

CLITICS, AFFIXES AND PARALLEL CORRESPONDENCE*

Kersti Börjars

Department of Linguistics
University of Manchester
Manchester M13 9PL
UK

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1. Introduction

One of the strongest points of the architecture of Lexical-Functional Grammar (LFG), and one of the ways in which it differs most strikingly from the Chomskyan approach, is in its recognition that there are different types of information associated with linguistic elements, e.g. syntactic information, functional information and information about semantic roles and that each type of information needs to be represented independently at c-structure, f-structure and a-structure, respectively. The constraints on what is a possible information structure may vary between the different components, and there may be “discrepancies” between the levels. The limits of these discrepancies can then be defined in terms of constraints on correspondences, or mapping principles. The most well-defined of these are the mapping principle between f-structure and a-structure (Bresnan and Kanerva 1989, Bresnan and Moshi 1990, Bresnan and Zaenen 1990, Levin 1989). This separation of types of information has led to insightful analyses of “raising” and control phenomena (going back to Bresnan (1982)), and has also shed new light on problems which arose because syntactic arguments and arguments relating to functional structure appeared to point in different directions. Kroeger’s (1993) discussion of subjects in Tagalog is an excellent example of this.

Another attractive aspect of LFG is that morphology can create f-structure in much the same way that constituency can. A lot of work in this area has been done recently (see for instance Börjars and Chapman (1998), Bresnan (1997b, In press) and Nordlinger (1997a, 1997b)). The exact status of morphological information still remains unclear; the architecture of LFG in principle allows separation between c(onstituent)-structure and m(orphology)-structure — explicit proposals to this effect is made in Butt, Niño and Segond (1996) and Frank and Zaenen (1998) — but most accounts appear to assume that morphological information is, in fact, part of c-structure. A discussion workshop held at LFG98 in Brisbane made clear that a consensus view does not exist on this issue within the LFG research community. The difference about what information should be represented in m-structure also varies between Butt, Niño and Segond (1996) and Frank and Zaenen (1998).

The purpose of this paper is to discuss a dataset which to my mind could be interpreted as an indication that there can be discrepancies between the morphological and the syntactic (or constituent) structure of the kind which would motivate a separate morphological level. The dataset involves clitics, and this kind of element is, of course, a prime candidate for a treatment in terms of different morphological and syntactic structure (see Autolexical Syntax accounts of such elements in Sadock (1991) Lapointe (1992) and Börjars (1997a)). Other candidates are so-called ‘superlexemes’, like the German or French preposition+determiner combinations *vom* (*von+dem* ‘from the.M/N.DAT’) and *du* (*de+le* ‘of the.M’), respectively. Ackema and Neeleman (1998) give further examples of morphology–syntax discrepancies from separable verbs in Germanic.

2. Clitics and how to deal with them

‘Clitic’ is a notoriously vague category, and I will make no attempt here at defining it. I will just assume that there are some characteristic properties which a typical clitic has; it is bound and its position is defined in terms of a phrasal rather than lexical category. The distinction between an affix and a clitic then lies mainly in position, but a number of associated characteristics follow from this, e.g. degree of boundedness and degree of morpho-phonological irregularities. Syntactic positioning is then a characteristic of all clitics, some clitics are even more syntactic in that they need to be represented as a separate category in the syntactic representation. This distinction can be illustrated by comparison with the possessive ‘s in English — which positions as a clitic, but to which one would not want to assign a syntactic category — and the clitic auxiliaries in English — which also position in relation to a syntactic unit but which one would assume to belong to a syntactic category (V or I). Clitics can then be said to be elements which appear to participate in

both the syntactic and the morphological components and hence share properties with both independent words and affixes.

In spite of this, many theoretical analyses of clitic phenomena play down either the morphological or the syntactic properties and place the element squarely in the other component. An example is Anderson (1992, 1993, 1996), in whose view any element which is bound, be it an affix or a clitic, has no representation in the syntax; ‘...clitics (including those that clearly manifest syntactic information, such as pronominals and auxiliary markers of tense and aspect) are analyzed as phonological material introduced into the PF-representations of phrases by rules belonging to the same broad class as those of Word Formation.’ (Anderson 1996:165) To Anderson, clitics represent information associated with “functional categories”, which is represented as a feature at the phrase level. Word Formation rules then place the phonological material associated with the feature in its correct position. These rules may make reference either to phonological units (e.g. word) or syntactic units (e.g. syntactic object). In Anderson (1996), the positional differences between affixes and clitics is accounted for in terms of Optimality Theory. An approach similar to that of Anderson has been formulated within Generalized Phrase Structure Grammar and Head-driven Phrase Structure Grammar by Lapointe (1990) and Miller (1992a).

Work in the Chomskyan tradition on the other hand gives ample examples of how clitics are dealt with entirely in the syntactic component. In such analyses, the distinction between affix, clitic and weak pronoun becomes difficult to make since all these types of words differ from other categories mainly in being syntactically dependent (cf. work in van Riemsdijk (1991), Hellan (1993), Rizzi (1993) and van Riemsdijk and Hellan (1995), and analyses like Haegeman (1993)).

Any formalism with parallel modules, like LFG and Autolexical Syntax should be able in principle to analyse elements as having independent category status in the syntax, but forming part of another word in the morphology. If we can establish that elements exist for which such an analysis is motivated, then we have found another argument in favour of modular architecture for grammars. In the remainder of this paper, I will consider potential candidates for such an analysis.

3. The problem

The Balkan languages (except Greek) and the Scandinavian languages all have a definite ending which may allow the noun to which it is attached to function as a full referential noun phrase (for further data and discussion see Börjars (In press: Ch 3)):

- | | | |
|--------|---------------------------------------|------------|
| (1) a. | får-et
sheep-DEF
‘the sheep’ | Swedish |
| b. | seyDur-in
sheep-DEF
‘the sheep’ | Faroese |
| c. | c&ovek-ot
man-DEF
‘the man’ | Macedonian |
| d. | om-ul
man-DEF
‘the man’ | Romanian |

I will now compare these elements — which I shall refer to as DEFs — with respect to a number of properties.

3.1 Semantic/Functional status

The apparently morphological elements in (1) appear to contribute to the phrase that which it needs to function as a full referential noun phrase, much in the way that English *the* does. Within LFG, where selection is not defined in terms of category, but in terms of functional information, this

- b. |famili*ii*+i| → familie
family(F).GEN/DAT.DEF Romanian
- c. cop*iii*
children.DEF

The kind of arbitrary gaps which might be expected if the DEF element is a morphological element are clearly there in Mainland Scandinavian as the examples in (5) show. *Fakta* appears not to be able to combine with the definite ending, even though as (5b) shows, there is no objection to using *fakta* within a definite noun phrase where no definite ending is required.

- (5) a. *Fakta-na pekar inte åt det hållet. Swedish
facts-DEF point not at that direction
- b. Dessa fakta pekar inte åt det hållet.
these facts point not at that direction
'The/These facts do not point in that direction.'

All the DEF elements appear to be unable to take scope over a co-ordinated nominal. Examples from Macedonian and Swedish are provided in (6) and (7).

- (6) a. *[maži i ženi] -te Macedonian
husbands and wives -DEF
- b. *[maži-te i ženi]
husbands-DEF and wives
- c. maži-te i ženi-te
husbands-DEF and wives-DEF
'the husbands and wives'
- (7) a. [hink och spade] -n Swedish
bucket and spade DEF
- b. [mamma och pappa] -en
mother and father DEF

I am unsure what conclusion can be drawn about the morphological status of DEF on the basis of these facts. It is difficult to make a definite article take scope over a co-ordinated nominal even when it is clearly syntactic, as in English. A sentence like *I dropped the children off at the school and nursery* seem to imply that the school and the nursery are the same place. However, a definite article in English can at least determine co-ordinated nominals which form close combinations or collocations, like *the fish and chips* and *the mother and father*. As the examples in (6) and (7) show, this is not possible with DEF in either Macedonian or Swedish.

3.3 Syntactic status

When it comes to syntactic status, there are at least two aspects to consider; firstly whether or not the element's position is defined in terms of a phrase, and secondly, whether there are arguments for assuming that the element should be assigned to an independent category in the syntactic component. If we assume that full argument status is not defined in terms of syntactic structure, as discussed in §3.1, examples like those in (1) do not in themselves form evidence in favour of DEF's status as determiner (D) in the syntax.

Consider placement first; in the Balkan languages the DEF elements appear to be second position elements as shown in (8) for Macedonian (see Lunt (1952), Elson (1976) and Scatton (1980) for Bulgarian and Macedonian; Dobrovie-Sorin (1987), Grosu (1988) and Renzi (1989) for Romanian; Morgan (1984) for Albanian, Halpern and Zwicky [, 1996 #378] for theoretical articles on the issue, for a survey of the exceptions to this generalisation, see Börjars [, In press #385:§3.6]).

- (8) a. c&ovek-ot Macedonian
 man-DEF
 ‘the man’
- b. dobr-iot c&ovek
 good-DEF man
 ‘the good man’
- c. dobr-iot mal c&ovek
 good-DEF little man
 ‘the good little man’
- d. *dober c&ovek-ot
 good man-DEF
- e. *dober mal-iot c&ovek
 good little-DEF man

In all the Scandinavian languages, DEF will always occur on the head noun, and hence it shows affix-like behaviour in that respect. Even though the positioning of DEF in (8) can be defined as ‘second position’, it can also be stated in terms of the initial element requiring marking for definiteness. The exact position then follows from the fact that DEF is enclitic (or suffixal) rather than proclitic (or prefixal). This view has led to the Edge Feature accounts, and weakens the use of data like (8) as an argument for the syntactic status of DEF. However, it should be pointed out that even within an Edge Feature account, the “edge affix” needs to have syntactic knowledge in the sense that it needs to know about the nature of the phrase on whose edge it is to attach.

I will now consider arguments in favour of DEF requiring an analysis in which it actually fills the position of D in the syntactic structure. The first argument is based on co-occurrence; under the assumption that a noun phrase has at most one D position, if DEF co-occurs with another determiner, then we can assume that it does not fill a D position in the syntax. This is the case in Norwegian and Albanian, as (13) and (14) show.

- (13) a. den gamle mannen Norwegian
 this old man.DEF
- b. den mannen
 that man.DEF
- c. denne mannen
 this man.DEF
- (14) a. ky djalë / djal-i Albanian
 this boy boy-DEF
- b. ai djalë / djal-i
 that boy boy-DEF

So, even though Norwegian and Albanian behave differently with respect to the positional criterion, their two DEFs follow the same pattern here.

Danish and Macedonian — which again differ diametrically with respect to the positioning of DEF — do not allow co-occurrence at all, as in (15) and (16).

- (15) a. toj c&ovek *c&ovek-ot Macedonian
 that man man-DEF
- b. ovoj c&ovek *c&ovek-ot
 this man man-DEF
- (16) a. den unge mand / *mand-en Danish
 the/that young man man-DEF
- b. den mand / *mand-en
 that man man-DEF

- c. denne mand / *mand-en
 this man man-DEF

Under the assumption that in order for a nominal to function as a full referential noun phrase it needs to contain a D projection, the data in (15) and (16) would lead to the conclusion that DEF must be a syntactic D itself. An alternative, in an account which accepts zero elements, would be to assume that DEF “licenses” a zero determiner in D. This can be restated within LFG as the inflection allowing N to be mapped into D lexically. Under either of the two latter analyses, the data in (15) and (16) do not force an analysis of DEF itself as a D in the syntax. Furthermore, under our functional interpretation of what makes a nominal a full referential noun phrase, we could just assume that the syntactic category of the phrases in (15) and (16) is DP and that the ones lacking a syntactic determiner but containing DEF are NPs, but that the two are functionally equivalent (in being specified for [\pm DEF]) and hence both able to be selected, say, by a verb requiring an object. The conclusion is then that, depending on your assumptions, the data in (15) and (16) need not force any conclusions about DEF’s syntactic status.

I turn now to the second possible argument for syntactic status for DEF. There appears to be a constraint in Germanic languages, that when there are pre-modifiers, there must be a syntactic determiner. This constraint shows up most clearly in the Scandinavian languages, because they permit a definite noun to function as a full noun phrase without a syntactic determiner, and previous analyses have generally worked on the assumption that it holds only for definite noun phrases [Delsing, 1992 #92]; Holmberg, 1987 #146; Svenonius, 1992a #293; Svenonius, 1992b #294]. Consider the data in (9).

- (9) a. *sömniga katt-en Swedish
 sleepy.DEF cat-DEF
 b. den sömniga katt-en
 the sleepy.DEF cat-DEF
 ‘the sleepy cat’

The prenominal adjective forces the presence of a syntactic determiner, in Swedish and Norwegian DEF is maintained in these constructions, but in Danish the presence of a syntactic determiner excludes the presence of DEF.

This constraint appears to hold also for indefinite noun phrases. There are a few environments in which indefinite singular count nouns can occur without a syntactic determiner, particularly in predicative position, as in (10a). As (10b) shows, if a prenominal adjective is added a syntactic determiner is required, as in (10c).

- (10) a. August är författare. Swedish
 August is author
 ‘August is an author.’
 b. *August är intressant författare.
 August is interesting.INDEF.C author
 c. August är en intressant författare.
 August is a.C interesting.INDEF.C author(C)
 ‘August is an interesting author.’

The constraint turns out not to be limited to the Scandinavian languages. The data in (11) demonstrates that the same generalisation can be made for Dutch.

- (11) a. Oscar is leraar. Dutch
 Oscar is teacher
 ‘Oscar is a teacher.’
 b. *Oscar is goede leraar.
 Oscar is good teacher

c. Oscar is een goede leraar.

Oscar is a good teacher
 ‘Oscar is a good teacher.’

This appears then to be a very general constraint at work in the Germanic languages. The question is how to state it. In Börjars and Donohue (1998) we argue that this is due to a requirement for a headed D-projection whenever a prenominal adjective is present. We provide an analysis in terms of Optimality Theory in which the presence of the syntactic determiner is ensured by a high ranking of OB-HD, requiring an obligatory lexical filler for the head. If we assume that this criterion can indeed be stated in terms of an obligatory D-projection, then some of the Scandinavian DEFs are indeed D-fillers, and in this sense, syntactic elements. Consider the Icelandic data in (12), similar data may be found in Faroese, though the status of such noun phrases is somewhat unclear (Barnes 1994:207).

- (12) a. mikli maður-inn Icelandic
 great man-DEF
 ‘the great man’
- b. gamli bátur-in Faroese
 old boat-DEF
 ‘the old boat’

The fact that DEF in Icelandic does permit the presence of an adjective can, under these assumptions, be seen as evidence that it should have the status of D in the syntactic representation. Analyses to this effect have been proposed (Börjars 1997a, Sadock 1991:113–5).

At first DEF in the Scandinavian languages appeared to be similar in that they have all the characteristic properties of an affix, and hence should be relatively unproblematic. Now we have two parameters along which they vary; firstly some of the Scandinavian languages allow (Faroese) or require (Norwegian) co-occurrence of DEF and a syntactic determiner and some forbid it (Danish); and secondly, the Mainland Scandinavian languages do not permit DEF to be the sole determiner when a prenominal adjective is present, whereas the Insular Scandinavian languages do. These two distinctions then need to be captured in any representation. The latter of the two, I have interpreted here as the Insular Scandinavian DEF having some degree of independent status in the syntax, whereas for the Mainland Scandinavian languages, there is no such argument. There is one further difference between the two sub-groups of Scandinavian languages which strengthens this view. Consider the paradigms from Icelandic given in (121), where *hest* ‘horse’ is a masculine noun of what is usually referred to as one of the strong declinations.

- (121) a. indefinite forms of *hest* ‘horse’ Icelandic
- | | SINGULAR | PLURAL |
|------------|----------------|----------------|
| NOMINATIVE | <i>hest-ur</i> | <i>hest-ar</i> |
| ACCUSATIVE | <i>hest</i> | <i>hest-a</i> |
| DATIVE | <i>hest-i</i> | <i>hest-um</i> |
| GENITIVE | <i>hest-s</i> | <i>hest-a</i> |
- b. definite forms of *hest* ‘horse’
- | | SINGULAR | PLURAL |
|------------|--------------------|--------------------|
| NOMINATIVE | <i>hest-ur-inn</i> | <i>hest-ar-nir</i> |
| ACCUSATIVE | <i>hest-inn</i> | <i>hest-a-na</i> |
| DATIVE | <i>hest-i-num</i> | <i>hest-um-num</i> |
| GENITIVE | <i>hest-s-ins</i> | <i>hest-a-nna</i> |

The pattern which clearly emerges here is that a morpheme indicating case and number precedes DEF, but at the same time DEF itself — whose basic form we can assume to be *(i)n* — appears to

be inflected for the same features. Compare this with the element which we can refer to as the demonstrative (translated by Kress (1982:107) into German as *jener* ‘that’ or *der andere* ‘the other’), given in (122).

(122)	paradigm for <i>hinn</i> in masculine		Icelandic
		SINGULAR	PLURAL
	NOMINATIVE	<i>hinn</i>	<i>hinir</i>
	ACCUSATIVE	<i>hinn</i>	<i>hina</i>
	DATIVE	<i>hinum</i>	<i>hinum</i>
	GENITIVE	<i>hins</i>	<i>hinna</i>

Similar comparisons can be made for other genders and declinations, and also for Faroese (see Kress (1982:56–84) for Icelandic and Lockwood (1977:28–46) for Faroese), in many cases the kind of irregularities typical of inflectional affixes occur. The most plausible analysis of this is to assume that DEF, which developed from a syntactic determiner by grammaticalisation, has maintained its inflectional pattern, but that the noun itself also subject to regular inflectional rules before combining with DEF. This seems a far more economical solution, given the regularity, than assuming that, say DEF.M.SG.NOM is instantiated as *-urinn* whereas INDEF.M.SG.NOM is instantiated as *-ur*. Such an analysis would make the similarities appear accidental. This then also points towards DEF having a more syntactic status in Insular Scandinavian than it does in Mainland Scandinavian. This behaviour of grammaticalised clitic elements is not uncommon, and if the clitic is not itself inflected, the inflection will often externalise, leading to what can be referred to as reordering of affixes (see Haspelmath (1993) for an account of this phenomenon). In this case, the grammaticalised element was already inflected, and whereas one might have expected the internal inflection to disappear, parallel to the development from the intermediate stage in the externalising examples provided by Haspelmath (1993), the Insular Scandinavian system appears to be stable, a further sign that DEF is not an affix in these languages.

4. Conclusions

In this paper I have used data from a small set of languages which share one property — they all have a DEF element — to show that a comparative analysis of the data brings out a number of distinctions which have to be mirrored in any analysis. The properties can be summed up somewhat simplified as in Table 1.

	F-structure D	Morphological	Positioning	Co-occurrence	D-filler
Macedonian	Yes	Yes	Phrasal	No	
Albanian	Yes	Yes	Phrasal	Yes	
Norwegian	Yes	Yes	Non-phrasal	Yes	No
Danish	Yes	Yes	Non-phrasal	No	No
Icelandic	Yes	Yes	Non-phrasal	No	Yes

Table 1: A comparison of the properties of DEF

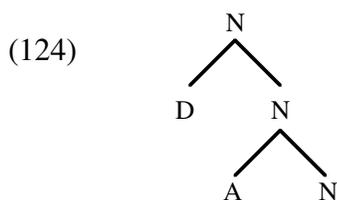
As Table 1 shows, the different properties are not related in the sense that the fact that two elements share one property makes no prediction as to their behaviour with respect to another property. Hence we need to be able to represent variation in many dimension. One way of achieving this would be to explore the possibility of morphological information representing a separate level of information, thus adding m-structure to c-structure, f-structure and a-structure in the LFG architecture, as proposed by Butt, Niño and Segond (1996) and Frank and Zaenen (1998). In such an architecture, morphological arguments can be separated out from purely

syntactic ones, in much the same way that arguments relating to c-structure are distinguished from those relating to the f-structure. In such a system, a feature could belong uniquely to m-structure or uniquely to f-structure, or to both. One could also imagine that constituency could vary between m-structure and c-structure. Even though I do not provide any formalisation here of m-structure representation, it is clear that such a separate level would give more scope to do justice to the subtle distinctions which exist.

There are, of course, alternative accounts, at least for aspects of the data presented here. The requirement that a syntactic determiner be present with prenominal adjectives, for instance, has been given a number of different analyses and some of these could possibly be extended to the Icelandic data (for an overview, see Börjars and Donohue (1998)). However, all previous accounts of which we are aware rely to some extent on the assumption that it is a constraint that applies only to definite noun phrases in the Mainland Scandinavian languages. As I have shown, this is not the case and hence accounts which rely specifically on definiteness are not acceptable.

An alternative could be to assume that the positional constraint on definiteness which clearly holds for the Balkan languages can be extended to the Scandinavian ones. Under such an analysis, DEF would be analysed as a morphological element, and lexical integrity would require it to form part of the word to which it is attached in the syntax. We could then assume that there was an ordering constraint for the Scandinavian languages requiring the first constituent to represent definiteness. If the noun phrase consists only of a noun or a noun with postmodification, then this constraint is satisfied by the noun. When premodifying adjectives occur, a syntactic determiner must be introduced to satisfy the constraint. Some independent constraint would then decide whether or not DEF was maintained in such constructions. This would neatly account for why a syntactic determiner is not normally required when there is only post-modification of the noun. It would, however, have to assume that the marking of the adjective which differs between definite and indefinite noun phrases is in fact **not** definiteness marking. Otherwise, we would predict that (9b) and (10b) would be grammatical. Under this analysis, we would have to ignore predeterminers for the purposes of position; they would be “extrametrical”, and we would also have to account for why the definite noun cannot simply precede the adjective in Scandinavian, as it can in the Balkan languages.¹ Furthermore, the difference in behaviour between the Mainland Scandinavian languages and the Insular ones, as illustrated in (121) and (122) is still unaccounted for. It is quite possible that solutions to all these issues can be found and the necessary distinctions argued for, but it is by no means obvious.

Sadler (1997) analyses another data set whose behaviour causes tension between the urge to maintain lexical integrity and the need to account for the positioning of the elements. She considers the distribution of a set of clitic pronouns in Welsh; these elements share a number of properties with the DEF elements that I have considered here, particularly in that they occur in a non-canonical position within their phrase — this is also the case for DEF in the Scandinavian languages compared to the syntactic determiners —, the fact that they show signs of not being syntactically independent elements, for instance by participating in morphological blocking (Börjars and Donohue 1998), and finally, but probably less importantly, they cannot have scope over co-ordinated structures. The solution provided in Sadler (1997) relies on the use of a structural type — introduced also in Sadler and Arnold (1994) — which is syntactically transparent, but which shares a number of features with morphological structures; small constructions. The result for a Welsh noun phrase which contains a pronoun, one adjective from a small set of possible prenominal ones and a noun is found in (124) (Sadler 1997:18 longer version).



In principle, this type of solution might be used for some subset of the distinctions required by the data discussed here. In particular, one might think of representing the clitic-like elements in this way, and the affix-like ones in a more conventional structure. One property that holds for the elements with which Sadler deals is that they all attach to the head of their phrase, and in this sense they are untypical clitics. The Welsh pronominal element can attach to different lexical categories, but only because it is associated with different phrasal categories; when it occurs in an NP it attaches to the head N, when it occurs within a VP it attaches to the V and within an IP it attaches to I. In order to capture the distinction between the Balkan DEF and the Scandinavian one, on the other hand, some parameter of placement would still need to be introduced, possibly in the form of an edge feature, a theoretical notion of which Sadler is critical (1997). However, if this could be done within the assumptions of this solution, then the distinction between the Balkan and the Scandinavian languages could be captured in terms of the placement parameter, and the distinction between the Insular Scandinavian languages and the Mainland Scandinavian languages could be stated in terms of whether the DEF element attaches in a small construction or as a conventional affix. There is, however, an important theoretical issue to be dealt with before such a solution is explored in more detail, and that is the exact status of the lexical elements involved in small constructions; is (124) a syntactic or a morphological representation? Sadler describes these small constructions as a structural type which is syntactically transparent, but which shares a number of features with morphological structures, but this description still leaves questions unanswered. The head category used is N, normally a lexical category to which morphological processes may apply. This is, however, not assumed to be the case with the two higher Ns in (124) (Sadler, pc). Still, the lowest N must be assumed to be an ordinary noun which could be the input to, say, an inflectional rule, or a compounding rule. Such issues as these seem to me to be of crucial importance for an evaluation of the solution to be possible.

There are then at least two promising paths within current LFG analyses, along which a detailed analysis of this dataset could be developed. My point with this preliminary paper has been to show that datasets can be found which will force us to develop in more detail the use of morphological information within LFG, and in particular to evaluate the introduction of a separate m-structure

Notes

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¹Peter Sells has suggested that this may be due to the fact that if the noun was found in the D position (in the same way that an inflected verb can be mapped lexically to the I node), then there would be no lexical filler of the N position, and assuming that we do not allow the adjective to adjoin to a headless projection, the ordering would be ruled out. This solution seems well worth pursuing.

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