen theory-nom mistaken-be-C us -to- gen prove-acc suru

Her second argument comes from compounding in English. She considers bitransitive verbs like English *give*. A hierarchical structure like the one given above, put into a X-bar theoretic (Larsonian) representation, gives the following tree:

⁷ Agent seems to be an exception in that it appears as highest thematic role in everybody's hierarchy I know of.



If incorporation (compounding) takes place, it is most likely the theme that incorporates into the verb. Incorporation crucially depends on c-command. In the tree given above only the theme may incorporate, the goal may not. When we look at compounds we get a confirmation for the correctness of the prominence hierarchy goal > theme:

- (38) Gift-giving to children
- (39) *Child-giving of gifts
- (40) from: the giving of gifts to children

The argument that I wanted to add concerns the unmarked word order in German and Dutch. As I hinted above I assume a head final VP for both languages. I furthermore assume that existential indefinites don't move, i.e. they stay in their base position. The linear ordering of arguments we get is subject (mostly agent) > indirect object (mostly goal) > direct object (mostly theme)

- (41) weil zu dieser Zeit viele Lehrer einigen Schülern zu gute Noten gaben
 since at that time many teachers_{nom} some pupils_{dat} too good grades_{acc} gave
 'since at that time many teacher gave too good grades to some pupils'

This data in my opinion strongly supports the Grimshaw hierarchy. In the same sense the proposed hierarchy is confirmed by languages that express dative positionally. According to Emonds (1993) there are four ways of identifying goals: (1) by productive morphological dative case, (2) by NPs which agree with an appropriately inflected verb, (3) by using an empty preposition like element that is best analyzed as case marker (K°), and (4) - and that's the crucial fact - by fixed word order and no case morphology. In that case precedence, which implies a structurally higher position, locates dative objects higher in the hierarchy than accusative ones. English illustrates that nicely:

- (42) Sieglinde gave Hunding the sleeping draught.
 The pope did not forgive Tannhäuser his sins.

Now I want to give my explanation for crossing - the actual topic of this paper. It has been observed that in languages with (more or less obligatory) movement of argumental phrases out of their base position to some higher one in the clause, there is a semantic effect. Scrambling is such a movement. Objects that scramble introduce some kind of anti-definiteness effect, i.e. scrambled objects (and subjects as well) only allow for a strong

reading. NPs with a weak determiner (indefinite article, adjective like quantifiers *many*, *some*, *few*; numerals and the like) are systematically ambiguous. They may either have a strong (presuppositional) or a cardinal reading. Thus sentences in (42), (43) reflecting base order are ambiguous⁸, the scrambled versions (44) and (45) are not ambiguous any more, i.e. for *many linguists* a partitive reading is forced as the translation suggests.

(42) daß die Polizei gestern viele Sprachwissenschaftler verhaftet hat (German)

(43) dat de politie gisteren veel taalkundigen opgepakt heeft (Dutch)
 that the police yesterday many linguists arrested has
 'that the police arrested many linguists yesterday'

(44) daß die Polizei viele Sprachwissenschaftler gestern verhaftet hat (German)

(45) dat de politie veel taalkundigen gisteren opgepakt heeft (Dutch)
 that the police many linguists yesterday arrested has
 'that the police arrested many (of the) linguists yesterday'

5. Tree splitting - attempts to account for argument positions depending on the reading that those trigger, at the end of this chapter the actual proposal will be made

In the past few years, several theories have been proposed that account for these data. I will briefly present the main idea of three of these. The first one is Diesing's Mapping Hypothesis (MH) (1988, 1992). Using quantifier structures in the style of I. Heim (1982) which split quantificational structure into a tripartite one containing an unselectively binding quantifier, a restrictive clause (RC) and a nuclear scope (NS), she proposes the following:

MH: Material from the VP is mapped into the NS
 Material from the IP is mapped into the RC

Assuming that VP is the domain of existential closure the above readings are (almost) accounted for. If the indefinite NP moves outside VP into the RC domain, it gets a quantificational reading there.

The second proposal is by de Hoop (as well as the Dutch examples (43), (45) 1992). She proposes that there are two types of structural cases. One of them she calls Weak Case and reserves it for weakly quantified objects. This Case is assigned in situ. The other case she calls Strong Case. That one is assigned in a derived position and triggers a strong reading for its bearer. If the derived position is the target position of scrambling, the above facts are explained as well. She divides a sentence into (the set of real) arguments that are predicated of, on the one hand, and the predication itself on the other. The predication obeys a principle she calls Principle of Contrastiveness (POC), p. 166:

For all NPs Q of type $\langle\langle e, t \rangle, t \rangle$ and predicates P :
 Q(P) is only appropriate if $|P| \ni C \ \& \ |C| > \text{or} = 2$

The complicated looking principle ensures that there must be alternatives to the predicate that could serve a possible assertion to the same Qs, i.e. true arguments.

⁸ The ambiguity however is not a real free choice one. The weak reading is much more preferred in the non scrambled version.

In his dissertation, Vallduví (1992) proposes that a sentence can be divided into several parts that have different informational tasks. He suggests that sentences are structured according to how the speaker wants the addressee to retrieve the relevant information. This he calls information packaging. According to him, every sentence contains a focus. It furthermore may contain a ground. The ground is the forms what is supposed to be old information for the hearer and serves as an anchor in the preceding conversation. For reasons of cohesion the ground may be useful, it is, however, not necessary (for an opposite assumption see Jäger (1994)). The splitting is the following ‘trinomial hierarchical articulation’ (p. 46):

Sentence = {Focus, Ground}
 Ground = {Link, Tail}

Links are what elsewhere is often called topic, in topic structures like

(46) Marc I will never forget.
 Yesterday I went to a Wagner opera.

Tail elements are those phrases that do not constitute a topic in the sense that the sentence is about them, but are elements that are known to hearer and do not deliver new information. In earlier work of mine (Meinunger (1994)) I use the above ideas and try to give a syntactically more refined analysis of what is going on with the movement out of VP. Under my analysis there, verbal arguments are projected according to Grimshaw’s thematic hierarchy in the VP. In case some argument serves, as I and Jäger (1994) call it, a topic, it has to leave the VP and targets the specifier position of an agreement projection. Very informally, topic is to be understood a referential anchor about which something is asserted. It turns out that the domain of Diesing’s RC, which is IP minus VP, de Hoop’s set of true arguments and Vallduví’s ground is the same and correspond to the topic part in my Console paper (1994) where I propose the following tree splitting:

[CP...[Agr...		[VP...]]]
Topic		Comment

The more refined syntactic analysis is what Adger (1993) calls the local versus global proposal. In the theory presented there (see Adger (1993) and Runner (1993) for very similar proposals) the specifier positions of agreement phrases host the topical NPs. Using evidence from morphological case realization, agreement data, clitic doubling, word order from typologically very different languages, I show that NPs get their thematic or rhematic reading in the relevant position⁹, i.e.:

- direct objects that are part of the comment in the position that is closest to the verb or its trace (=complement position, i.e. sister of V^o)
- indirect objects that are part of the comment in the specifier position of the lowest V^o
- subjects in the highest specifier position of VP

⁹ Actually I do not talk about the projection of indirect objects there. However the step from the proposal there to the integration of dative objects is straightforward.

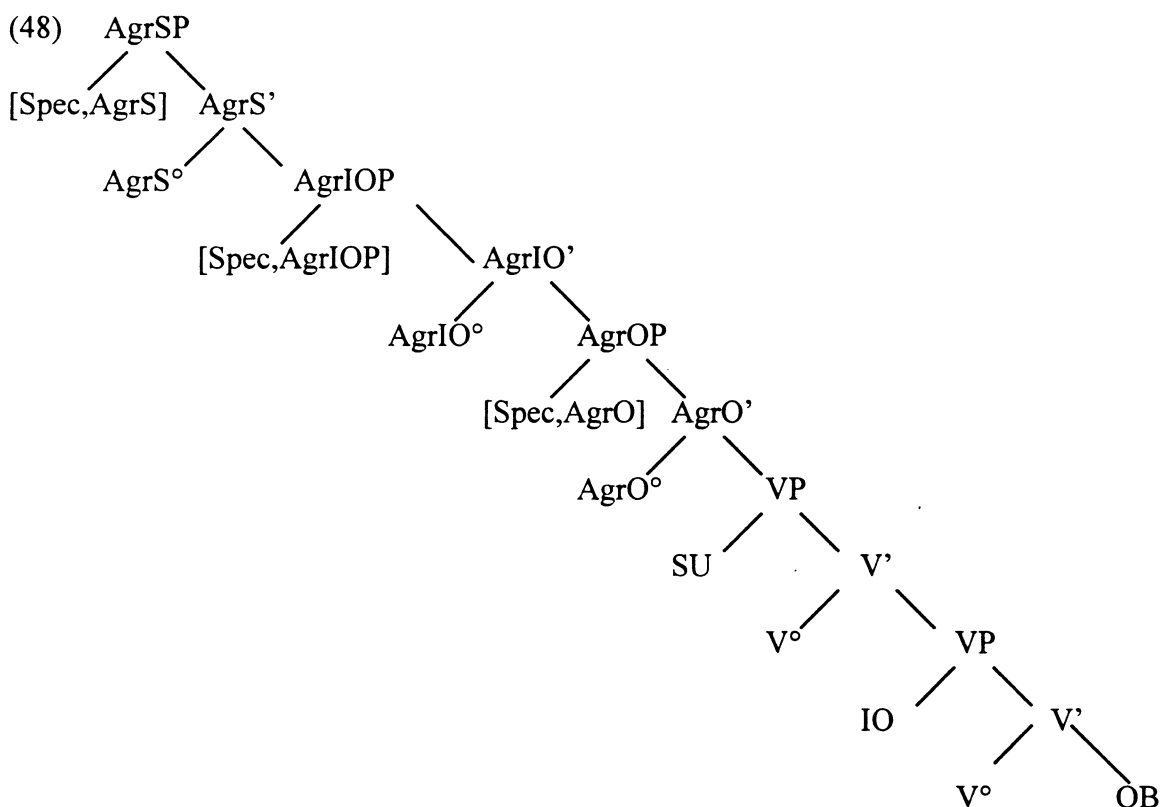
Scrambling in Dutch suggests that the same order is required for the hierarchical ordering of scrambled NPs, thus the order of agreement projection has to parallel the VP internal order¹⁰ :

- (47) a. dat Jan de mannen deze film met plezier toont
 that Jan the men this movie with pleasure shows
 b. *dat de mannen Jan deze film met plezier toont
 that the men Jan this movie with pleasure shows
 c. *dat deze film Jan de mannen met plezier toont
 that this movie Jan the men with pleasure shows
 d. ??dat Jan deze film de mannen met plezier toont
 that Jan this movie the men with pleasure hows

That suggests that AgrS is higher than AgrIO and that in turn is higher than AgrO. Thus the target position

- of thematic direct objects is [Spec,AgrO]
- of thematic indirect objects is [Spec,AgrIO] and
- of thematic subjects is [Spec,AgrS]

Accordingly we get the following tree:



¹⁰ Examples taken from Neeleman (1994)

In order to get to their designated position all arguments cross each other several times. If we now implement Szabolcsi and Zwart's idea that crossing is possible if a certain hierarchy is preserved, we are able to account for the crossing mess. The hierarchy that must not be violated is the same that orders the arguments in their base: prominence. The intuitive idea behind prominence is salience, and that makes sense. By undergoing topic movement, i.e. movement to Spec, Agr positions, crossing is not only possible, but even forced. The only constraint that is to be obeyed is hierarchy preserving of prominence.

In his article 'Topic, pronoun, and grammatical agreement' Givón (1976) also justifies the hierarchy which is assumed in this paper. He presents conceptual reflections which lead him to the conclusion that „there are grounds for believing that with respect to the topicality hierarchy, datives stand above accusatives. This is reflected in the higher percent of definites and humans for datives as compared to accusatives.“ And indeed, agents are always the highest arguments in a hierarchy. For agents as well, it is normally the case that they are human. Insofar the hierarchy of arguments is somehow a structuring of mankind's anthropocentric viewpoint. Prominence, in terms of communicative salience, thus orders arguments (see also Haftka (1980)). However, the scale of prominence is not always the same one, and sometimes there seem to be conflicts. One apparent conflict is shown in Grimshaw's book. There she gives the hierarchy given at page 12, here repeated as (49)

(49) (Agent (Experiencer (Goal / Source / Location (Theme))))

One class of experiencer verbs - the fear class (or Belletti and Rizzi's *temere* class) - is well-behaved. That means the experiencer becomes the subject of the sentence, the theme the object.

(50) Lohengrin fears Elsa's question.
Artemis likes Kayne's theory.

However, there is the class of ill-behaved verbs - the *frighten* class (Belletti and Rizzi's *preoccupare* class)

(51) Alberich frightens the Nibelungs.

Here the experiencer appears as a postverbal object, and the theme occupies the subject position. Grimshaw however presents a way out of the dilemma. Her proposal is that there is not only one scale of hierarchy but more, at least two. She shows that the ill behaved verbs have something to them which the other class lacks. There is a causative element involved such that (51) can be paraphrased by:

(52) Alberich causes the Nibelungs to experience fear.

Then she states that the causal structure of a predicate also defines a hierarchy, just as the thematic structure does, a hierarchy in which the cause argument is most prominent:

(53) (cause (...))

She claims that the causativity hierarchy overrides the other one(s) and imposes a structure where the causer is the most prominent argument. She furthermore attributes the hierarchy to event structure. This however is not that crucial to our point. What matters is the relative prominence that has to be preserved.

Additional support for my theory can be taken from ergative absolutive languages (e-a languages). Typologically those languages differ from nominative accusative languages (n-a languages) in that in the former, the same Case is assigned to subjects in intransitive sentences as is assigned to objects in transitive ones¹¹. Nominative accusative languages normally uniformly assign nominative case to subjects (and accusative to objects).

(54) I kissed him. (I = nom, him = acc)

(55a) I came.

(55b) *Me came. (me = acc)

(56) Balan d^yugumbil baᅅgul yaraᅅgu balgan (Dyrbal, examples taken
 woman-abs man-erg hit from Comrie (1989))

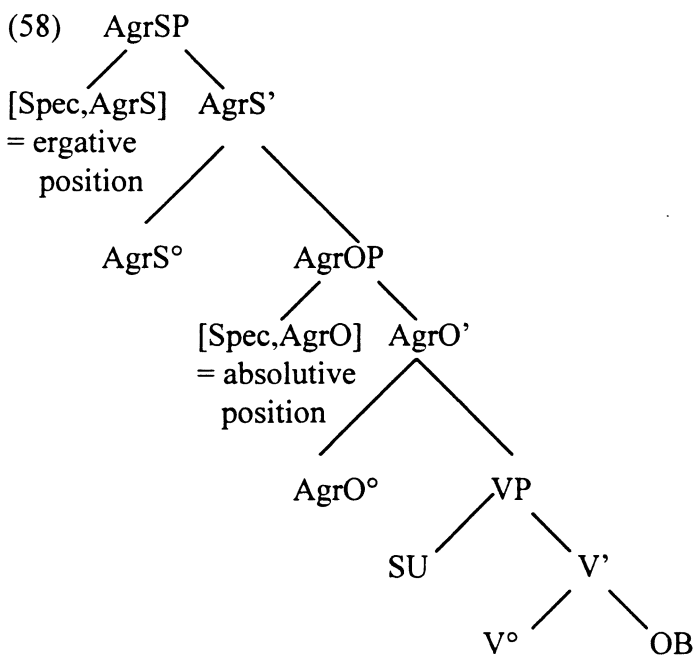
‘The man hit the woman.’

(57a) Bayi yara banin^yu.
 man-abs came-here

‘The man came here’

(57b) *Bayi yaraᅅgu banin^yu.
 man-erg

If we translate this case pattern into the minimalist framework, we get the following representation for e-a languages.



¹¹This is a very rough sketch of the n-a / e-a difference. The actual data are much more complicated. The proposal however is not affected.

Now the difference between nominative (-accusative) and (ergative-) absolutive structures reduces to the target position of SU and OB. In transitive structures the thematically more prominent argument has to raise to the highest Spec,Agr position and the object raises to a lower one. This triggers SU movement to [Spec,AgrS] (the nominative checking position in n-a languages and the ergative checking position in e-a languages) and OB movement to [Spec,AgrO] (the accusative checking position in n-a languages and the absolutive checking position in e-a languages). These movement constraints are easily explained within our prominence preserving theory. In intransitive structures only one argument is present. In that case either landing site [Spec,AgrS] or [Spec,AgrO] could be targeted. No intervention or crossing structure arises. Since there is only one element, the hierarchy is trivially preserved. Languages may choose which Spec position a sole argument targets¹². This is in the full spirit of Grimshaw's theory or the hypothesis presented here (prominence preserving): what matters is not fixed, rigid positions, but the relative prominence among arguments.

6. Prominence theory extended

6.1. The apparent problem with more flexible languages

Now I want to show that prominence theory extends even further. First I have to enlarge the data base and to eliminate some doubts which the new data might raise concerning the strict prominence theory. Using the Dutch examples in (47) above I tried to show that the basic order SU > IO > DO may not be changed. (47) was supposed to show that among all possible permutations, only the one in (47a) comes out as grammatical. This is indeed the case in Dutch, but not in German. In German it is possible for a direct object to move over an indirect one (59), and also for an object to cross an unmoved subject (60):

- (59) weil Johannes das Buch einem Freund gegeben hat
 since John the book_{acc} a friend_{dat} given has
 'since John gave the book to a friend'
- (60) (Mensch, die Gegend sieht aber eigenartig aus. Die ganzen Gebäude passen gar nicht
 zusammen. Wie kommt denn das ?)
 Ja das ist so, weil hier jedes Haus ein anderer Architekt entworfen hat.
 well that is so, since here every house_{acc} a other architect_{nom} designed has
 '(Oh, this neighborhood looks strange. All the buildings here don't really fit to each
 other. How come ?)
 Well, that's because every house here has been designed by an other architect.'

These are not only possible word order devices. They are even obligatory to express the intended meaning. If *einem Freund* is fronted in (59) then the NP loses its existential reading. The dative gets a specific reading, which may not be intended. In (60) the sentence even becomes ungrammatical, see (60'):

¹² That the choice is actually not free, but fully determined is shown in Mahajan's work on ergativity. His proposal however is independent of the prominence story. It explains why the languages on the one hand choose the n-a option, whereas the others use the e-a strategy. The idea is thus located on a different level and fully compatible with the prominence proposal.

(60') * weil hier ein anderer Architekt jedes Haus entworfen hat.¹³

How do we account for this data? As already stated above, Meinunger (1994) proposes the topic-comment mapping where topic NPs leave the VP and the other ones that belong to the comment stay in situ. Thus it follows that *das Buch* in (59) is discourse linked and acts as an element which is predicated of (exactly as *Johannes*) and therefore has to move to [Spec,AgrO]. The comment NP which happens to be the dative object remains in its base position. There it gets its purely existential rhematic reading. The same happens in (60). '*jedes Haus*' is a strongly quantified NP. Thus *Haus*, being presupposed and belonging to the restrictive clause, has to leave its base position. '*ein anderer Architekt*' is obviously not referential. It is contained in the comment and therefore stays inside VP in German. Lenerz (1977) also argues for the IO > DO order. His argument is that there are no restrictions for the IO > DO order. The other linearization is limited to certain circumstances. DO > IO is (only) possible, when IO is focused while DO is not. That is in full agreement with what the topic-comment mapping predicts.

The reason why German, as opposed to Dutch, allows for this kind of linear ordering, is probably because the morphology is rich enough to tell the thematic role. In that sense, Dutch is more 'configurational' than German. Only the position is able to identify the argumental status of a bare NP not inflected for Case. Anyway, what one can conclude from the German data is that topics move whereas comment elements stay. Topics are definitely more prominent than non-topics. As stated above, they act as anchor in the ongoing conversation. Thus they are prominent to the degree that they are used as point of departure for processing of new information. That means that we now have a case that somehow parallels Grimshaw's dilemma. We have two hierarchies that are ideally congruent, but not necessarily; thus we have two hierarchies that exist next to each other and are incompatible. Like in Grimshaw's case, one hierarchy wins the competition: here the topic prominence triumphs over the thematic prominence.

The preceding discussion delivers a picture where prominence relations govern the following hierarchies: argument structure is organized through prominence relations between thematic roles. This gives the instructions to create lexical projections. Clause structure is triggered by sentence functional perspective, or, in other words, as Vallduví would call it : information packaging. That means topics reflect their higher prominence with respect to comment parts by moving out of the VP. Their order with respect to one another outside VP is again determined by thematic hierarchy.

Now the story goes on. The last sentence of the preceding paragraph is actually not the complete truth. As the data presented till now (are supposed to) show, the order of arguments in the base position as well as in the derived one is IO > DO. That suggests that the order of topic NPs with respect to each other is fixed. This again, however, is true only for languages like Dutch. Languages that have the possibility to allow for crossing, i.e. fronting of a thematically deeper, but topic argument with respect to a thematically higher but comment element, also seem to allow for some freedom among scrambled elements. German again exemplifies that (negation shows that scrambling has taken place):

¹³ After some time, the sentence does not sound bad any more. The meaning of the sentence, however, is completely different from (60).

- (61) weil Lohengrin der geliebten Elsa seine Herkunft nicht preisgeben möchte
 since Lohengrin the loved Elsa his descend not reveal wants
 ‘since Lohengrin does not want to reveal his descent to his possible deliverer’
- (62) weil Lohengrin seine Herkunft der geliebten Elsa nicht preisgeben möchte
 since Lohengrin his descend the loved Elsas not reveal wants

In a certain sense, Catalan shows similar behavior and can be analyzed in a similar manner. For the time being, the analysis I will suggest is not very fashionable, in face of Kayne’s ‘Antisymmetry of syntax’ (1993). However; I will follow Vallduví in assuming that there is rightward movement in this language. And even more, I will propose a VP structure that in terms of X-bar structure completely mirrors the German VP (see (68)). Vallduví shows that in Catalan (semantic, informational) focus is also phonologically encoded, in that the deepest element in a structure carries the accent:

- (63) L’amo odia el BRÒQUIL.
 the boss hates the broccoli
 ‘The boss hates BROCCOLI.’

This sentence is a canonical one, i.e. it is not restricted to a narrow focus reading on *bròquil* and allows for focus projection. Under my analysis *bròquil* necessarily belongs to the comment and should therefore not move. In constructions that differ from the one in (63) in terms of information packaging, things change. If it is clear between the communicants that there is some relation between the boss and broccoli, both arguments may function as topics. The relevant relation then constitutes the comment.

- (64) L’amo l’ODIA, el bròquil.
 the boss it +hates the broccoli
 ‘The boss HATES broccoli.’

The following facts are in favor of a rightward movement analysis. First, Cinque (1993) argues that there are lots of languages that mark their deepest embedded element by assigning them neutral accent. In some sense, Vallduví argues for the same, i.e. he analyzes Catalan as such a language (without any reference to Cinque’s work). If this is adopted, the object in (64) cannot be the deepest element anymore since it is the verb that carries phonological stress and delivers the relevant information of the sentence. Thus the object must have moved outside the c-command domain of the verb.¹⁴

The second argument is clitic doubling. Note that clitic doubling is ungrammatical in (63), but obligatory in (64). In Meinunger (1994), mainly following Suñer (1988), it has been argued that some clitics (especially those that occur in clitic doubling constructions) are best analyzed as agreement markers. Furthermore, it has been shown there that the presence of clitics triggers a topic reading of the doubled argument. If, in turn, clitic doubling is triggered by an argument in its relevant Spec,Agr position at something like S-structure, *el bròquil* in (64) should have moved there. This implies that [Spec,AgrO] is on the right. Such an analysis

¹⁴ I have to confess that I am not particularly happy with the explanation. Actually I believe that there is some correspondence between stress assignment and the deepest embedded constituent’s head. I think, however, that this is true for constituents only, i.e. the verb as X^o-element has a syntactically fixed position which should not vary whether the verb itself is stressed or not.

seems to be supported by constructions involving double object constructions. The neutral order in Catalan is verb > direct object > indirect object (/ directional argument), see (65). However, verb > indirect object (/ directional argument) > direct object is also possible. In that case then, the direct object must be clitic doubled, and additionally, the indirect one must constitute the focus, (66)¹⁵.

(65) No he donat encara les notes als ALUMnes.
 not have_{1sg} given yet the marks to-the students
 'I haven't given the marks to the students yet.'

(66) No les_j he donat encara als ALUMnes les notes;
 not cl_{DO} have_{1sg} given yet to the students the notes

Further evidence for the rightward movement analysis is provided by the placement of clause peripheral particles. These may not occur between the verb and its arguments unless they are defocused and clitic doubled, which we took both as indicator for movement (to the right).

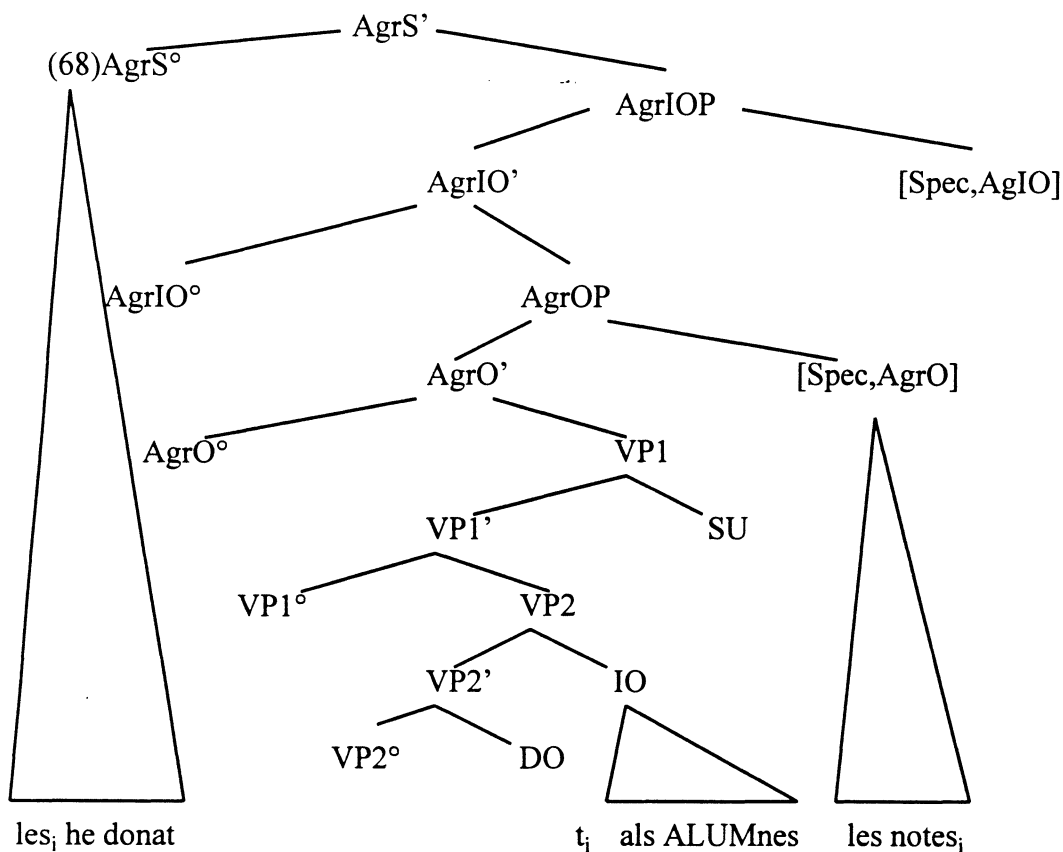
(67a) Ficarem (*oi) el ganivet (*oi) al CALAIX, oi ?
 put_{1pl} prt the knife prt into-the drawer
 'We'll put the knife in the drawer, right ?'

(67b) El_i ficarem t_i al CALAIX, oi, el ganivet_i, (oi) ?

Considering that Catalan overtly identifies the thematic role of arguments using (empty) prepositions, we get the mirror image of German.¹⁶

¹⁵ Thanks to Josep Quer for the data.

¹⁶ Interestingly, van Riemsdijk presented a theory the other day which reinforces the rightward hypothesis from a totally different perspective. In his talk 'Adjunktion und Adjazenz' held at FAS on June 11, he tried to show that verb cluster formation, i.e. the morphophonological conflation of verbal lexical and functional material depends on strict adjacency. The consequence of such a theory is that only languages which project complements and specifiers on the same (!) side of the head (heresy in Kaynians' eyes) should allow for inflected forms of verbs with bound inflectional morphemes. Thus all head final languages are good candidates, and they indeed behave as expected, normally. The other group would be languages that are completely head initial. The modern romance languages could be analyzed as such, and Catalan belongs to them. (Since in German as well as in Catalan, as representatives a larger group of more languages, the CP level is undoubtedly head medial, verbs that incorporate or adjoin to C° should be excluded, and interestingly, in matrix declarative sentences this step is forbidden. I don't know whether the theory holds. However, I find it interesting and promising, well maybe less interesting than Kayne's proposal, but more promising.)



Vallduví attributes that to information packaging. I also would like to argue that in German-like languages phrases are linearized according to their communicative contribution. This has been observed a long time ago. What we get is the German scrambling behavior, i.e. since in Catalan overt elements identify an argument's thematic role, the order of topic elements is rather free:

(69) Encara	no els; les; he donat $t_i t_j$,	les notes; als alumnes; _i
Encara	no els; les; he donat $t_i t_j$,	als alumnes; les notes; _j
Les notes; _j encara	no els; les; he donat $t_i t_j$,	als alumnes; _i
Als alumnes; _i encara	no els; les; he donat $t_i t_j$,	les notes; _j
Les notes; _j als alumnes; _i encara	no els; les; he donat $t_i t_j$.	
Als alumnes; _i les notes; _j encara	no els; les; he donat $t_i t_j$.	

The idea that linearization is triggered by communicative weight goes back to Behagel (1909) and his 'Gesetz der wachsenden Glieder'. An other pioneer is the Czech scholar Firbas. He proposes a theory of 'communicative dynamism' (mainly Firbas (1964)). This theory rejects a binary analysis of sentences that divides a sentence into a thematic and rhematic part¹⁷. His dynamism theory proposes that all phrases are part of a continuum that is a scale of communicative importance. For him there is an additional part to theme and rheme. He calls it transition. Its task is to mediate between the (proper) thematic and (proper) rhematic part of

¹⁷ In the immense work on functional sentence perspective there are lots of proposals about how to split a sentence and then how to call the parts (theme-rheme, topic-comment, topic-focus, focus-open proposition, hearer old- hearer new...) For the details see Vallduví. What matters here is that this binary analysis is not adequate or at least not explanative enough.

the sentence. Thus the theme is constituted by the element(s) carrying the lowest degree of communicative dynamism within the sentence. Towards the end of the sentence the degree of information becomes higher, that means, the informative part is on the right. In-between, i.e. within the transition part, phrases are ordered according to their communicative weight, which I will call communicative prominence. Thus again prominence comes as an ordering principle. This ordering, however, should probably be analyzed as the product of A-bar-movement.

6.2. A place for Optimality Theory?

This is the right place to use another theoretical framework that has been introduced into syntax by the same linguist: Jane Grimshaw, namely optimality theory (Grimshaw (1993)). Roughly, optimality theory works like this: there are a number of constraints that evaluate some output of a grammatical process. These constraints state what output is good in a (grammatical sense). These constraints are autonomous, i.e. they do not depend on each another. Optimality theory says that these constraints are ranked. This means that there is a language particular hierarchy of relevant constants. These may be obeyed or violated. The output of the relevant grammatical construct which violates the least comes out as grammatical. Thus where some language decides to give priority to one constraint over another, the output may violate the more deeply ranked one, but not the more highly ranked one. A different language may reverse the ranking and, consequently, the result must be different.

The ranking that I propose to account for the German type - Dutch type difference is not strictly parallel to the usual ranking. However, if we adopt the following constraints for word order, we have an explanation for the different behavior:

- (Θ₉) order constituents according to their thematic hierarchy
- (Π₉) order constituents according to their weight with respect to communicative dynamism

Dutch prescribes (Θ₉) > (Π₉). In German, the ranking is not rigid. It allows for either ordering, maybe with a preference for (Π₉) > (Θ₉).

Thus, in a generalized fashion one could state, that one of the parametric differences between non-configurational languages and (more) configurational languages is the constraint ranking (Θ₉) > (Π₉) vs. (Π₉) > (Θ₉). The possibility for the latter ranking is probably dependent on the language having a rich enough case morphology.

7. Summary

It has been shown that many linguistic hierarchies are ordered by prominence in the sense of communicative salience. If thematic hierarchy is one of these and a requirement is imposed, namely that this hierarchy be preserved under case checking, we do not depend on the mysterious equidistance theory any longer.

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