

Attributive Adjectives and Nominal Templates

Robert Truswell, University College, London

Cinque (1994) and Scott (2002) propose conceptions of nominal functional structure in which a rigid and highly elaborated series of functional heads regulates the distribution of attributive adjectives according to the class of property that they denote. The following are their proposed adjectival hierarchies:

(1) a. **Serialization of adjectives in event nominals:**

poss > cardinal > ordinal > speaker-or. > subj.-or. > manner > thematic

Serialization of adjectives in object-denoting nominals:

poss > cardinal > ordinal > quality > size > shape > color > nation. (Cinque 1994:96).

- b. Determiner > ordinal number > cardinal number > subjective comment > ?evidential > size > length > height > speed > ?depth > width > weight > temperature > ?wetness > age > shape > color > nationality/ origin > material > compound element > NP (Scott 2002:114).

The main interest of these heterogeneous and apparently arbitrary hierarchies stems from the hypothesis that the heads regulating adjective order may form part of the linear functional sequence often assumed to regulate nominal morphosyntactic and semantic properties, a connection that Cinque (1999) investigated with respect to adverbials and clausal functional structure. Viewed in this light, these hierarchies make a clear and testable prediction: movement aside, and disregarding exceptional word orders linked to marked information structures, if two adjectives belong to different classes, only one relative order of the two should be possible. Section 1 will test this prediction against data gathered from www.google.co.uk. The data attest to a far greater freedom with respect to order among multiple adjectives than predicted by the models in (1). In section 2,

the wider project of relating adjective orders and nominal morphosyntax and semantics through a rigidly ordered functional sequence is scrutinized.

1 The Data

The choice of Google as a huge, but unregulated, corpus was made on the basis of the results of Malouf 2000, which found that, although there are 262,838 tokens of pairs of attributive adjectives in the British National Corpus, over 76% of adjective pair types occur only once in any order. For a study that aims to investigate consistency of ordering of adjective pairs, this shows that even the BNC is not sufficiently big to attribute much significance to the results.

Searches were carried out on Google for prototypical members, in English, of six classes of adjective, namely the five lowest classes of Cinque's object-denoting hierarchy, plus the lower *material* class from Scott's hierarchy. In addition, a number of *modal* adjectives, which do not have a clear place in either of the above taxonomies, were considered. The search terms consisted of pairs of adjacent adjectives from these classes in a specified order. As this paper is concerned solely with canonical Adj-Adj-N constructions, many examples returned by Google were irrelevant, and so the numbers of hits returned by the searches are extremely noisy, including many cases where, for example, the Adj-Adj sequence does not modify a noun or is disrupted by punctuation (arguably indicating marked prosody and information structure), or the Adj-N sequence is idiomatic (for example, *big top*, or *new potatoes*). This means that Google is highly problematic as a reliable indicator of *relative frequency* of different orders: too much of the data obtained must be judged ungrammatical or discarded as irrelevant, and statistical patterns are expected to be too approximate for confidence. Instead, Google is used heuristically, as a potential source of positive evidence for the existence of grammatical examples of certain adjective orders. All examples given below are from Google, representing the tokens judged to be most acceptable from the first 100 hits returned. Furthermore, the sites from which the examples were taken were consulted, to verify that

there was no evidence for marked information structures.¹ The grammaticality judgments given do not reflect absence of a *sequence* of adjectives on Google, then, but rather absence of *grammatical NP constituents*. I use ‘??’ to indicate that all attested Adj–Adj–N constituents found on Google are judged unacceptable by the native speakers I consulted, and ‘*’ to indicate that no Adj–Adj–N constituents were found.

One clear division shown in the data is between the two *subsecutive*, and the four *intersective*, classes examined.² The four intersective classes considered are shape (illustrated here with *circular*), color (*red*), nationality (*French*), and material (*wooden*). Pairs of adjectives drawn from these classes are well attested in any order (see (2)). The same is true of the two subsecutive classes considered, size (*big*) and quality (*new*) (see (3)). However, in all acceptable examples, members of the subsecutive classes precede members of the intersective classes (compare (4) and (5)).

(2) Free order of intersective adjective pairs:

- a. *wooden French* mantel clock — *French wooden* carriage clock
- b. *wooden red* clogs — *red wooden* clogs
- c. *wooden circular* pedestal — *circular wooden* pedestal
- d. *French red* doors — *red French* doors³
- e. *French circular* table — *circular French* side table
- f. *circular red* patch — *red circular* patch

(3) Free order of subsecutive adjective pairs:

new big cuts — *big new* cuts

(4) Subsecutive adjectives precede intersective adjectives:

- a. *big wooden bridge* — *new wooden piles*
- b. *big French dog* — *new French site*
- c. *big red barn* — *new red dress*
- d. *big circular lights* — *new circular tables*

(5) **Intersective adjectives do not precede subsective adjectives:**

- a. ?? *wooden big bridge* — ?? *wooden new concrete piles*
- b. ?? *French big feline* — ?? *French new site*
- c. * *red big N?* — * *red new N?*
- d. ?? *circular big flat lights* — ?? *circular new table decorations*

A rather less simple pattern emerges with respect to modal adjectives. Although there is a strong tendency for these adjectives to precede the other classes discussed above (for example, *possible* precedes the six classes of adjective described above in 88% of the hits returned by Google), there are also several examples, particularly from more technical or scientific sources, where the opposite order is quite naturally used (see (6–7) below).

- (6) a. *obvious childish writing*
- b. *potential big letdown*

- (7) a. *childish obvious forgeries*
- b. *big potential problem*

Given that at least modal adjectives are clearly scope-taking elements, we expect that variation of the position of a second adjective with respect to a modal adjective will correspond to a variation in interpretation, all else being equal. Indeed, this is what we find. An example such as (8) is clearly to be interpreted such that *white* is outside the scope of *possible*.

- (8) A white possible Subaru

Note, furthermore, that this interpretation would be unexpected if examples like (8) were due to focusing of *white*. Focus movement reconstructs for scope obligatorily, which would make (8) indistinguishable from *a possible white Subaru*, contrary to fact.

Overall, then, assuming that precedence reflects dominance in this case, the data from Google gives the following pattern of attributive adjective ordering in English:

- (9) a. Subjective adjectives dominate intersective adjectives.
- b. Modal adjectives are freely ordered with respect to subjective and intersective adjectives, although they tend to dominate both classes.

It is now clear that both Cinque's and Scott's adjectival templates undergenerate with respect to attested adjective orders. The above data show that any order is possible of multiple intersective, or multiple subjective, adjectives, in contrast to their division, in (1), into several rigidly ordered categories. This finding is complemented by the data in Malouf 2000, which show, on the basis of a study of the British National Corpus, that ordering relations among pairs of adjectives are not strictly transitive. This fact is unexpected under the Cinquean model: either two adjectives belong to the same category, which is immediately problematic for that model, or they belong to different categories, in which case the rigidity of the functional sequences in (1) lead us to expect transitivity of ordering relations.

There is a residual templatic element in these findings, in that subjective adjectives dominate intersective adjectives. This could suggest the following provisional template:

$$(10) [_{DP} D^0 [_{XP} AdjP^*_{\text{subjective}} X^0 [_{NP} AdjP^*_{\text{intersective}} N^0]]]$$

Multiple adjectives must be able to attach within any of these categories, and modal adjectives must be able to attach within both XP and NP. This amounts to a rejection of Cinque's and Scott's assumption of a unique specifier in each phrase, and a unique position in the template for each

adjectival class. Those assumptions were tenable, particularly for Cinque, as multiple adjectives referring to color, for instance, are rare, for obvious functional reasons. However, it is incompatible with the above evidence that multiple intersective and multiple subsecutive adjectives are quite unremarkable.⁴

A further issue concerns the relation between the provisional template in (10) and nominal functional structure motivated by concerns independent of adjectives. This is addressed in the following section, where it will be claimed that (10) *cannot* be reconciled with such concerns.

2 DP-internal Functional Structure

In order to test the hypothesis underpinning the hierarchies in (1), namely that a single, rigidly ordered, linear functional sequence can derive adjective orders in tandem with other nominal morphological or semantic properties, it is necessary to compare the position within such a putative template of X^0 in (10), with the position of independently motivated heads that occur within the same “space” in which attributive adjectives are merged. If the evidence shows that X^0 either is rigidly ordered with respect to such heads, or is identical to such a head, then the hypothesis behind (1) can be maintained. If, on the other hand, it can be shown that X^0 does not occupy a fixed position relative to such heads, then the hypothesis that the same rigid, linear functional sequence regulates core nominal morphosemantics and adjective orders must be abandoned.

Such a comparison can only be made in respect of a particular theory of nominal functional structure. In the cartographic spirit, I propose to compare (10) with highly articulated theories of nominal functional structure. However, given the canonical English order Det–Adj–N, X^0 is clearly located below any determiner heads, and, as adjectival phrases can themselves be syntactically complex, I will assume that adjectives are merged above any L-syntactic “little *n*” heads. Few heads are generally assumed between these two fields. A plausible candidate for such a head, however, is one related to the mass–count distinction, which may be reflected morphologically in

the occurrence of classifiers or morphological number marking. One recent analysis that proposes a dedicated head as the locus of these functions is found in Borer 2005, which describes such a head's function as being to 'divid[e] mass' (Borer 2005:101). The following pages will investigate the relation between such a head (referred to below as Count⁰) and X⁰ in (10).

Count⁰ is also relevant to questions of adjective distribution, as certain classes of adjective cannot appear with mass nouns. Any adjective that is infelicitous⁵ with mass nouns cannot appear, by definition, in the absence of Count⁰. Such classes of adjective include size (11a) and shape (11b), while classes that can appear with mass nouns include color (11c) and nationality (11d) adjectives.

- (11) a. * tiny gas
 ?? big salt
 b. ?? circular water
 ?? square grass
 c. red liquid.
 d. French wine

Size and shape adjectives are unremarkable with count nouns, as seen minimally in English in bare plurals:

- (12) a. big dogs
 b. circular pools of water

This classification of adjectives cuts across the subsective–intersective divide. Here, size and shape adjectives pattern together, despite size adjectives being subsective and shape adjectives being intersective. There is a simple explanation for the oddness of size and shape adjectives cooccurring with mass nouns, namely that both size and shape adjectives presuppose that the object

that they describe is spatially delimited, while mass semantics is, by definition, associated with the absence of such delimitations. The explanation is, however, beside the point here.

The interest of this distinction here is its interaction with the intersective–subjective distinction described in the previous section. We now have four possible classes of adjective, illustrated below:

- (13) a. Intersective, can occur with mass nouns, for example, *wooden*;
 b. Intersective, can't occur with mass nouns, for example, *square*;
 c. Subjective, can occur with mass nouns, for example, *expensive*;
 d. Subjective, can't occur with mass nouns, for example, *big*

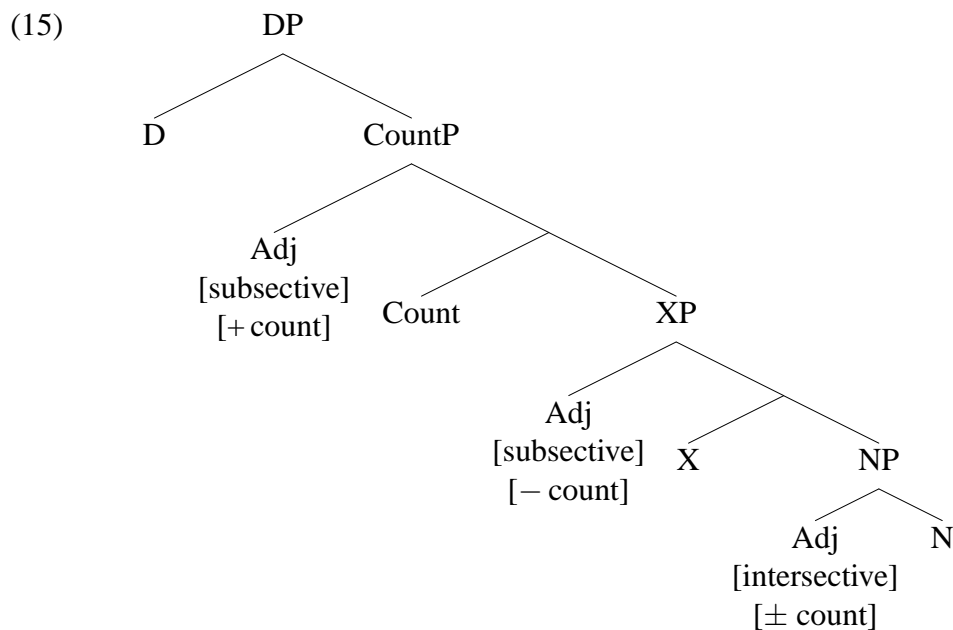
The fact that all four logically possible combinations of the two binary distinctions are available already rules out the possibility of identity of Count⁰ and X⁰, as the two would not be predicted to vary independently if they were one and the same.

What is more, it is doubtful that the two heads can be ordered in a linear sequence. To see this, consider the following data from Google, demonstrating a representative sample of the ordering restrictions among these four classes:

- (14) a. **Class (13d) dominates class (13b):**
big square dish — ?? *square big* stool
- b. **Class (13c) dominates class (13a):**
expensive wooden recorders — ?? *wooden expensive* custom window
 treatments
- c. **Class (13d) dominates class (13c):**
big expensive rings — ?? *expensive big* trees
- d. **Class (13b) and class (13a) are freely ordered:**
square wooden coaster — *wooden square* coaster

What these data show is that, in addition to the subjective > intersective ordering, there is a restriction such that adjectives that are not able to occur felicitously with mass nouns precede adjectives that can readily occur with mass nouns, but *this restriction only holds among subjective adjectives*. Relative orders of *intersective* adjectives are unconstrained by the ability or otherwise of these adjectives to occur with mass nouns.

If we were to attempt to accommodate both X^0 and Count^0 within a single rigid functional sequence, the most promising possibility would be the following:



However, there are two main objections to this structure. Firstly, there is no reason whatsoever, other than adequate description of the attested distributional patterns, for the XP and CountP projections to occur in this order. Neither has any clear effect on the other: Count^0 is necessary for its effect on interpretation of the head noun, while X^0 has a purely distributional effect, regulating adjective order within the noun phrase. What is more, in many cases (those with mass nouns, or with no subjective adjectives) only one or the other will be present, and so the stipulation that CountP dominates XP in (15) amounts to no more than a restatement of the observations in (14).

Secondly, there is a discrepancy between the way that Count^0 may be assumed to convert mass

into count semantics, and the adjectival restrictions in terms of cooccurrence with mass nouns. The mass/count distinction among nouns is a binary one, with [+count] interpretations above Count⁰ and [-count] interpretations elsewhere. For adjectives, on the other hand, the mass/count distinction is a selectional restriction on the type of nouns certain adjectives can modify, and this only corresponds to a distributional restriction for a proper subset of those adjectives in which the selectional restriction is active, namely for subsecutive adjectives. There is a three-way distinction among adjectives with regard to [\pm count], then: some adjectives do not subcategorise for count or mass nouns; some adjectives do, but not in such a way that this restricts adjective orders; and some (subsecutive) adjectives do, this subcategorisation corresponding to an ordering restriction. It is very hard to see how all these patterns could fit into a single hierarchy in any principled way, without damaging the coherence of any conception of the function of the heads in question.

3 Conclusion

This paper has addressed a class of theories of multiple adjective orders, which aim to motivate those orders on the basis of the same rigid and linear functional sequence that is taken also to derive morphosyntactic and semantic properties of noun phrases unrelated to attributive adjectives. The evidence given here indicates that, not only do the specific instantiations in (1) of this class of theory undergenerate with respect to attested orders of multiple adjectives, but the whole project, of reducing adjective ordering restrictions and nominal morphosyntax and semantics to a single linear functional sequence, is problematic.

No decisive evidence has been offered here for the structural nature of attributive adjectives: the above data is, in principle, compatible with analyses of attributive adjectives as specifiers, as adjuncts (if the structural relation between adjuncts and their sisters is distinct from that between specifiers and their sisters), or (following Abney 1987) as heads. It is necessary to reject Cinque's (1994) and Scott's (2002) assumption of a single adjectival specifier position associated with each

head, but analyses admitting either multiple specifiers within a given projection, or XP-shell structures, are quite conceivable.

Equally, the data presented here do not attest to an absolute freedom of adjective orders. One robust restriction emerges, namely that subsecutive adjectives dominate intersective adjectives. However, whatever is responsible for this restriction, even if it should turn out to be related to a property of some head, cannot also be part of any rigid, linear functional sequence containing Count^0 . This is, in a sense, unsurprising. All the evidence for the reality of Count^0 comes from concerns unrelated to adjective orders, and it has only a secondary effect on adjective orders. Meanwhile, X^0 only exists to regulate orders of multiple adjectives. However, it means that two central components of the theories that derive (1) must be abandoned, namely that attributive adjectives occupy unique specifier positions in functional projections, and that a single, highly articulated yet rigidly ordered, functional sequence can derive adjective orders in addition to morphosyntactic and semantic properties of nonadjunct elements in noun phrases.

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Notes

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¹The majority of examples came from contexts that are clearly neutral with respect to information structure, such as antiques catalogues. Where this was not possible, factors such as contrastive focus affecting adjective order were controlled for.

²An *intersective* adjective, such as *red*, is one where the interpretation of Adj–N is equivalent to the conjunction of the properties denoted by Adj and N. A *subsective* adjective, such as *big*, is one where the interpretation of Adj–N is equivalent to the conjunction of the property denoted by N with the property denoted by Adj relative to a comparison class largely determined by N. *Modal* adjectives do not allow an inference from Adj–N to N, and so can best be represented as intensional second order functions taking nominal arguments.

³This example (<http://antiques-internet.com/colorado/antiquesdenver/dynapage/IP240.htm>) did refer to red doors from France, rather than *French doors* in the sense of glass double doors.

⁴A related problem was noted by Scott, who only tentatively included many categories, such as *evidential* adjectives, to derive cases of two *subjective comment* adjectives (‘a {boring famous/famous boring} book’, Scott 2002:108), although, as Scott acknowledges, this problem is not restricted to the *subjective comment* category. Once it is apparent that possible cooccurrence of multiple adjectives in the same class is the norm, the postulation of extra positions in the hierarchy based on dubious semantic distinctions becomes untenable. Such cases could, of course, be handled by analyses based on adjunction, or multiple specifiers, yet such structures are at odds with theories in the Cinquean mould, which aim to derive perceived rigidities in adjective ordering.

⁵It is probably inaccurate to label the examples in (11a–b) as ungrammatical. Rather, the usually mass nouns are coerced into a count-like interpretation by the presence of an adjective that requires such a semantics. Where this is feasible, the results are grammatical.