

THE REPRESENTATION OF SYNTACTIC CATEGORIES

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1. THE DISTRIBUTION OF COMPLEMENTS

One important line of research in current syntactic theorizing concerns the question how the order of complement categories with respect to their governing head and with respect to each other can be accounted for in a non-stipulative way. A first important step in the right direction was the case theory proposed in Rouveret & Vergnaud (1980), Chomsky (1981) and Vergnaud (1985). This theory links the distribution of noun phrase (NP) complements to the case assigning properties of the governing head. As a result, this theory is somewhat limited in scope in that it applies to NPs only. A somewhat more ambitious research program taking case theory as a point of departure is initiated by Stowell (1981) and carried further in Koopman (1984) and Travis (1984).

The central idea behind this work is that in addition to case theory there are other modules of the grammar that must be invoked in order to account for the distribution of all types of complements (NPs, prepositional phrases (PP), adjective phrases (APs), infinitival complements, finite complement clauses, etc.) by means of the subtle interaction of the principles of these modules. Some of these modules are components of the grammar that have to be present for independent reasons, such as theta theory, the module that is concerned with the semantic roles that complements have with respect to the predicate that they are arguments of. Others are principles that are postulated within one or the other module with the specific purpose of accounting for complement order. An example is Stowell's (1984) Case Resistance Principle, which says, roughly, that certain complement categories not only do not require case but in fact may not occur in a case assignment context, that is they resist case. It is to this principle that he attributes the inability of tensed complement clauses to occur in typical NP slots such as the subject or direct object positions in languages such as English.

As an antithesis to these proposals, there have been a few suggestions to the effect that the problem of the distribution of complements should be handled in a more unified, less modular way. Kayne (1982), for example, has suggested a principle requiring that predicates must have arguments as their complements and that complements must govern predicative constituents. It is the somewhat less plausible second half of this principle that is supposed to take over the work of case theory. That is nouns cannot govern prototypical arguments (NPs). Nevertheless, such an approach has the advantage that it becomes possible to envisage a generalization of case theory to the domain of verbal governors. In particular, it might become possible to unify the core case of case theory, which we can abbreviate as *N-NP, with the principles that prohibit the occurrence of bare verbal complements to verbs. Such principles, sometimes referred to as the *V-V filter, have been discussed in Longobardi (1980) and Van Riemsdijk & Williams (1981).

The main advantage of this latter research strategy is, it seems to me, that a difficult problem that faces case theory can be avoided. This is the problem of inherent case. I mean the fact that in a wide variety of syntactic contexts NPs must be assumed to be inherently case marked simply because there is no obvious case governor around that could have assigned it. To give just one example, take NPs that function as time adverbials such as *every*

day. In an overtly case marking language such as German, such NPs show up in the accusative. It is clear that such adverbial NPs are not governed by any kind of case assigner. If this is true, then it means that there is a range of NPs that can escape the case filter by means of being inherently case marked. But then, how can we make sure that the case filter will still work properly in those situations it was designed for. In other words, couldn't the object of a passive verb avoid being moved to a nominative case position by appearing in some inherent case? While it is not impossible to elaborate case theory in order to accommodate the distinction between inherent and assigned case, we must ask whether that is the right way to go.

2. THE UNLIKE CATEGORY CONDITION

While Kayne's proposal is not very clear at this point and has not been presented in a written version, Hoekstra (1984) has come up with a principle that is very much in the same spirit, the *Unlike Category Condition* (UCC) (1). Hoekstra formulates this principle as follows.

(1). *The Unlike Category Condition*

At s-structure, no element of the type $[\alpha N, \beta V]^0$ may canonically govern a projection of $[\alpha N, \beta V]$.² (p. 85)

The effect of this principle can be summarized as in [2].

- (2). a. $*[V V^{\max}]_{V'}$
 b. $*[N N^{\max}]_{N'}$
 c. $*[A A^{\max}]_{A'}$
 d. $*[P P^{\max}]_{P'}$

[2a] and [2b] yield the desired effect, [2c] will turn out not to be crucial, for reasons I will discuss below, and [2d] poses a problem, as Hoekstra himself correctly points out. The problem is that prepositions do seem to be able to subcategorize PPs (cf. for example Van Riemsdijk (1978). Standard examples from Dutch are:

- (3). a. van voor de oorlog
 from before the war
 b. tot achter de garage
 until behind the garage
 c. voor er bij
 for there with (for with it)
 d. sinds drie uur na zijn val
 since three hours after his fall

More generally, the situation in Dutch can be summarized by saying that the prepositions *van*, *voor*, *tot*, and *sinds* can govern locative or temporal PPs. Confronted with this problem, Bennis and Hoekstra propose a radical solution: the two prepositions are reanalyzed and are therefore immune to the filtering effect of the UCC. As a supporting argument they state that the number of prepositions involved is very small. This is a rather weak point, though, in view of the fact that the category of prepositions is generally taken to be a closed

class anyway. Furthermore, the range of prepositions that can be governed and, in their view, reanalyzed by *van*, *voor*, *tot*, and *sinds* is considerable.

More important, however, is the fact that the version of reanalysis adopted by Bennis and Hoekstra is one of the most powerful ones that one can imagine. In particular, it has to be a version of reanalysis that does not require that the elements to be reanalyzed be adjacent, otherwise examples like [3c] and [3d] would be problematic. Nevertheless string adjacency is one of the properties generally attributed to reanalysis. Furthermore, this proposal implies that governors other than V can trigger reanalysis, even though in practically all the standard cases of reanalysis that have been more or less well established in the literature the trigger is a verb. While a restriction to the effect that only V can trigger reanalysis has never been explicitly proposed (3), it must have been implicitly assumed since otherwise we lose the explanation for the fact that prepositional passives are not possible in NPs. That is, if N is allowed to trigger reanalysis we have no account for the ungrammaticality of [4].

- (4). *The problem's investigation into

Within the Bennis and Hoekstra proposal, this is particularly problematic, since it is now unclear why it should be that there are no known cases in which N-NP or A-AP sequences can escape the UCC by means of reanalysis.

On the basis of these considerations I reject the UCC. Nevertheless it must be admitted that Bennis and Hoekstra do get some mileage out of their reanalysis account of [2d]. Before moving on to an alternative to the UCC, let us briefly consider their line of argument. They point out that in a structure like [5] in Dutch, the XP can be a finite clause (S') but never an infinitive.

- (5). [P [P XP]_{PP}]_{PP}

- (6). a. Deze grap zout ik op tot na dat ik de cijfers
this joke save I up until after that I the grades

bekend heb gemaakt
know have made

(I will save this joke until after I have announced the grades)

- b. *Deze grap zout ik op tot na de cijfers bekend te
this joke save I up until after the grades known to

hebben gemaakt
have made

This interesting contrast can be explained, Bennis and Hoekstra suggest, by assuming that a preposition that introduces an infinitive occupies the position of the complementizer. This assumption receives support from the fact that the regular infinitival complementizer *om*, which like English *for* is prepositional in form, cannot occur after prepositions either.

- (7). Hij vertelde de grap na (*om) de cijfers bekend te
he told the joke after the grades known to

hebben gemaakt
have made

This account requires two stipulations, however, which considerably reduce its viability. Take the crucial type of structure as in [8].

$$(8). \quad [P [_{S'} [_{COMP} P] \dots]]$$

In this structure the UCC must be assumed to apply to the two prepositions in order to rule out cases like [6b]. On the other hand, we have to assume that reanalysis *cannot* apply to this pair of prepositions, for otherwise it would be possible for such structures to evade the effect of the UCC.

It is fair to conclude, then, that the case that Bennis and Hoekstra make for their account of the problem that [2d] creates for the UCC is too weak to be credible. Nevertheless, their observation in [6] is interesting in its own right. While space prevents fuller discussion, let us briefly consider an alternative account before developing an alternative to the UCC.

One obvious difference between tensed clauses and infinitives is that infinitives have a lexically unexpressed, controlled subject. And in fact, control theory may be taken to be responsible for the contrast in [6]. For reasons that are not understood, a PRO-subject preceded by a preposition is subject to a requirement of obligatory control. Following roughly the theory in Manzini (1983) the antecedent must be part of the functional complex of the element that governs the S' that the PRO in question is the subject of. In structures like [9] this element is the higher of the two prepositions.

$$(9). \quad \begin{array}{l} \text{a. } [P [_{S'} [_{COMP} P] [_{S} \text{PRO} \dots]] \\ \text{b. } [P [P [COMP [PRO \dots]_{S'}]_{PP}]_{PP} \end{array}$$

But the domain of that preposition can never contain a potential antecedent. In fact, the only complement it contains is the S' in question. Hence structures like [9] can never exist because the PRO, while requiring an antecedent, can never find one that is close enough. Note that infinitival complements to nouns and adjectives are different in two respects. First, they do not obligatorily impose obligatory control. And second, they do have the possibility of having, in addition to the infinitival complement, other arguments in their domain. Sometimes these arguments will be explicit, sometimes implicit. Hence the peculiar behavior of PPs with sentential complements follows without much trouble from some reasonably well established principles of control theory.

3. THE UNLIKE FEATURE CONDITION

Having concluded that the UCC is not tenable but that a global approach along similar lines is worth exploring, let us consider an alternative approach to the problem of accounting for the distribution of complements with respect to their heads.

The main problem with the UCC is that it is both too strong and too weak. We have seen above that it is too strong because it incorrectly excludes the P - PP cases. But it is also too weak in that it fails to exclude a number of combinations that are generally taken to be impossible. In particular, unlike case theory the UCC does not rule out adjectives governing an NP with a grammatical case (4).

The alternative I wish to present here continues to assume with the UCC and its predecessors that certain categories cannot occur in each other's immediate proximity, but it characterizes the relevant contexts in terms of the syntactic features rather than the categories

[12a] and [12b] show what is excluded by the UFC. [12c] demonstrates the versatility of P and PP. [12d] gives the remaining cases that are allowed under this system. It is immediately clear from this table that the UFC constitutes a better approximation of what are standardly perceived as the core facts. Nevertheless, it also appears that there are some problematic cases.

First, it is predicted that AP can be a complement to P and that VP can be a complement to P and N. One approach to the case of P - AP would be to say that this is desirable in view of the existence of such cases as [13].

(13). The sky changed from azure to anthracite.

On the other hand, however, it could be argued along the same lines that V - AP should also be allowed, witness [14] (6).

(14). When wine turns sour it tastes vile

Unfortunately there really are too few of such cases to base any firm conclusions on. The main thing about these is that the AP is a predicate with respect to the subject of the sentence in these cases and in that sense is not really a complement to the verb by itself.

Similarly, a VP is really a predicate. What is more it is a predicate that requires a subject position next to it by virtue of the Extended Projection Principle (EPP) (7) or whatever principle is taken to predict that the subject position is obligatory. We could say, then, that P - VP and N - VP are not ruled out by the UFC but by the EPP.

The second problem is closely related to the first. Consider [15].

(15). I consider John happy

Such instances of secondary predication are often analyzed in terms of so-called small clauses (8). Thus the structure of [15] might be as in [16].

(16). I consider [John [happy]_{AP}]_{AP}.

If the node dominating the small clause is indeed a projection of A, then the UFC would rule out such a structure. This is a controversial issue, but whatever analysis of secondary predication is adopted, it seems reasonable to say that the distribution of small clauses does not directly fall under the domain of the UFC. If anything, in fact, it will be the subject of the small clause that is subject to the filtering effect of the UFC, as it was taken to be under the case theoretic account of word order phenomena. The gross intuition is that the distribution of small clauses is largely independent of the categorial nature of their predicates (AP, PP, NP, or VP).

We will assume, then, that all instances of VP complements to X^o are ruled out by the EPP, some redundantly so (9). For the case of AP we assume somewhat arbitrarily in view of the unclear status of such cases as [13] and [14] the following principle:

(17). For the purposes of the UFC, the positive specification of AP for the feature [α N] is dominant, while the positive specification [β V] is recessive.

By this we achieve the effect that the UFC treats adjectives essentially like nouns. Needless to say, [17] is very tentative. If it turned out that it represents what should be said for a large majority of the languages of the world, a revision of the feature system would be called for. At this point, however, we will simply limit ourselves to stipulating [17] (10).

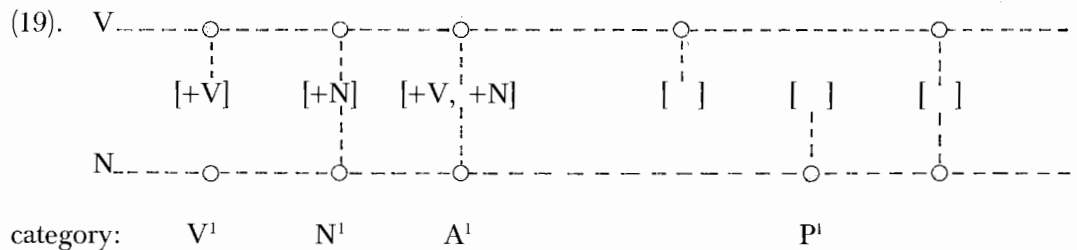
The table in [18] summarizes the system we have developed so far (11).

(18).	situation	prediction	by	fact
a.	V - VP	*	EPP	*
	V - AP	OK	(17)	OK
	V - NP	OK		OK
	V - PP	OK		OK
b.	N - VP	*	EPP	*
	N - AP	*	UFC	*
	N - NP	*	UFC	*
	N - PP	OK		OK
c.	A - VP	*	EPP	*
	A - AP	*	UFC	*
	A - NP	*	UFC	*
	A - PP	OK		OK
d.	P - VP	*	EPP	*
	P - AP	OK		OK
	P - NP	OK		OK
	P - PP	OK		OK

4. UFC OR OCP?

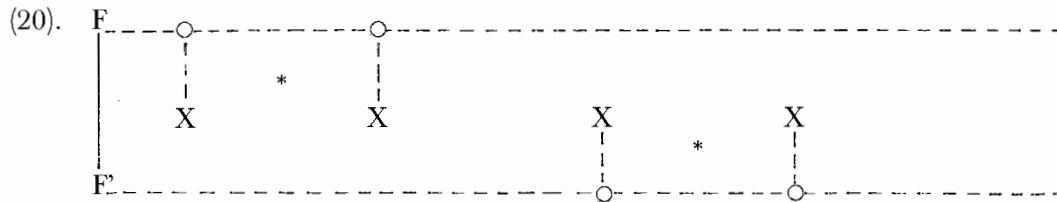
Before pursuing this approach by extending it to further cases, let us consider the status of the UFC. In particular, we have concluded that there is a certain asymmetry in the use of the syntactic category features in that it is the plus value that counts for the UFC, while the minus value is more like the neutral specification. This situation is highly reminiscent of certain approaches to phonological features such as the autosegmental theory of Kaye, Lowenstamm, and Vergnaud (1985). In this theory, features are represented as lines to which individual segments can be linked.

Suppose, in fact, that the typically lexical categories N, V and A are inherently specified in the lexicon for the plus values of the categorial features. We could then say that a segment so specified (a head or its projection) can only be well-formed in a syntactic representation, or, if you prefer, is only visible, if it is linked with the line representing that feature. For prepositions I will assume, and this is a departure from the standard interpretation, that in order to be visible they must be linked to some line, but that since they are not inherently specified they can be linked to either line. [19] shows how this works.



If we conceptualize syntactic category feature representations in this way, it becomes possible to interpret the UFC as the syntactic counterpart of the phonological Obligatory Contour Principle (OCP), originally proposed in Leben (1973) (12). According to the OCP,

two adjacent segments in phonology cannot be independently linked to the same feature line. Graphically:



The OCP predicts, among other things that two identical adjacent short vowels are impossible. They must be reinterpreted as a long vowel if the language in question allows long vowels, or some epenthetic element must be inserted between them. Otherwise the OCP will rule out such a structure. This closely parallels what we have been saying about syntax: in a representation that potentially violates the UFC, the structure may be rescued by inserting a neutral element, that is, a preposition, or by reanalyzing the governing head with the head of the complement phrase (cf. note 8).

In comparing phonology with syntax in this manner, there is one important problem that we have to keep in mind. This is that in phonology the OCP applies to hierarchically unstructured strings of segments, while in syntax it applies to pairs of heads and phrases. But within such a phrase, the UFC may again be applicable. In the representations given, we will simply assume that the “segments” can be freely interpreted to represent either heads or projections. This is entirely consistent with the notion of endocentricity and with such interpretations of government as presented in Belletti and Rizzi (1981), where it is proposed that if α governs some phrase XP, the whole projection line of X^0 is accessible to government by α .

As mentioned above, one of the main results of the system proposed here is that it predicts the great syntactic versatility of prepositions in a straightforward way. The free interpretation of segments as heads or as projections leads to a slight complication, however. Consider the case in which a verb governs a PP whose preposition governs an NP. Then the PP must be associated with the N-line by virtue of the UFC. But if the P^0 is also associated with the N-line it cannot govern an NP. In view of this, we could drop the visibility requirement for P and assume that P or P^1 need not be linked to any line. Alternatively, we could adopt the following principle.

- (21). Only inherent feature specifications percolate from the head to (or are visible at) the maximal projection node.

With these provisos it appears that we have established a nontrivial parallelism between syntax and phonology, if the UFC approach to the distribution of syntactic categories is on the right track.

5. TOWARD A MORE INCLUSIVE SYSTEM

The system developed so far is relatively simple, but, of course, it is simple by virtue or the fact that the data to be covered by it are quite limited and streamlined. One important domain that has been omitted from the above discussion is that of sentential complements.

Before turning to these, recall that we had noted a problem in connection with obliquely case marked NPs. Adjectives can take NP complements, provided they are in some

zer, we also predict the impossibility of tensed clauses in the subject position. Note, finally, that there is a fourth logical possibility in addition to [22a-c]. This is a clausal complement which is positively specified for both the N- and the V-line. This would be some sort of adjectival complement clause. I know of no construction that might plausibly be characterized in this manner. If we were to extend this approach to adjuncts, however, as we will directly, this might well be the right way to handle reduced relatives, adjectival participles and the like.

Another extension of this approach that might be envisaged would be to use it in accounting for the distribution of noncomplements. Let us briefly consider specifiers and adjuncts. As for adjuncts, there are reasons to question the widely held doctrine that they are fundamentally different in their syntactic distribution from complements (15). In many languages complements and adjuncts are freely scrambled. Furthermore, even in languages like English and French, where there appears to be a fairly strict separation of complements and adjuncts in the domain of V, this separation disappears entirely when we look at the internal structure of the NP. Most strikingly, perhaps, postnominal adjectives in French must precede complements.

- (23). a. la destruction totale de la ville
 the destruction total of the city
 b. *la destruction de la ville totale

Furthermore, there are indications that adjuncts pattern with complements distributionally in various ways. Consider, for example, the fact that in Dutch only PP and S' can follow the verb cluster at the end of the VP. NP and AP are excluded from this position. This statement holds true of both complements and adjuncts (16).

Turning now to specifiers, it seems to me that the system suggest an interesting generalization. What do we take to be the specifiers of the four major categories? There does not seem to be much of a consensus on this matter. Let me suggest, then, that we distinguish one class of canonical specifiers for each category. The canonical specifier of a noun, clearly is the article or determiner, under which I subsume the simple article, demonstratives and quantifier phrases. Similarly, I will assume that the auxiliary (or INFL) is the canonical specifier of VP. In the case of adjectives, what characterizes them most is their possibility to have a comparative and a superlative. These originate, however, in a quantifier phrase. Prepositions, finally, do have specifiers, but I find it hard to single out a specific subclass as constituting the canonical specifier of P.

With this in mind, observe now that the canonical specifiers of N and A are nominal in nature, while the canonical specifier of V is verbal in nature. Furthermore we note that P does not have a canonical specifier. This strongly suggests that we characterize the notion of canonical specifier in terms of identity of the positive feature specification with the head. Thus we have the following situation.

(24).	head	features	can. spec.	features
a.	N	[+N]	art., QP demonstr.	[+N]
b.	V	[+V]	aux., Infl.	[+V]
c.	A	[+N, (+V)]	QP	[+N]
d.	P	[]	—	—

Looking at the fundamental properties of specifiers in this way, it seems that we have uncovered, alongside the system of mutual repulsion between heads and complements/adjuncts, a system of mutual attraction that holds between heads and specifiers.

NOTES

- (1) Cf. also BENNIS & HOEKSTRA (1986).
- (2) A canonically governs B if and only if A governs B and the direction in which A governs B is the same as the one of the head governing its complements. Cf. KAYNE (1983).
- (3) HOWEVER, see VAN RIEMSDIJK (1986).
- (4) There are good reasons to allow oblique NPs in the complement of adjectives, as argued, for example, in VAN RIEMSDIJK (1983). I return below to the status of NPs with oblique case marking in the system presented here.
- (5) It should be noted that the statement that PPs are syntactically the most versatile category, posited here as a fact, is by no means uncontroversial. Rudolf de Rijk, in his contribution to this conference reaches the opposite conclusion, in fact. At the same time, however, his paper clearly illustrates the difficulties that one often encounters in trying to establish whether some grammatical formative is or is not a preor postposition. It remains highly unclear, for example, whether Japanese *na*, which De Rijk cites, is a postposition or not. A more definitive pronouncement on the general behavior of PPs will therefore have to await the resolution of a great number more cases.
- (6) Cf. EMONDS (1985).
- (7) Cf. CHOMSKY (1981).
- (8) Cf. STOWELL (1983).
- (9) This is not entirely correct, because there is another way in which a VP complement to V could escape both the effect of the UFC and that of the EPP. This is for the verbs to be reanalyzed as in Dutch and German verb raising constructions, cf. VAN RIEMSDIJK & WILLIAMS (1981).
- (10) Note that the idea that the feature specification of AP is partly recessive ties in neatly with the idea that certain feature values of AP may be neutralized in certain contexts. This possibility was explored in VAN RIEMSDIJK (1983).
- (11) Curiously, [18] exhibits a considerable amount of symmetry which is quite accidental given the way the three principles in question (UFC, EPP, and [17]) interact. Since some of the categories in the table are fairly tentative, however, not too much importance should be attached to this fact. Furthermore, while the symmetry invites us to look for simpler principles, one possible outcome of such an exercise is a principle that stretches my intuitions about naturalness and simplicity to a very considerable extent:
(i) $\{ [aN]^0 - [-\alpha V, -N]^{\max} \}$ is $[-\alpha^*]$
- (12) For a more recent discussion, see McCARTHY (1986).
- (13) Note that we are talking about infinitival complements here as opposed to bare VP-complements.
- (14) Some of these predictions are not entirely obvious. In particular, the distribution of tensed clauses and infinitives introduced by a prepositions is subject to considerable variation. For example, English disallows tensed S with complementizer as well as infinitives in a PP. Only bare tensed S and gerunds are allowed. Dutch on the other hand allows all of these. I will not dwell on these finer distinctions here, because the scope of the system proposed is such that it should not be accountable for such local differences among languages.
- (15) This is the position originating in CHOMSKY (1965).
- (16) This is not to say that all PP-complements and all adjuncts can extrapose into the postverbal position. Certain directional PPs, complements or adjuncts, cannot.

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