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Morphosemantic Mismatches, Structural Economy, and Licensing

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Agreement and concord involve mismatches between the position where a syntactic or semantic contribution is made and where it is expressed morphologically. Such mismatches are often taken to involve either movement or the spreading and realization of features. I examine a number of superficially different instances of this kind of mismatch that seem to resist an account based on realization and movement alone. I argue that the patterns involved should receive a unified account in terms of licensors, elements subject to a condition of structural economy that associate indirectly with semantically contentful heads through features that those heads spread and that require a c-commanding licensor.

Keywords: agreement, concord, definiteness marking, determiner spreading, economy, morphosemantic mismatches

In agreement and concord phenomena, an element that is associated with a certain structural position as far as syntax and semantics are concerned is expressed morphologically in a different position. In the Danish example in (1b), definiteness, which is presumably related to D, is reflected by a final *-e* on the two adjectives below it.

- (1) a. en stor gammel hest
INDEF big old horse
'a big old horse'
b. den store gamle hest
DEF big old horse
'the big old horse'

Such mismatches between syntax/semantics and morphology can be captured in terms of feature spreading and realization: a syntactically/semantically contentful element S spreads a feature F_S

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onto one or more elements in a certain domain; each instance of F_S is realized by an instance of a syntactically/semantically vacuous element R .¹ I will refer to the contentful elements as *spreaders* and to the vacuous elements that realize them as *realizers*. In (1b), we might say that definite D is a spreader, that a feature F_{DEF} is spread onto each of the two adjectives, and that each F_{DEF} is realized by an instance of the realizer *-e*.² As a rule, a spreader will appear exactly once within a domain, usually where its syntactic/semantic contribution is made (though it can sometimes be phonologically null, and it can be dislocated, subject to the usual constraints on movement). A realizer, on the other hand, can appear several times within a domain (in examples like (1b), there will be as many instances of *-e* as there are adjectives).

My focus in this article is on certain elements that participate in mismatches but do not fall neatly into either category. On the one hand, these elements pattern with spreaders: they tend to occur once within a domain, and they can appear to move. On the other hand, they pattern with realizers: they can occur lower in the structure than is expected, and they can appear more than once within a domain. I will refer to these elements as *licensors*, and my goal is to characterize their distribution, though I will not try to derive it from deeper principles. I will claim that licensors appear in positions that allow them to c-command instances of features. In section 1, I will suggest that *-en* in the Danish *den* is a licensor for F_{DEF} . In (1b), this single occurrence of *-en* will license all the occurrences of F_{DEF} within the noun phrase. It will also be possible for multiple occurrences of a licensor to appear within a single domain. Finally, I will argue that the distribution of licensors is subject to a condition of *structural economy*: no more instances of a licensor can be used than are required to license the features within the domain. I will refer to my proposal, in which spreaders, realizers, and licensors all play a role, as the *SRL approach*. I will try to show that, for various distributional patterns, this approach provides a better account than licensor-free alternatives.

I will start, in section 1, by looking at an SRL account of interactions of definiteness marking and modification within the Danish noun phrase and comparing it with other, perhaps more obvious accounts that have been proposed in the literature. Further support will come from the ability of the SRL account of definiteness marking to handle the seemingly very different pattern of gender marking in Danish, discussed in section 2. Whereas licensor-free approaches require nontrivial stipulations in order to accommodate the facts discussed in the literature, the SRL approach captures these patterns with little or no modification, making new predictions along the way. These predictions extend beyond Danish, leading in section 3 to a straightforward (and to my knowledge novel) account of the complex paradigm of number, gender, case, and definiteness marking in Icelandic in terms of a change in the labeling of a single node within the Danish noun phrase. Finally, in section 4, I will look at Modern Greek, a language that has a highly flexible word order within the noun phrase, allowing the predictions of the SRL approach to be tested on data in which one factor is made arbitrarily complex while everything else is kept fixed. I will

¹ See Pesetsky 2007 and Matushansky 2008 for recent accounts of Russian case marking along these lines.

² Below I will argue that F_{DEF} also appears on the noun, though it is not morphologically realized there. Spreaders, such as D in this example, are sometimes referred to in the literature as *controllers*, and elements such as A and N that receive features from a spreader are sometimes called *targets* (see Corbett 2006). Realizers such as *-e* are the morphological expression of features on a target.

try to show that when the relevant tests are constructed, the predictions of the SRL approach are borne out.

1 Definiteness in Danish

1.1 The Basic Pattern

Like most Scandinavian languages, Danish can mark definiteness either with a nominal suffix or with an independent, pronominal form.³ The nominal suffix is *-en* in the common gender (CG) and *-et* in the neuter (Nt). The pronominal form is *den* in the CG and *det* in the Nt.⁴

The choice of suffix or pronominal form is not free. To a first approximation, the generalization is this:⁵

(2) Basic generalization

The pronominal marker is required if the noun is modified by an adjective; it is disallowed with unmodified nouns.

The following examples, from Hankamer and Mikkelsen 2005:87–88, illustrate the generalization:

(3) Unmodified N: Obligatory suffix

- a. hest-en
horse-DEF
'the horse'
- b. *den hest
DEF horse

(4) Adjectival modification: Obligatory pronominal marker

- a. *gamle hest-en
old horse-DEF
- b. den gamle hest
DEF old horse
'the old horse'

Most of the literature on this pattern has focused on the dependencies between the two definiteness markers, *-en* and *den*, and the rest of the phrase. This will be a good place to start

³ The pronominal form is often referred to as the definite article, which may suggest that it is a spreader with the semantics of definiteness. If the current proposal is right, however, both forms of definiteness marking are licensors, and their association with the semantics of definiteness is indirect.

⁴ The distinction between the two genders will play an important role later, but for now I will mostly ignore it and use the CG wherever possible.

⁵ For the moment, I will focus exclusively on adjectives in describing the Danish pattern of definiteness marking. As discussed at length by Hankamer and Mikkelsen (2005), PPs and relative clauses interact with definiteness marking in rather subtle ways, raising challenges for many familiar accounts. I will return to this point in section 1.4, where I will show that the current proposal generalizes straightforwardly to handle PPs and relative clauses and correctly predicts their interaction.

I should also mention that, as has often been observed, the pronominal forms *den* and *det* can be used not only for definiteness but also as demonstratives. In their demonstrative use, prosodically marked by stress, the following noun can be unmodified. Generalization (2), then, is about the use of *den* and *det* for definiteness and not as demonstratives.

our discussion of licensors, and I will get to that in a moment. Before that, note that we can already see the less controversial function elements, which I referred to as spreaders and realizers. Spreaders are the function elements that make a syntactic/semantic contribution. In the present case, the relevant spreader is the definiteness head, the denotation of which takes the denotation of the whole noun phrase as its argument. We can imagine this spreader as a (possibly covert) head that attaches as sister to the noun phrase.⁶ The main thing that spreaders do, other than contribute to the semantics, is spread features on elements in their domain, which can then be expressed by a realizer. In the present case, we will talk about a definiteness feature F_{DEF} . A realizer for this feature is the final *-e* on the attributive adjective in (4). This ending changes the adjective ‘old’ from its base form, *gammel*, which is found in singular indefinite noun phrases, to the form *gamle*. More generally, *-e* is added to most adjectives in Danish when appearing in definite or plural noun phrases. When multiple adjectives modify the same noun, each shows up with its own *-e*, as in (5b).⁷

- (5) a. *en stor gammel hest*
 1 big old horse
 ‘a big old horse’
 b. *den stor-e gaml-e hest*
 DEF big old horse
 ‘the big old horse’

What we have, then, is a spreader attaching where its semantic contribution is made and spreading its features below, and realizers expressing these features on the adjectives. This much, I take it, is shared by all accounts of the basic pattern, either explicitly or implicitly.⁸ What remains controversial is the distribution of *-en* and *den*. Let us look quickly at what licensor-free accounts have had to say about the distribution of these markers in (3) and (4), as well as at some problems such accounts face. After that, in section 1.3, I will present the SRL account.

1.2 Sketches of Licensor-Free Accounts

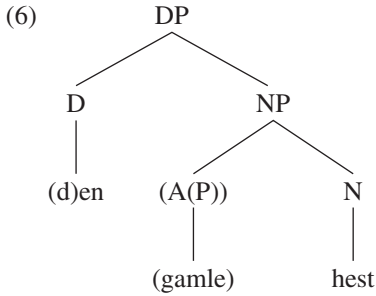
1.2.1 Licensor-Free Account I: The Markers -en and den as Spreaders If definiteness markers in Danish are spreaders, considerations of compositionality would suggest a structure like this:⁹

⁶ Alternatively, one can avoid the idea of a definiteness head and take a syncategorematic approach, as proposed by Carlson (1983), where the distribution of the definiteness-related elements within the noun phrase is related directly to the operation of interpreting the noun phrase as definite. If the current proposal is correct, though, the syncategorematic version will determine the distribution of *-en* not directly but through something like licensors. As far as I can see, the argument below can be stated equally well with covert heads and with syncategorematic entries. The latter perspective is less committed syntactically, and I will sometimes use it for presentational purposes, without intending to imply that an analysis using covert heads is incorrect.

⁷ I use *1* as a gloss for the CG form of the indefinite article. This is also the form of the numeral ‘one’, orthographically written as *én*. I will have more to say about *1* when I discuss gender marking in section 2.

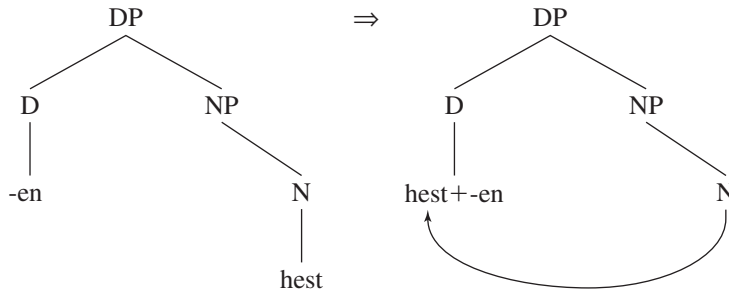
⁸ Minor details can change. For example, Börjars and Donohue (2000) treat the *-e* form as basic, analyzing what I referred to as the base form as the marked form expressing indefiniteness. For them, too, though, the relevant features are spread within the noun phrase. The difference lies only in the particular features that are spread and in the choice of realizers.

⁹ The labeling of the nonterminal nodes can vary. Delsing (1993), for example, analyzes NP as a right specifier of the adjective. As far as compositionality is concerned, this choice does not make a difference.

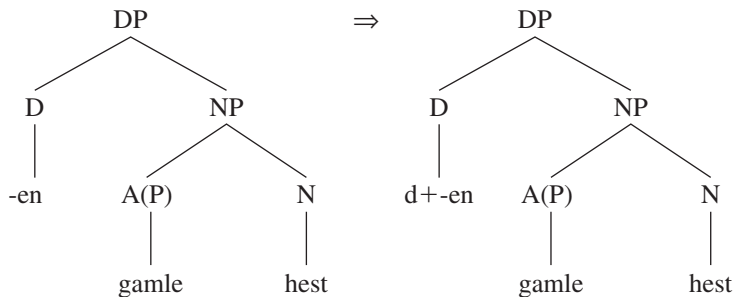


This structure corresponds directly to the surface form of noun phrases with adjectival modification, such as *den gamle hest*. It is also perfectly compatible with the unmodified form *hest-en*: (6) represents hierarchical relations; compositionality considerations do not tell us whether D should appear to the left of NP or to its right, or whether D can form a word with N. However, to account for the dependency pattern in (3) and (4), most spreader accounts treat the linear order and affixation in *den gamle hest* (as accidentally drawn in (6)) as basic, attributing the postnominal suffix configuration to a process that can only take place in the absence of an intervening adjective. This process can be the raising of N to D, as assumed by Delsing (1993) and Embick and Noyer (2001), and as illustrated in (7).

(7) a. *Unmodified N raises to D*



b. *Intervening adjective blocks raising*



Alternatively, as suggested by Embick and Marantz (2008), movement can go in the opposite direction, with D moving postsyntactically to N unless an adjective linearly intervenes.

As Hankamer and Mikkelsen (2005) discuss in detail, it is hard to use familiar kinds of movement as the basis for the dependencies between the markers in Danish. They also note that

a movement account would encounter difficulties in accounting for certain lexical exceptions, as well as in capturing the different effects on definiteness marking that various postnominal modifiers have, an issue we will come back to below. We will encounter further complications for a spreader account in what follows. However, while I agree with Hankamer and Mikkelsen that movement does not offer an adequate characterization of the dependencies under discussion, I believe it does offer a key ingredient that should be preserved by any account. This ingredient is the identification of the nominal suffix *-en* with the prenominal form *den* (or with part of it).¹⁰ The two forms seem to be related, but capturing this relatedness can be a difficult task for certain approaches, such as the realizer accounts that we will review shortly. For a movement account, relatedness is expected: it is exactly the same D that sometimes attaches to N and sometimes appears in its base position, where it surfaces with an anchoring stem *d*. The nominal suffix is correctly predicted to be a subpart of the prenominal form.

1.2.2 Licensor-Free Account II: The Markers -en and den as Realizers On a realizer account of the definiteness marker in Danish, *-en* and *den* are similar to the adjectival ending in that they all express a definiteness-related feature within the noun phrase. Since there is only one occurrence of *(d)en* but possibly many adjectival realizers, something about *(d)en* will have to be different. A familiar idea is that the adjectival endings express a feature that is related to *words* while *(d)en* expresses a feature that is related to whole *phrases*. For example, Börjars and Donohue (2000) propose that each of the adjectives in an indefinite noun phrase, as in (5a), has a *word-level* null affix realizing a *word-level* indefiniteness feature, while *(d)en* is a *phrasal affix* expressing a *phrasal* definiteness feature of the whole noun phrase. A similar idea is pursued by Hankamer and Mikkelsen (2002), who treat *-en* as an affix that is attached by a lexical rule (their Rule D, p. 155) that turns a definite N into a D, effectively stating that N is a complete NP that cannot be further modified.¹¹

To capture the generalization in (2), a natural idea for a realizer account of definiteness marking is that *-en* is the preferred form, used whenever possible, while *den* is the marked form, used only if *-en* is disallowed. This idea, which both Börjars and Donohue (2000) and Hankamer and Mikkelsen (2002) pursue, derives the unacceptability of **den hest* in (3b) as the result of blocking by the preferred *hest-en*. Both accounts attribute the markedness of *den* with respect to *-en* to a preference for words over phrases. For Hankamer and Mikkelsen (2002), the preference is stated directly, following Poser's (1992) proposal. For Börjars and Donohue (2000:335), the

¹⁰ Not all movement accounts involve identity of the two definiteness markers. Vangsnes (1999) treats *-en* as the head of a projection, DXP, that can host *den* as a specifier. Leu (2009) treats *-en* and *den* as the heads of two distinct projections. Both accounts involve potential N(P)-movement inside the noun phrase (and for Vangsnes, also the movement of *den*). However, since these accounts analyze *-en* and *den* as different syntactic elements, they do not relate the impossibility of double definiteness in Danish directly to movement. Rather, they attribute the restriction to a constraint against the simultaneous realization of the two positions.

¹¹ The other definiteness marker, *den*, is assumed by Hankamer and Mikkelsen (2002) to appear in D, as sister to a definite NP. It can be thought of as another realizer of the definiteness feature or as the spreader itself.

preference is derived from an economy condition: *den* adds *syntactic* structure, leading to a violation of economy that is more severe than the violation caused by *-en*, which only adds *morphological* structure.

There are some aspects of the realizer approach that I think are correct, such as the idea that the definiteness marker is not itself a spreader but rather an indirect reflection of definiteness, related to the features within the noun phrase. I also think that realizer accounts are right to distinguish between the local kind of realizers found on the adjectives in (5) and the much less local behavior of *(d)en*. Finally, I agree with the realizer accounts about the significance to the distribution of *(d)en* of some structural markedness condition.

On the other hand, the realizer approach gives rise to certain concerns, even if we restrict ourselves to the basic pattern above. First, the supposed distinction between words and phrases is suspect, and the very notion of a lexicon as a component of grammar has been shown to face nontrivial challenges (for discussion, see Halle and Marantz 1993 and especially Marantz 1997). It would be good to avoid relying on a distinction between words and phrases as a basis for specifying features, affixes, and economy conditions.¹²

In addition to the inherent difficulty of basing an account on a distinction between words and phrases, there are particular generalizations about the Danish pattern that such an account obscures. For example, the form *den* properly contains the form *-en*, and it seems reasonable to try to analyze *den* as bimorphemic: *d* + *-en*. This decomposition is easily accomplished within a spreader approach, as noted above. Within a realizer account, on the other hand, decomposition would mean that *-en* can sometimes express a phrasal feature (as in *d-en gamle hest*), raising the question of why it was not able to do so when attached to the noun (**gamle hest-en*). Similarly, the proper containment of *-en* in *den* suggests an economy condition that is simpler than the ones used in the proposals discussed above. If *den* = *d* + *-en*, we could appeal to a uniform condition that penalizes structure rather than appealing to distinct evaluations of morphological complexity and syntactic complexity. Again, this is not available to an account that relies on *-en* being structurally different from *den*.¹³

1.3 Licensing

The SRL account makes use of a two-step architecture. The first step, which I will refer to as *GRAMMAR*, generates structures and enforces the usual well-formedness conditions on phrase struc-

¹² Of course, it would be even better if we could reverse the dependencies assumed by the realizer accounts and actually *derive* the intuitive notion of word from independently needed primitives. See Katzir 2008 for a proposal in this direction.

¹³ A related concern is the implementation of the two kinds of definiteness (or indefiniteness) features used to distinguish the unique occurrence of a definiteness marker within the phrase from the variable number of adjectival affixes. The proposals mentioned above do not provide any details in this regard, and it seems to me that doing so would require complicating the machinery in various ways. In any case, I think it would be good for the account of *-en* and *den* and the account of adjectival endings to use the same features and the same spreading operation.

ture, selection, phonology, semantics, and so on. For example, the following aspects of the distribution of *-en* will be managed by GRAMMAR:¹⁴

- (8) a. *-en* is a suffix.
- b. *-en* can attach to N and *d*, but not to *A*.

GRAMMAR also takes care of spreading, realizing, and licensing. For the moment, we will focus on the following conditions:

(9) *Spreading*

The head noun in a noun phrase and all modifying adjectives have the feature F_{DEF} iff the noun phrase is interpreted as definite.¹⁵

(10) *Realizing*

F_{DEF} is realized as *-e* on all modifying adjectives (a different instance of *-e* for each instance of F_{DEF}).

(11) *Licensing*

Each instance of F_{DEF} is c-commanded by some instance of *-en* (possibly one *-en* for several instances of F_{DEF}).

Of everything included in GRAMMAR so far, only (11) is special to the SRL account. The rest, as mentioned above, is shared in one way or another by all current proposals that I am aware of.

The second step of the SRL architecture is *ECONOMY*, where outputs of GRAMMAR are evaluated, and those that have superfluous licensors (and maybe other dummy elements) are ruled out.¹⁶

(12) *ECONOMY*

If S_1 and S_2 are identical except for licensors, and if S_1 has strictly fewer licensors than S_2 , then S_2 is ungrammatical.

¹⁴ I am assuming that *den* is bimorphemic and that its decomposition is *den* = *d* + *en*. I don't know what *d* is, and I will treat it as a dummy element for purposes of exposition. More significantly, as (8b) makes clear, I am assuming that the *-en* in *den* is the same element as the nominal suffix *-en*. This morphological identity seems straightforward for the singular, CG form, but it is obscured in the neuter gender, and even more so in the plural, where, as Line Mikkelsen and others have pointed out to me, the prenominal form is *de* and the postnominal form is *-ne*. However, it seems to me that the idea of decomposing *de* into *d* and *-ne* is not entirely far-fetched, especially given the absence of *dn* as an onset cluster in Danish (see Basbøll 2005:206). Decomposition will be the least obvious for Icelandic, which we will study in detail in section 3. However, once we peel off a few phonological processes that are needed for Icelandic independently of the proposed account, the form identity predicted by the account will turn out to be complete.

¹⁵ We could state (9) so as to make reference to a spreader: a definite D spreads F_{DEF} onto the head noun and all modifying adjectives in the noun phrase it is attached to.

¹⁶ This two-step evaluation, where some operations can take place freely but are subject to an economy condition, bears obvious resemblance to the framework proposed by Fox (2000). *ECONOMY*, as stated in (12), can be applied to whole outputs of GRAMMAR or relativized to smaller domains. At present, I have no evidence that would suggest one version over the other.

Here is how it would work for the basic pattern in (3) and (4), repeated here:

(13) *Unmodified N: Obligatory suffix*

- a. hest-en
horse-DEF
'the horse'
- b. *den hest
DEF horse

(14) *Adjectival modification: Obligatory pronominal marker*

- a. *gamle hest-en
old horse-DEF
- b. den gamle hest
DEF old horse
'the old horse'

In (13) and (14), the noun phrase is definite, so N and all modifying As (when present) bear F_{DEF} . *-en* licenses the single instance of F_{DEF} in (13a), *hest-en*, and since there is no well-formed candidate that satisfies ECONOMY better, (13a) is grammatical.¹⁷ Note that the bare form *hest* is more economical than *hest-en*, but it is ill formed because of its unlicensed instance of F_{DEF} , and consequently it is not part of the candidate set evaluated by ECONOMY.

There are two possible explanations for why (13b), **den hest*, is ungrammatical. If *d* is a dummy element (another licenser?), the structure will be ruled out by ECONOMY: (13a), *hest-en*, is identical modulo dummy elements and is more economical. Or, if we can find a more meaningful role for *d* in the way modification is implemented, (13b) could be ruled out by GRAMMAR.¹⁸

As for (14a), **gamle hest-en*, I would like to say that it is ruled out by GRAMMAR: *-en* is attached too low to c-command the adjective, leaving an instance of F_{DEF} unlicensed. (14b), *den gamle hest*, on the other hand, is grammatical: all the instances of F_{DEF} are licensed (we will discuss the details shortly), and there is no well-formed candidate that is more economical. By ECONOMY (and the well-formedness of (14b)), we correctly predict that double definiteness should be ungrammatical.¹⁹

¹⁷ I am currently assuming that spreading domains are the same as licensing domains. This makes sense here, but one could imagine things being different.

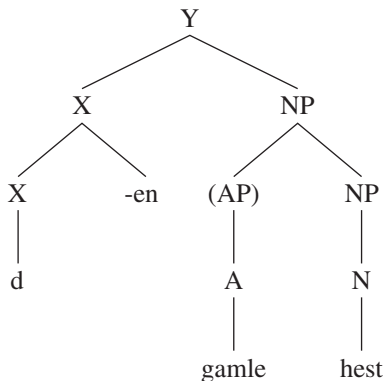
¹⁸ Some support for ruling out (13b) by ECONOMY comes from Hankamer and Mikkelsen's (2005) discussion of CG nouns ending with *-ende*. These nouns are exceptional in not taking the suffix *-en* and instead licensing *den* even in the absence of adjectives. For example, the definite form of *studerende* 'student' is *den studerende* and not **studerenden*. The impossibility of *-en* with nouns like *studerende*, on the current account, will presumably be stated in GRAMMAR. Consequently, ECONOMY will receive no better alternative to *den studerende*, and the complex form will correctly be predicted to be grammatical.

¹⁹ In Faroese, Norwegian, and Swedish, double definiteness is well formed, a fact that has sometimes motivated treating the definiteness suffix in these languages as agreement markers (see, e.g., Delsing 1993, Vangsnes 1999, for arguments and discussion). For the current proposal, double definiteness could perhaps be taken to suggest that the preadjectival definiteness marker in these languages does not have the noun within its licensing domain. I will not discuss double definiteness in Scandinavian here, but a detailed account of multiple definiteness marking along these lines will be developed for Modern Greek in section 4. Note also that there are many other candidates that should be considered for the Danish pattern: **en-hest*, **gaml-en hest-en*, and so on. I assume they are all ruled out by GRAMMAR.

- (15) *den gamle hest-en
 DEF old horse-DEF

In order to actually derive the asymmetry between (14a) and (14b), we should be more particular about structural relations. We need to ensure that *-en* c-commands both N and A when attached to *d*, as in (16), but not when attached to N.²⁰

- (16) Good: *-en* on *d* c-commands both A and N



If c-command is defined in terms of first node up, (16) will not have the desired c-command relations.²¹ We need a looser notion of c-command, ensuring that something like (17) holds.²²

- (17) An affix c-commands everything its attachment site c-commands or dominates.

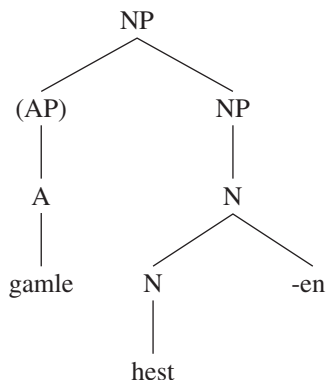
If (17) is guaranteed, F_{DEF} on the adjective and the noun is licensed by *-en* when attached to *d*. For the bad case, shown in (18), N must be too low to be a sister of A(P).

²⁰ The labels *N* and *NP* in (16) and after are chosen for expository convenience. As discussed below, the current account relies on the two labels' being distinct, but the actual choice can vary. The identity of X will not matter here. One possibility is that it is D and that it has a null variant that appears in forms like *hest-en*. If this is the case, we can perhaps identify X with the spreader of F_{DEF} and the source of the semantics of definiteness. Evidence from demonstratives, pointed out to me by an *LI* reviewer, may require a somewhat higher source of spreading and could also help in narrowing down the possible choices for X and for Y. See Julien 2005 and Leu 2007 for data and relevant discussion. For the purposes of this article, I will remain agnostic about the identity of X and Y and about the proper treatment of demonstratives in Danish.

²¹ A definition in terms of first branching node up will not help, and it will not work with the definition in (17) either.

²² In Katzir 2008, I try to show that we can derive condition (17) if we follow May (1985) and Kayne (1994) in using a notion of c-command that is sensitive to the distinction between categories and segments (Chomsky 1986). Here, I will treat (17) as an arbitrary stipulation and simply assume that it holds.

(18) *Bad: Postnominal -en does not c-command the adjective*



Note that the current proposal relies crucially on the way that A(P) attaches within the noun phrase. In particular, by distinguishing between N and NP and by attaching A(P) as a sister to the latter, we made what looks like a completely arbitrary phrase-structural choice. I believe, though, that this is a fortunate state of affairs, and that treating this choice as arbitrary allows us to account for the superficially different distributional patterns of marking in Icelandic in terms of a variant of Danish in which this choice was made differently. I will discuss this point in detail in section 3. I should also mention that, while the labels *N* and *NP* may suggest that the two projections are related, all that matters for the current proposal is that they are distinct. One way to ensure that they are distinct is to let categories like *N* project phrasal categories like *NP*, but the discussion of licensing in this section would remain unaffected if *NP* were a different category, as long as this category is distinct from *N*. Such a category can be projected, perhaps, from a null head that takes the highest segment of *N* as its sister.²³

1.4 Other Modifiers

The interaction of PPs and relative clauses with definiteness marking is different from that of adjectives. As discussed by Hankamer and Mikkelsen (2005) and Embick and Marantz (2008), these additional interactions pose difficulties for both spreader-based and realizer-based theories of definiteness marking. I will start by showing how the SRL account handles these interactions and then review the challenges for licensor-free accounts.

²³ As an *LI* reviewer points out, choosing to project *NP* as the phrasal counterpart of *N* raises conceptual issues that are similar to those discussed in the context of the distinction between words and phrases in section 1.2.2 (though the empirical arguments against a wordhood-based analysis remain). This may suggest that treating the two projections as unrelated is better than having one as the phrasal projection of the other. I wish to avoid taking a stance on this question here and will continue using labels like *NP* for presentational purposes only.

PPs do not trigger the prenominal definiteness marker in Danish. In the absence of other modifiers within the definite noun phrase, only the nominal suffix is possible, and the PP appears after the suffixed noun.

- (19) *PP in a definite noun phrase with no other modifiers* (Hankamer and Mikkelsen 2005: 111)

- a. gris-en med blå pletter
pig-DEF with blue spots
'the pig with blue spots'
- b. *den gris med blå pletter
DEF pig with blue spots

The current account has little of interest to say about (19). The spreading rule (9) says that F_{DEF} spreads onto the head noun and all modifying adjectives. Without further amendment, nothing within a PP will get F_{DEF} from the modified noun. This means that nothing within the PP needs licensing from the outside. In (19), only the noun will have F_{DEF} related to the definiteness of the whole noun phrase, and as before, this F_{DEF} can be licensed using nothing more than the postnominal *-en*. More generally, we would expect that, all things being equal, PPs would be inert with respect to definiteness marking: the definiteness marking of a noun phrase with a PP should be exactly the same as that of a noun phrase without a PP. For example, we expect, correctly, that adding an adjective should trigger the use of the prenominal marker.

- (20) *gamle gris-en med blå pletter
old pig-DEF with blue spots

- (21) den gamle gris med blå pletter
DEF old pig with blue spots
'the old pig with blue spots'

Nonrestrictive relative clauses behave like PPs in not triggering the prenominal marker. For them, too, nothing has to be changed in the current proposal. Restrictive relative clauses (RRCs), on the other hand, are different from PPs (and from nonrestrictive relative clauses) and similar to adjectives in triggering the prenominal marker, at least optionally.

- (22) a. hest-en som vandt løb-et
horse-DEF that won race-DEF
'the horse, which won the race' (*nonrestrictive, all speakers*)
'the horse that won the race' (*restrictive, some speakers*)
- b. den hest som vandt løb-et
DEF horse that won race-DEF
'the horse that won the race' (*restrictive only*)
(Hankamer and Mikkelsen 2005:108)

To account for definiteness marking with RRCs, then, we need to update definition (9). We could

say, for example, that F_{DEF} spreads onto the relative pronoun in an RRC. Here is the revised spreading rule.²⁴

(23) *Spreading (revised)*

The head noun in a noun phrase, all modifying adjectives, and the relative pronoun in a restrictive relative clause have the feature F_{DEF} iff the noun phrase is interpreted as definite.

Other than this minor modification, nothing more needs to be said about relative clauses to derive their interaction with definiteness. For example, an adjective should trigger the prenominal marker, regardless of whether the relative clause is restrictive or not. And since, on the SRL account, PPs are inert and RRCs trigger the prenominal marker, we predict that a definite noun phrase with a PP and an RRC (and no other modifier) should have a prenominal marker. This is correct, as (24) shows.

- (24) den gris med blå pletter som vi fik af nabo-en
 DEF pig with blue spots that we got from neighbor-DEF
 ‘the pig with blue spots that we got from the neighbor’
 (Hankamer and Mikkelsen 2005:112)

From the perspective of the SRL account, all these facts are unremarkable. The earlier system, designed to account for the basic pattern, was able to accommodate these new interactions straightforwardly. The reason I have mentioned PPs and RRCs is that they have posed problems for all the other major approaches that I am aware of. For a realizer account, the choice between *-en* and *den* boils down to a distinction between words and phrases: *-en* goes on words; *den* goes on phrases. RRCs seem well behaved in this respect. Like adjectives, they make the noun phrase too big to fit into a single word, so *den* is the marker of choice. PPs, on the other hand, are mysterious. I take it that the result of modifying a noun with a PP (or of adding a PP complement) is no more wordlike than the result of modifying a noun with an adjective, and yet a PP appears with *-en* and not *den* (in the absence of other modifiers). Could one say that PPs attach so high that they do not really belong to the noun phrase? Hankamer and Mikkelsen (2005) suggest this, but the position of the PP between the noun and the RRC in (24) makes this proposal look unappealing. Hankamer and Mikkelsen try to account for these facts in terms of a raising analysis for relative clauses, combined with various assumptions about the definiteness and the phonological content of the elements participating in this construction. As far as I have been able to establish, however, *den* can be used (and is possibly preferred) also with RRCs that pattern with what has been analyzed in the literature as matching and not raising relative clauses. For example, extraposed relative clauses, which have been argued by Hulsey and Sauerland (2006) to require an analysis in terms of matching rather than raising, allow *den*, at least for some speakers.

²⁴ It might be possible to simplify the statement of (23) by saying that F_{DEF} is assigned to the +N elements within a definite noun phrase. The relative pronouns that do not receive F_{DEF} are arguably attached outside of the noun phrase. I will not attempt to develop this idea here.

- (25) Jeg så den hest med blå pletter i går som du fortalte mig om.
 I saw DEF horse with blue spots yesterday that you told me about
 'I saw the horse with blue spots yesterday that you told me about.'

As for a spreader account, PPs and RRCs pull such an account in two opposite directions. In terms of structure, the attachment of a modifier PP is presumably not much different from that of an attributive adjective. The inertness of PPs to definiteness, then, can be seen as further evidence against an analysis in terms of structural intervention, where *-en* on D and N below meet through movement unless there is more structure in the middle. In the space of currently available spreader accounts, this amounts to further evidence for an analysis in terms of linear intervention, like that of Embick and Marantz (2008). This makes it all the more surprising that a postnominal RRC can also trigger *den*.²⁵

1.5 Interim Summary

Introducing the notion of licensors allowed us to account for the basic pattern of definiteness marking in Danish. Stipulating a new kind of function element is hardly a pleasing move, but previous attempts to account for the pattern in a more conservative way have ended up making complex stipulations of their own even for the simple case of a single noun and a single adjective. The SRL account extended naturally to capture the interactions of other elements in the noun phrase and their combinations with definiteness, while licensor-free accounts had a harder time.

We now turn to another advantage of using licensors: the same mechanism that accounted for the definiteness pattern will allow us to account for a seemingly very different pattern related to gender marking, as well as for the interaction of the two patterns.

2 Gender in Danish

Our Danish examples have so far used only the common gender (CG). As mentioned above, Danish has a second gender, the neuter (Nt). The distinction between the two genders is expressed in several different places within the noun phrase.²⁶ Orthographically, the usual way to mark the distinction is by ending the Nt form in *t* instead of the final *n* (or *Ø*) in the CG form.²⁷

²⁵ Embick and Marantz (2008) refer to Hankamer and Mikkelsen's (2005) proposal, mentioned above, that what we have here is a raising relative clause.

²⁶ But only in the singular. The distinction is neutralized in plural noun phrases.

²⁷ Phonetically, all the *-t* endings are not alike, as has been pointed out to me on several occasions. I believe that these differences between the different surface forms make sense once certain facts about Danish phonology are taken into account, and that the orthography is quite faithful to the underlying morphological forms. I will not go into detail in this case, but a similar issue on a larger scale will emerge as a challenge to the account of Icelandic in section 3, and for that language I will try to show that a set of independently supported phonological processes account for all the apparent counterexamples.

- (26) a. Definiteness suffix: *-en* for CG and *-et* for Nt
 b. Prenominal definiteness marker: *den* for CG and *det* for Nt
 c. Indefinite article: *en* for CG and *et* for Nt
 d. The numeral ‘one’: *én* for CG and *ét* for Nt
 e. Adjectival ending: \emptyset for CG and *-t* for Nt

I will assume that *-t* is a marker of Nt, as suggested by (26e), and that the *(-)et* forms in the other cases listed in (26) are the result of decomposition: $(-)et = (-)en + -t$. For example, the definite form of an unmodified Nt noun like *hus* ‘house’ is *hus-et*, with the Nt definiteness suffix *-et*, and it will be decomposed as *hus-en-t*. Earlier, I suggested that the prenominal CG definiteness marker *den* is already decomposable into *d* + *-en*; so for the Nt marker we will now have $det = d + -et = d + -en + -t$. The idea of identifying the Nt marker on different elements within the noun phrase as instances of the same syntactic element is close to the proposals of Milner and Milner (1972) for German and of Leu (2007, 2009) for a variety of Germanic languages, including Danish.²⁸

The following paradigm suggests that *-t* has the distributional properties of a licenser:

- (27) *Indefinite: Article and adjectives both marked for gender*
 a. *en stor gammel hest*
 1 big old horse
 ‘a big old horse’ (CG)
 b. *et stor-t gammel-t hus*
 1.Nt big-Nt old-Nt house
 ‘a big old house’ (Nt)
- (28) *Definite: Contrast neutralized on adjectives (but remains on the article)*
 a. *den store gamle hest*
 DEF big old horse
 ‘the big old horse’ (CG)
 b. *det store gamle hus*
 DEF.Nt big old house
 ‘the big old house’ (Nt)

The Nt marker *-t* appears on every adjective in an indefinite Nt noun phrase but only on the definiteness marker *-en* in a definite Nt noun phrase. This seems mysterious if *-t* is a spreader. The pattern is no less puzzling if *-t* is a realizer, since whatever gender/number features spread

²⁸ For Leu (2007, 2009), the marking on the adjective is the same as the marking on the prenominal marker (as well as on a demonstrative) in the presence of modifying adjectives, but crucially not the same as the marking on the definiteness suffix in the absence of modifying adjectives. Leu provides evidence from Swiss German in support of this distinction. In Swiss German feminine singular noun phrases, a marker *-i* appears on adjectives in indefinite noun phrases (as in *ä rot-i rosä* ‘a red rose’) and on the definiteness marker in definite noun phrases in the presence of an adjective (*d-i rot rosä* ‘the red rose’), but not on the definiteness marker when the noun is unmodified (*d rosä* ‘the rose’). I will not attempt here to extend the current account to the Swiss German facts.

onto the adjectives are presumably the same in the definite and the indefinite form.²⁹ If *-t* is a licenser, on the other hand, things are simpler. What we would say is that there is some feature, call it F_{Nt} , which, judging from the places where *-t* appears in (27b), spreads onto the adjectives and *en* when the noun phrase is Nt.³⁰

(29) *En*, *-en*, and all modifying *As* have F_{Nt} iff the noun is neuter singular.

GRAMMAR will include the following statements to account for the attachment possibilities of *-t*:

- (30) a. *-t* is a suffix.
b. *-t* can attach to *A*, *en*, and *-en*.

And just as *-en* licenses F_{DEF} , so *-t* licenses F_{Nt} . Note that, on the current account, neither indefiniteness nor CG is marked in Danish (see also Julien 2005).³¹ Either licenser can appear on its own or *-t* can be stacked on top of *-en* (though *-en* cannot be stacked on top of *-t*).

| | | | | |
|------|-------|-----|-------|----|
| (31) | <hr/> | | | |
| | – | Def | | |
| | – | ∅ | –en | |
| | Nt | –t | –en + | –t |

I mentioned above that the Nt marker will be decomposed as $det = d + -et = d + -en + -t$, and that *-en* needs to c-command the adjectives from its attachment point on *d* in the prenominal marker. We can now predict that when *-t* attaches on top of $d + -en$, c-commanding *-en*, it will also c-command all the adjectives below. This will allow the *-t* on the prenominal marker to license every instance of F_{Nt} on the adjectives below, just as *-en* on the prenominal marker licenses every instance of F_{DEF} on those adjectives (as well as on the noun). Consequently, any additional *-t* will be unnecessary, and as a result of ECONOMY candidates with such additional instances of *-t* will lose, and only candidates with a single *-t* attached to the prenominal marker will survive.

- (32) a. det store hvide hus
DEF.Nt big white house
‘the big white house’ (Nt)

²⁹ Börjars and Donohue (2000) offer an interesting proposal for dealing with the gender pattern within a realizier framework. They suggest that the *-t* form encodes indefiniteness, so that forms ending in *-t* are incompatible with a definite noun phrase, resulting in the emergence of the less fully specified *-e* form. This makes the appearance of *-t* on *-en* itself somewhat surprising. Hankamer and Mikkelsen (2002, 2005) do not discuss gender marking at all, and it is not obvious to me how the distributional facts can be made to fit with their account.

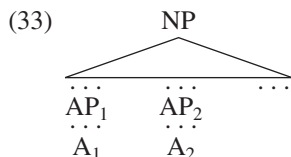
³⁰ As the contrast between (27b) and (28b) shows, the two articles have a different effect on the distribution of *-t* on the adjectives. Below, I will suggest that the indefinite article in Danish is closer in its structural properties to an adjective than to the definite article.

³¹ That is, both F_{DEF} and F_{Nt} appear to be privative features. I do not think this is a complete accident, but I will not pursue this matter here.

- b. *det store hvid-t hus
 DEF.Nt big white-Nt house
- c. *det stor-t hvide hus
 DEF.Nt big-Nt white house
- d. *den stor-t hus
 DEF big-Nt house

In other words, if the proposed treatment of *-t* as a licenser is correct, it is not surprising to see the adjectival instances of *-t* obligatorily disappear when preceded by the prenominal definiteness marker, which in turn surfaces with a final *-t*.

Turning to the marking of Nt in the indefinite, as in (27b), we notice that each adjective bears its own *-t* marker. On our earlier assumptions, this can only mean that *-t* on one adjective does not c-command the other adjective. (If it did, one *-t* would be enough, and the second occurrence of *-t* would be ruled out by ECONOMY.) This, in turn, means that the *attachment site* of *-t* within one adjective does not c-command the other adjective. This would make sense if, as has often been suggested, the Danish adjective is not a head that takes the noun phrase as its sister but part of a phrase that attaches as an adjunct within the noun phrase as shown in (33).³² The change of label from *A* to *AP* will ensure that a *-t* on *A* will only c-command elements that are lower than *AP*. In particular, it will not c-command adjectives other than its host. Any other adjective will require its own *-t* for licensing of F_{Nt} .



One way of satisfying the schematic description in (33) is by attaching the APs recursively to NP, with each AP having a separate segment of NP as its mother. Another possibility is to adjoin the APs to one another first, attaching the result to NP as a single constituent. The analysis of multiple adjectival attachments in Greek in section 4.2 will require the recursive option for that language, while the discussion in section 3 will suggest the single-constituent option for Icelandic. For Danish, the current proposal is compatible with either attachment choice.

The appearance of *-t* also on the indefinite article 1 (*et*) suggests that 1, too, does not c-command the adjectives (and that the adjectives do not c-command 1). This means that the structural position of 1 is closer to that of adjectives than to that of the prenominal definiteness marker *den* (or *det*). The choice of treating 1 as similar to an adjective is somewhat more controversial than the analysis of adjectives as phrasal, but it can be justified in the case of Danish indepen-

³² See Svenonius 1994, Julien 2002, and Hankamer and Mikkelsen 2005 for discussion of the main considerations, all of which seem independent of current concerns.

dently of the current proposal.³³ The evidence comes from the ability of the prenominal definiteness marker and of 1 to appear together in the same noun phrase. This happens, as pointed out to me by Torben Thrane (pers. comm.), in certain contexts that correspond to a partitive reading for the noun phrase.³⁴

- (34) Den ene kop er forsvundet.
 DEF 1 cup is disappeared
 ‘One of the cups has disappeared.’ (CG)

Significantly for our discussion of phrase structure, 1 in these cases appears between the definiteness marker and the noun. Moreover, 1 surfaces with what I referred to above as the realizer *-e*, just like an adjective under a definiteness marker. This supports the choice of treating 1 as something similar to an adjective rather than as a counterpart of *den*.³⁵

To summarize the last few steps: Our earlier assumptions about licensing have pushed us in a particular direction with respect to phrase structure. This direction, in turn, allowed us to discover an interesting fact, for which we found independent support, about the position of so-called definite and indefinite articles within the Danish noun phrase.

And one final step. If the indefinite Nt article *et* is really an adjectival 1 with a licenser *-t*, and if this article can appear below the definiteness marker, we expect that the *-t* on 1 will obligatorily disappear in such contexts, just as it disappears on adjectives, and that instead of *-t* we will find the realizer *-e*, again, in analogy with adjectives. This is correct.

- (35) a. Det ene hvide krus er forsvundet.
 DEF.Nt 1 white mug is disappeared
 ‘One of the white mugs has disappeared.’ (Nt)
 b. *Det ete/et hvide krus er forsvundet.
 DEF.Nt 1.Nt white mug is disappeared
 c. *Det ene hvidt krus er forsvundet.
 DEF.Nt 1 white.Nt mug is disappeared

³³ I will remain agnostic here regarding the possible crosslinguistic variation in the status of the indefinite article. As an *LL* reviewer points out, the behavior of the indefinite article in German is different from its behavior in Danish. In German, the indefinite article does not bear the so-called strong adjectival ending with certain combinations of gender, number, and case, such as neuter singular nominative/accusative—hence, for example, *ein-(*)es gut-es neu-es Buch* ‘a good new book’. With most other combinations, it does bear the strong ending, while any following adjectives surface with the so-called weak adjectival inflection—hence *mit ein-em gut-en neu-en Buch* ‘with a good new book’ (neuter singular dative). In the absence of an article, all adjectives bear the strong ending. For the current analysis, these facts suggest that spreading distinguishes between adjectives and the indefinite article and that the strong ending c-commands all adjectives when attached to 1 but not when attached to an adjective. I leave an account of the indefinite article in German to another occasion and restrict the arguments in this section regarding the structural properties of the indefinite article to Danish.

³⁴ See also Julien 2005. I will ignore here the precise meaning of this construction and how it may arise compositionally.

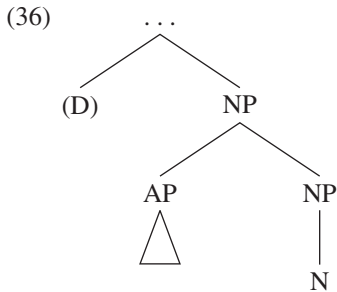
³⁵ The data discussed allow the current account a certain amount of flexibility with respect to the precise syntactic status of 1. Julien (2005) discusses data similar to (34) and proposes a nonadjectival analysis of 1 that, as far as I can see, is also compatible with the current proposal.

3 Icelandic

3.1 Changing the Lower Segment in the Danish NP

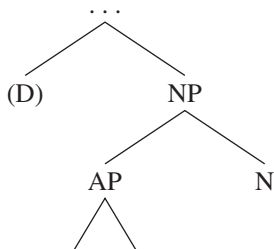
In the previous sections, we examined two distributional patterns within the Danish noun phrase: the marking of definiteness with *-en*, and the marking of neuter singular with *-t*. We noted that analyses that treat these markers as spreaders or realizers face a variety of challenges, and we saw how introducing a third kind of function element, licensors, allowed us to account for these patterns and their interactions. It also led us to some new facts about the attachment site and the internal structure of the indefiniteness marker 1.

Enriching the inventory of function elements is not something to celebrate. It seems to me, though, that this is a reasonable price to pay for the ability to capture the marking patterns presented in previous sections. As for the other assumptions made above, I tried to show that, with one exception, they all seem plausible enough independently of the current proposal. The exception had to do with the attachment of AP as an adjunct to NP, as shown in (36).

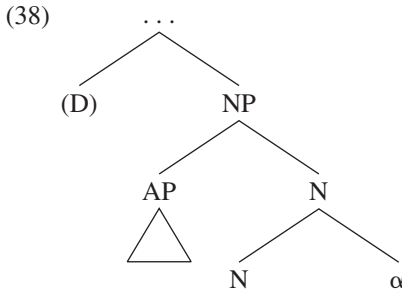


Nothing about the attachment of AP in (36) is particularly implausible (and in fact a similar structure has been suggested by Svenonius (1993), though for different reasons and within a different theoretical setting). However, the only motivation in the current context for positing this attachment site came from the need to prevent the postnominal definiteness marker from c-commanding into the adjective. I can think of no general reason to expect this kind of configuration and must therefore treat this as an arbitrary choice of Danish. But if it is an arbitrary choice, we should expect to find a variant of Danish, call it Danish', where a different choice has been made. I believe that Icelandic is precisely this kind of Danish', and that where Danish has NP as the sister of AP, Icelandic has N, as (37) shows.

(37) *Danish'* (=Icelandic)



As far as licensing is concerned, the main difference between the structure for Danish, in (36), and the structure for Danish', in (37), is that in the former N does not c-command the adjective and in the latter it does. This means that if an affix α is adjoined to N in Danish', as *-en/et* is in Danish, it will c-command the adjective and license occurrences of F_α on it, contrasting with the inability of such an affix to do so in Danish. For purposes of licensing features on the adjective, then, a postnominal attachment site would suffice, as in (38).



And as before, if we attach an additional suffix, call it β , on top of α , it will c-command both α and everything that α c-commands. In the discussion of Danish earlier, we talked about *-t* attaching on top of *-en* and licensing F_{Nt} both on *-en* and on everything that *-en* c-commands. Assuming that Danish' has counterparts to the Danish F_{DEF} and F_{Nt} , and that these features are spread in the same way in both languages and have licensors that behave like the Danish ones, we expect Danish' to have exactly the same pattern of definiteness and F_{Nt} as Danish with the exception that there will be no need for a prenominal definiteness marker. The postnominal suffix will license F_{DEF} on N and on AP, and the postdefiniteness suffix corresponding to *-t* will license the counterpart of F_{Nt} on the definiteness marker and on the adjective. And since the postnominal suffix will be good enough, ECONOMY will rule out the more complex prenominal form. To complete the analogy with Danish, where the realizer *-e* expresses either definiteness or plurality, Danish' might use its own realizers to express various combinations of features on the adjective. Schematically, and using for the moment the actual forms of the Danish suffixes, we would expect the pattern in Danish' for a noun phrase with one adjective to look like this:³⁶

- (39) a. Indefinite: [Adj – *t*] [N]
 b. Definite: [Adj – *e*] [N – *en* – *t*]

Real Icelandic, to which we now turn, will follow exactly the pattern in (39), but seeing this will require some effort, both because of Icelandic's rich morphological paradigm and because of phonological processes that sometimes obscure the underlying morphological structure.

3.2 Overview

Like Danish, Icelandic marks definiteness and does not mark indefiniteness. Like Danish, it also marks a distinction between singular and plural. The gender system of Icelandic is richer than

³⁶ Noun phrases with multiple adjectival modifiers are discussed below.

that of Danish, though: it distinguishes among masculine, feminine, and neuter genders, distinctions that survive, at least in part, in the plural part of the paradigm. Finally, Icelandic differs from Danish in that it marks grammatical case, distinguishing among nominative, accusative, dative, and genitive. The distinctions are marked both on nouns and on adjectives, though in different ways, as we will see.

In Icelandic, definiteness is marked on the noun, regardless of whether it is a bare noun or is modified by adjectives. Thus, for example, the masculine singular nominative noun for ‘horse’ is *hestur* when indefinite and *hesturinn* when definite, and the forms for the noun remain the same in the presence of adjectival modification: *gulur hestur* ‘a yellow horse’ and *guli hesturinn* ‘the yellow horse’. The invariance of the nominal form under adjectival modification persists in the plural, as well as under changes of gender and case. With respect to definiteness, then, Icelandic follows the above characterization of Danish.³⁷

Turning to the marking of the various combinations of number, gender, and case, we observe that there are three different places within the noun phrase where elements vary according to these factors. One place is the adjectival ending. The two other places appear after the noun, one between the noun and the definiteness marker, and the other following the definiteness marker. Let us stay with the masculine singular ‘(yellow) horse’, and let us treat *-in* as the definiteness marker. The preliminary decomposition of the surface forms shown in (40) arises.³⁸

(40) *gul + hest* ‘yellow horse’ *masc.*

| | – Def | | + Def | |
|------|--------|---------|-------|--------------|
| | Adj | N | Adj | N |
| Nom. | gul-ur | hest-ur | gul-i | hest-ur-in-n |
| Acc. | gul-an | hest | gul-a | hest-in-n |
| Dat. | gul-um | hest-i | gul-a | hest-in-um |
| Gen. | gul-s | hest-s | gul-a | hest-s-in-s |

The position right after the noun (and before *-in* in the definite) will not concern us in what follows. I will call the affix that appears in that place *C1*, just to have a name for it, but as far as I have been able to establish it does not participate in any pattern that might be relevant to the current proposal.³⁹

The remaining two positions, the postadjectival one and the one right after *-in*, will be directly relevant to the analysis of Icelandic as Danish’. In Danish, these are the positions that can host

³⁷ Icelandic does have a prenominal definiteness marker, often described as part of a formal register. I will discuss it in section 3.4.

³⁸ The underlying forms are somewhat different. I return to that shortly.

³⁹ *C1* seems to be absent from the definite form of the dative in (40). As discussed by Orešnik (1972), however, there are phonological reasons to expect the combination *i-in* to surface as *in*.

-t, and I will claim that in Icelandic they can host the affixes that correspond to *-t*. I will refer to these counterparts of *-t* collectively as C2 (when it is useful to refer to the C2 affix that corresponds to a particular combination $\xi = \langle n, g, c \rangle$ of number, gender, and case, I will write C2 _{ξ}). My claim, then, will be that the adjectival suffix in an indefinite noun phrase is the same affix as the one that follows the definiteness marker in a definite noun phrase, and that, more generally, (40) instantiates the pattern in (39). Using C1, C2, and *-in*, and writing *v* for the adjectival ending in the definite (corresponding to the Danish *-e* in the same configuration), we can now restate (39) in Icelandic-appropriate terms.

- (41) a. Indefinite: [Adj – C2] [N – C1]
 b. Definite: [Adj – *v*] [N – C1 – *in* – C2]

The pattern in (41) is what Icelandic would look like if it were Danish'. How closely does this pattern match the actual data in (40)? The distribution of C1 and of the realizer *v* does not seem directly relevant, and with respect to definiteness I already mentioned that the distribution of *-in* is as predicted. So we are left with the question of whether the adjectival suffix in the indefinite is indeed the same as the affix that follows *-in* in the definite. The data in (40) are close to what we want, but identity is not complete. For two of the rows, dative and genitive, the indefinite adjectival suffix is exactly the same as the one that follows *-in* (*-um* for dative and *-s* for genitive). For nominative and accusative, on the other hand, the relevant surface forms are not identical. Nominative has an adjectival *-ur* in the indefinite and *-n* following *-in*, and accusative has a postadjectival *-an* in the indefinite and *-n* following *-in*.

To maintain the position that Icelandic is Danish' and that (41) correctly characterizes the morphological reality, we will need to explain the apparent exceptions in the nominative and accusative. One could appeal, perhaps, to contextual allomorphy, but it would be better to avoid this option and find an independent explanation that will allow us to actually predict where and how the surface forms for C2 differ.

Phonology offers precisely this kind of independent explanation. After certain adjectives that end with *in*, such as *heiðin* 'heathen' and *heppin* 'lucky', the C2 endings in the indefinite are *-n* for both the nominative and the accusative, rather than the usual *-ur* and *-an* (see Einarsson 1945:53). Significantly, the *-in* in these adjectives has nothing to do with definiteness. Some processes, then, make the C2 forms for nominative and accusative surface as *-n* (instead of *-ur* and *-an*) after the *-in* in *heiðin* and *heppin*. It seems plausible enough that the same processes also apply to these C2 forms after the definiteness marker *-in*, changing them in the same way.

The phonological processes behind these changes are not entirely surprising. For example, what surfaces as the ending *-ur* has been argued by Orešnik (1972) (following Anderson (1969)) to be underlyingly *-r*, with *u*-epenthesis taking place under certain conditions (see also Kiparsky 1984). Another familiar process is the assimilation of *r* to *n* following *n* (see Anderson 1974). We can state the relevant rules as follows:

- (42) $\emptyset \rightarrow u / C_r\{C, \#\}$

- (43) $r \rightarrow n / n_$

Ordering (42) after (43) ensures that the nominative C2 ending will surface as *-n* after a final *-in*, regardless of whether it is attached to one of the adjectives mentioned above or to the definiteness marker.⁴⁰

For accusative, I can find no similar evidence that the relevant phonological process involves epenthesis.⁴¹ I will tentatively assume that the accusative form is due to a process of *a*-deletion.

(44) $a \rightarrow \emptyset / \text{Cin} ______ n\#$

Before we discuss the rest of the paradigm, a note on multiple APs is in order. The patterns stated schematically in (39) and (41) involve a single adjective. When more than one adjective modifies the noun, each appears with its own ending, C2 if the noun phrase is indefinite, and *v* if it is definite.

- (45) a. Indefinite: [Adj – C2] . . . [Adj – C2] [N – C1]
 b. Definite: [Adj – *v*] . . . [Adj – *v*] [N – C1 – *in* – C2]

- (46) a. *feit-ur gul-ur hest-ur*
fat-C2 yellow-C2 horse-C1
 ‘a fat yellow horse’ (masculine singular nominative)
 b. *feit-i gul-i hest-ur-in-n*
fat-v yellow-v horse-C1-DEF-C2
 ‘the fat yellow horse’ (masculine singular nominative)

As pointed out to me by an *LI* reviewer, this is expected if the adjectives first combine to form a single constituent that then combines with the noun but not if the adjectives stack recursively on top of the noun. If the adjectives combine together first, they will all be c-commanded by *-in* and C2 in the definite, but if they stack recursively, only the adjective closest to the noun will be c-commanded by these suffixes. As mentioned in the discussion of the schematic structure in (33), this choice does not matter for the SRL analysis of Danish. We now see that for the analysis of Icelandic, it does matter. In section 4.2, we will see that it matters for Greek too; there, we will have to adopt the recursive attachment of adjectives on top of the noun. This could imply a point of crosslinguistic variation.⁴² Alternatively, and perhaps more plausibly, it could be that adjectives in Icelandic do stack above the noun and that our current assumptions regarding licensing domains in Icelandic are not quite right.⁴³ I will not investigate this question further here.

⁴⁰ Thus, while adding the C2_(Masc., Sg., Nom.) *-r* to the adjective *gul* ‘yellow’ results in the surface form *gulur*, owing to application of (42), adding the same C2 to the adjective *heppin* ‘lucky’ results in the surface form *heppinn*, owing to application of (43), which in turn bleeds (42).

⁴¹ In fact, the diagnostics that Orešnik (1972) uses to show that *u* is epenthetic in *-ur* suggest that the *a* in *-an* is present underlyingly. For example, stem-final *j* drops unless it is followed by a vowel. Thus, the masculine singular form of the adjective stem *miðj* ‘in the middle’ (Einarsson 1945) surfaces as *miðj-um* in the dative but as *mið-s* in the genitive. The nominative form is *mið-ur*, suggesting that at some level of representation, the vowel *u* was absent. The accusative form, however, is *miðj-an*, suggesting that *a* was part of the suffix earlier on.

⁴² As the reviewer notes, such variation should be detectable by constituency tests such as ellipsis.

⁴³ As a very preliminary direction, one can consider a slightly modified structure for the Icelandic noun phrase where the category to which *-in* attaches is the same as the one to which the APs attach (possibly by avoiding the distinction between N and NP in this language). For such a structure, a reading of principle (17) in which *dominance* means dominance by at least one segment will ensure that all stacked adjectives are c-commanded by *-in*.

nominative and accusative forms of ‘heathen’ (neuter singular) are both *heiðið* (Einarsson 1945: 53).

We can already predict the correspondence between indefinite adjectival endings and post-definiteness endings in the plural part of the paradigm without further modification. The forms are given in (51).

- (51) a. *Masculine*: gul + hest ‘yellow horse’ + *pl.*

| | – Def | | + Def | |
|------|----------------|---------|-------|----------------------|
| | Adj | N | Adj | N |
| Nom. | gul- ir | hest-ar | gulu | hest-ar- <i>n-ir</i> |
| Acc. | gul- a | hest-a | gulu | hest-a- <i>n-a</i> |
| Dat. | gul- um | hest-um | gulu | hest-u- <i>n-um</i> |
| Gen. | gul- ra | hest-a | gulu | hest-a- <i>n-na</i> |

- b. *Feminine*: gul + kinn ‘yellow cheek’ + *pl.*

| | – Def | | + Def | |
|------|----------------|---------|-------|----------------------|
| | Adj | N | Adj | N |
| Nom. | gul- ar | kinn-ar | gulu | kinn-ar- <i>n-ar</i> |
| Acc. | gul- ar | kinn-ar | gulu | kinn-ar- <i>n-ar</i> |
| Dat. | gul- um | kinn-um | gulu | kinn-u- <i>n-um</i> |
| Gen. | gul- ra | kinn-a | gulu | kinn-a- <i>n-na</i> |

- c. *Neuter*: gul + barn ‘yellow child’ + *pl.*

| | – Def | | + Def | |
|------|----------------|---------|-------|---------------------|
| | Adj | N | Adj | N |
| Nom. | gul | börn | gulu | börn- <i>in</i> |
| Acc. | gul | börn | gulu | börn- <i>in</i> |
| Dat. | gul- um | börn-um | gulu | börn-u- <i>n-um</i> |
| Gen. | gul- ra | barn-a | gulu | barn-a- <i>n-na</i> |

3.4 Independent Definiteness Marking

The structure of the Icelandic noun phrase makes it unnecessary to use a free article-like definiteness marker, and because of ECONOMY we predicted that such marking would in fact be impossible. But ECONOMY is relevant only as long as everything other than licensors remains fixed. If we can find a nonvacuous preadjectival head in Icelandic that can combine with *-in*, the result will

not mean the same as the usual definite form with a postnominal *-in*, and so ECONOMY will not rule it out. In such a case, we expect two further things to happen. First, the post-D *-in* will make the post-N occurrence superfluous. Second, the post-*in* C2 will c-command the adjectives, making lower occurrences of C2 superfluous.

Icelandic has a prenominal marker that allows us to test these predictions. The precise meaning of this marker is somewhat unclear (my informants reported that the use of this marker implies some emphatic or emotional value, in addition to definiteness). Morphologically, the marker is composed of a base *hin*, which I will analyze as *h* + *in*, and a suffix, which we expect to be C2. Once the phonological rules above are taken into account, the entire paradigm (shown in (52)) is derived.⁴⁴

| (52) | Sg. | | | Pl. | | |
|------|----------------|-----------------|---------------|----------------|----------------|----------------|
| | Masc. | Fem. | Neut. | Masc. | Fem. | Neut. |
| Nom. | hin- n | hin | hið | hin- ir | hin- ar | hin |
| Acc. | hin- n | hin- a | hið | hin- a | hin- ar | hin |
| Dat. | hin- um | hin- ni | hin- u | hin- um | hin- um | hin- um |
| Gen. | hin- s | hin- nar | hin- s | hin- na | hin- na | hin- na |

And as predicted, if the prenominal marker is used, the definiteness suffix cannot appear on N, and there are no occurrences of C2 below.

- (53) a. hinn góði hestur
 the good horse
 b. *hinn góði hestur-in-n
 the good horse
 c. *hinn góð-ur hestur
 the good horse

3.5 Interim Summary

We started with the idea of Icelandic as Danish', where we changed nothing other than the label of the sister of AP (*NP* in Danish, and *N* in Danish'). By using five independently motivated

⁴⁴ Work by Sigurðsson (1993) and Vangsnes (1999, 2004) argues for an interaction between the presence or absence of the independent marker and movement, as pointed out to me by an *LJ* reviewer. In particular, Vangsnes provides evidence that in the absence of an independent definiteness marker, a constituent containing the noun, the adjectives, and a possessive moves up across a possible numeral to the position, presumably D, where the independent marker would otherwise appear. As far as I can tell, this movement does not help in accounting for the patterns discussed in this article, and I will not attempt to address it here. The reviewer also points out that the possessive appears with what looks like C2 morphology, even in definite noun phrases. This is puzzling for the current account, since it suggests that C2 on *-in* fails to license F_{C2} on the possessive. I have no account for this fact at present.

phonological rules for Icelandic, we derived the entire correspondence between indefinite adjectival endings and postdefiniteness endings in the full paradigm.

4 Greek

4.1 *Moving Things Around inside the Noun Phrase*

We saw that the marking patterns in Danish and Icelandic noun phrases lend themselves to an SRL analysis. The novel part of the analysis was the introduction of *licensors*, function elements that associate with one or more instances of a feature, possibly at a distance. The evidence for licensors and their domains came from the accumulation of distributional facts that they help predict. The core Danish facts already suggested that an SRL approach has an advantage over licensor-free accounts. Additional data, both language-internal and crosslinguistic, provided further support for this idea.

There remains a general concern that should be addressed. As is often the case in morphology, the Germanic data that we have tried to analyze make it hard to evaluate competing hypotheses with respect to arbitrarily complex configurations. We were able to increase the level of complexity by considering further elements within the phrase, partially overlapping marking patterns, and different choices with respect to phrase structure. Eventually, however, we will run out of new modifiers, patterns, and phrase-structural choices, and even before that we might run out of languages that will allow us to test the relevant combinations. In addition, when we switch to different constructions and different languages it is often hard to ensure that all other relevant factors remain without change. We could try to show, as we did, that our assumptions have at least some independent plausibility, either by using familiar structural diagnostics or by pointing out new predictions, but ultimately all the evidence in favor of the SRL approach came from the ability of the system as a whole to predict a finite collection of paradigms. What is missing is the ability to take an initial set of configurations and start complicating them in a controlled (and meaningful) way.⁴⁵ If we could move elements around within the noun phrase, we would be able to complicate our configurations in the way we need. Unfortunately, however, Danish and Icelandic have fairly rigid word order within the noun phrase, and the same seems true for other Germanic languages as well.

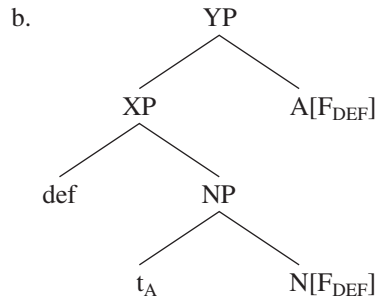
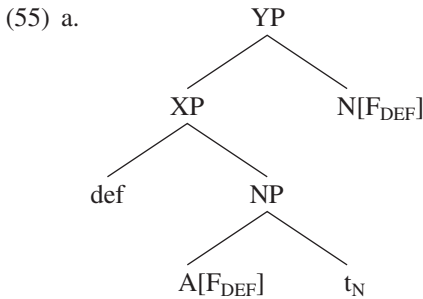
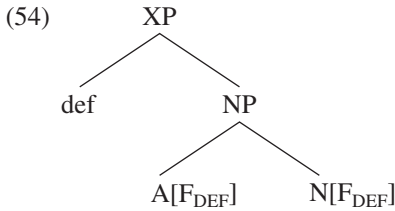
So what would Danish look like if it allowed elements within the noun phrase to move around? The answer, assuming that the present analysis of the Germanic data is correct, depends on what can move where and what positions are available for licensors. Suppose, first, that both A(P)⁴⁶ and N can right-dislocate to a position higher than the position corresponding to the Danish *den*.⁴⁷ Suppose further that when A or N moves, its features must be licensed in their *surface*

⁴⁵ By *meaningful*, I mean relevant for comparing competing theories. Stacking additional adjectives before a Danish noun or PPs after it would make the noun phrase more complex in some sense, but all current theories predict that the choice between *den* and *-en* will not change when moving from one adjective to more or from one PP to more.

⁴⁶ The question of whether the adjective projects an AP will not be directly relevant in what follows. From here on, I will use A for the possibly phrasal A(P).

⁴⁷ Or perhaps more naturally, especially from the point of view of structural economy, we could assume that movement must be structurally nonvacuous, stated in terms of changing hierarchical relations between the moved constituent and at least one other (terminal) node.

position (that is, c-commanding the trace is insufficient for licensing the moved element). (54) shows the base, Danish-like, configuration. (55) shows the configuration for right-dislocation of N (string-vacuously) and of A.



In the basic case, shown in (54), the licenser *def* is sister to NP and can license F_{DEF} both on the adjective and on the noun. Each of the dislocated structures, however, now has an unlicensed instance of F_{DEF} . If *def* can attach not only where it appears in (54) and (55), as sister to NP, but also as sister to YP or higher, such attachment would resolve the licensing issue, making the lower *def* redundant. All we would see, unless there were some intervening element between the two positions, would be a Danish-like language with the possibility of reordering the noun and the adjectives.⁴⁸

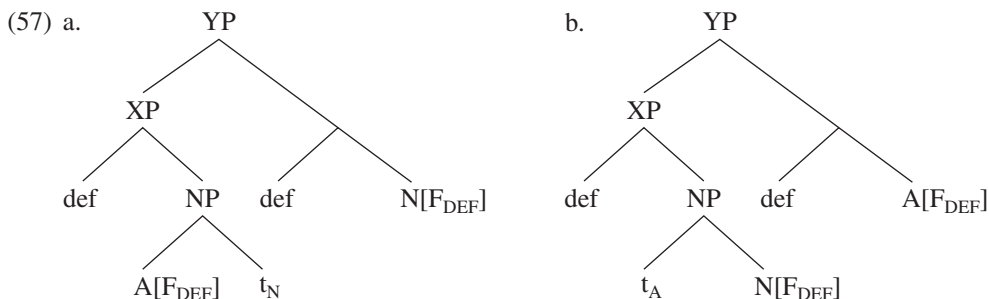
A more interesting pattern would emerge if such a higher position for *def* were not available, and if lower, more local attachment sites were available instead. For example, imagine that *def* could take not only NP but also N and A as its sister.

(56) *Def* can attach as sister to A, N, and maximal NP.

In the basic configuration, as in (54), we would have no need for attaching *def* as sister to A or N, since *def*'s higher attachment site (as sister to NP) would suffice to license all the occurrences of F_{DEF} . In the dislocated structures, however, the local attachment sites of *def* can come to the rescue. The dislocated element can have a licenser as its sister, licensing its F_{DEF} , while the original occurrence of *def* licenses F_{DEF} in the remnant, as before. Neither attachment site

⁴⁸ This could happen, for example, if XP and YP were both NP, as pointed out by an *LI* reviewer. The pattern just discussed bears a certain resemblance to various patterns of adjectival modification in Romance. It would be interesting to see whether this resemblance is significant, and whether the SRL approach can account for the Romance data, but I will not pursue this idea here.

c-commands the other, though, so the structures end up with two instances of *def*, as shown in (57).⁴⁹



For a language that has the attachment possibilities just mentioned, but is otherwise like Germanic, we so far make the following predictions. The basic word order is [def A N], but where dislocation takes place the orders [def A def N] and [def N def A] result. A postnominal occurrence of A is obligatorily preceded by *def*, and if we have independent ways to detect movement, we should be able to confirm that the order [def A def N] arises exactly when dislocation takes place. We can also say something about indefinite noun phrases. If the current language is like Danish in treating definiteness as a privative feature, with no indefinite counterpart for F_{DEF} , dislocation in an indefinite noun phrase should not disrupt any licensing relations. What we expect, then, is that along with a basic [(1) A N] we should also find [(1) N A], but crucially neither [(1) N 1 A] nor [(1) A 1 N].

The predictions we have made are elaborate and quite specific, and the pattern they lead us to expect is superficially quite different from Germanic. More generally, the hypothetical pattern would be surprising for licenser-free accounts: if *def* is a realizer, we would not expect an element to acquire a new occurrence of it by leaving the domain of definiteness (if anything, we might expect to find the opposite); and if *def* is a spreader, any additional occurrence of it would be at odds with everything we believe about the semantics of definiteness.⁵⁰ From our current perspective, on the other hand, the pattern is an almost immediate relative of the Germanic marking patterns that we saw.

I believe that Modern Greek, with its intricate patterns of word order and definiteness marking, allows us to test our predictions. These patterns have generated a fair amount of theoretical

⁴⁹ As an *LI* reviewer points out, the structures in (57) appear to violate the Extension requirement, since *def* is not inserted at the root. One way to address this concern is to insert *def* before movement and move the constituent of *def* and its sister. Without movement, a structure with an additional *def* will have more instances of *def* than are necessary for licensing and will therefore be ruled out by *ECONOMY*; but with movement, the competing structure will not satisfy licensing, so the structure with the additional *def* will survive. Alternatively, if *def* is inserted by adjunction rather than by substitution, it will be exempt from Extension, as Chomsky (1995) suggests (or perhaps it is subject to a modified version of Extension; see Frank and Vijay-Shanker 2001 for a proposal and discussion).

⁵⁰ In particular, an additional occurrence of a spreader with semantics along the lines of the English definite article will give rise to a type mismatch, on the fairly standard assumption that the definite article is of type $\langle et, e \rangle$, nouns are of type *et*, and adjectives are either of type *et* or of type $\langle et, et \rangle$ (see Heim and Kratzer 1998).

interest, though to my knowledge the proper way to account for them has remained an open question.⁵¹

Here is the basic pattern of word order and definiteness in Modern Greek:⁵²

- (58) a. to megalo (to) vivlio
 the.NEUT.SG big.NEUT.SG (the.NEUT.SG) book.NEUT.SG
 ‘the big book’
 b. to vivlio *(to) megalo
 the.NEUT.SG book.NEUT.SG *(the.NEUT.SG) big.NEUT.SG
 ‘the big book’
- (59) a. ena megalo (*ena) vivlio
 1.NEUT.SG big.NEUT.SG (*1.NEUT.SG) book.NEUT.SG
 ‘a big book’
 b. ena vivlio (*ena) megalo
 1.NEUT.SG book.NEUT.SG (*1.NEUT.SG) big.NEUT.SG
 ‘a big book’

The definiteness marker usually precedes the adjective, which in turn precedes the noun.⁵³ It is possible to have a postnominal adjective, though this requires a second definiteness marker immediately preceding the adjective. And it is possible, though not necessary, for the noun to have its own marker even in the basic order. Following Kolliakou (2004), I will refer to the form [def A N] as *monadic* and to the forms [def A def N] and [def N def A] as *polydefinite*.⁵⁴ For indefinite noun phrases, the basic word order is as in the definite case, but a postnominal adjectival

⁵¹ For discussion of the facts and for some of the main proposals, see Androutsopoulou 1996, Alexiadou and Wilder 1998, Manolessou 2000, Kolliakou 2004, Lekakou and Szendrői 2007, Marinis and Panagiotidis 2007, and Ioannidou and Den Dikken 2009, and references cited therein. The terms *determiner spreading* (from Androutsopoulou) and *polydefiniteness* (from Kolliakou) are often used to refer to one of the main aspects of the pattern. Mine is by no means the first attempt to bring together the Greek patterns with the Germanic ones. See Alexiadou 2003 for relevant discussion of the crosslinguistic setting. See also Leu 2009 for an account that treats Greek and Germanic in parallel using remnant movement.

⁵² Gender and number will not play a role in my account of the Greek facts and will be omitted from glosses in subsequent examples.

⁵³ In the absence of an adjective, the definiteness marker still precedes the noun. There is no postnominal suffix option. With regard to this aspect of definiteness, then, Greek is more similar to languages like German and Dutch than to their Scandinavian cousins. None of this matters here.

⁵⁴ As noted by Alexiadou and Wilder (1998), the polydefinite forms are more selective than the monadic forms: while the form [def A N] can involve any adjective in Greek, the form [def A def N] is degraded with certain adjectives like *ipotithemenos* ‘alleged’ and *proigumenos* ‘previous’. As noted in the literature, this restriction is not absolute. For example, Leu (2009) reports that some speakers, at least, accept *o proigumenos o prothipurgus* ‘the previous the president’ in an appropriate context. To this I wish to add that, as far as I have been able to determine, reversing the order in these constructions often leads to unacceptability. Thus, even speakers who accept examples like *o ipotithemenos o dolofonos* ‘the alleged the murderer’ often reject its reversed variant **o dolofonos o ipotithemenos* ‘*the murderer the alleged’. To my knowledge there are no adjectives that are better in the order [def N def A] than in the order [def A def N], and there is no counterpart to this pattern in which the restriction on order reversal depends on the noun.

position is also available. Unlike the definiteness marker, 1 never occurs more than once. This is just what the proposed Germanic-based account predicts.⁵⁵

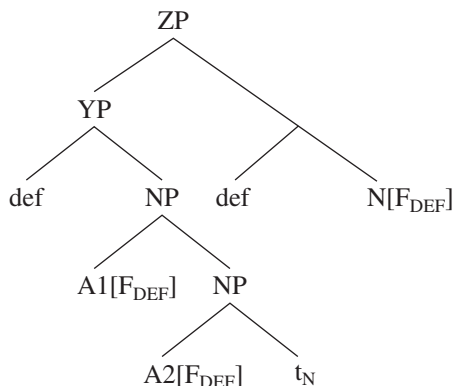
4.2 Characterizing the General Pattern of Definiteness Marking

What happens when more than one thing can move within the noun phrase? Let us look at a Greek noun phrase with two attributive adjectives. As in Germanic, the adjectives typically stack up on top of the noun and appear to its left. On the assumptions made here, a single instance of *def* attached as sister to NP should suffice to license F_{DEF} on all the adjectives and on the noun. This is all as one might expect by extrapolating from the case of a single adjective or by using the parallelism with Germanic.

- (60) to megalo kokkino vivlio
 the big red book
 ‘the big red book’

Suppose now that we try to right-dislocate the noun. If we could do that and change nothing else, we would find something like the structure in (61).

- (61) *Hypothetical structure for dislocating N and keeping the rest fixed*



The original *def* would license the instances of F_{DEF} on A1 and A2, while, as in the case of modification by a single adjective, an extra *def* would be needed to license F_{DEF} on the dislocated N. The bidefiniteness in (61), however, relies on the structure being well formed (up to licensing),

⁵⁵ A question that arises for any movement account is why things should move within the noun phrase in the first place. I believe that considerations of information structure offer a possible answer. As a rough generalization, using multiple definite markers felicitously requires a context that makes the noun phrase or parts of it anaphoric or contrastive in some sense (see Kolliakou 2004; for complications and differing views, see Manolissou 2000, Marinis and Panagiotidis 2007, Ioannidou and Den Dikken 2009). For the current proposal, this suggests an account along the lines of Reinhart 1995, Zubizarreta 1998, Arregui-Urbina 2002, Kučerová 2007, and Wagner 2007, according to which movement sometimes serves the role of removing given material from the focus domain. As far as I can determine, the correspondence between word order and givenness is as expected by an account along the lines presented here. See Katzir 2008 for discussion.

and (61) has one property that makes it an unlikely configuration. In the remnant NP, two adjectives stack without a noun at the bottom. Crosslinguistically, however, adjectives can only stack on top of a noun, and Greek appears to be no exception. For example, two adjectives in a predicative position require overt conjunction.

- (62) Auto to vivlio einai megalo *(kai) kokkino.
 this the book is big *(and) red
 ‘This book is big and red.’

It also seems that more is required than having a noun in the right place at some point in the derivation: light nouns, which some accounts treat as moving up across the adjective,⁵⁶ are degraded with stacked adjectives (thus *Tipota megalo (??kokkino) einai sti gonía* ‘Nothing big (??red) is in the corner’).⁵⁷ We would expect, then, that (61) would be ungrammatical, quite independently of issues of licensing. And it is: [def A1 A2 def N] is not a possible order.⁵⁸

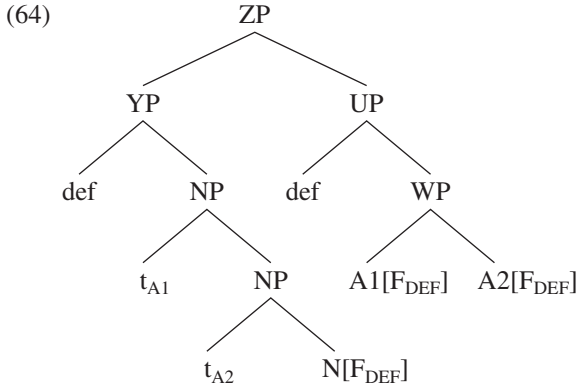
- (63) *to megalo kokkino to vivlio
 the big red the book

A similar problem (along with familiar constraints on movement) prevents the two adjectives from appearing on the right and sharing a single licenser, as illustrated in (64).

⁵⁶ See Abney 1987 and Kishimoto 2000 for analyses along these lines. See Larson and Marušić 2004 for problems with such an account. As an *LI* reviewer points out, Larson and Marušić note that heaviness of the A(P) can make possible A(P)-stacking on the right, both with light nouns and otherwise: *a man present [capable of lifting a horse]* and *everyone present [capable of lifting a horse]*.

⁵⁷ The noun above which adjectives can stack can be overt (as it is in most cases), but for some speakers it can also be covert, as in noun ellipsis. For those speakers, *Tha paro to megalo kokkino* ‘I’ll have the big red (one)’, which has no overt counterpart for *one*, is grammatical. The contrast between ellipsis sites and movement traces may seem surprising from the perspective of certain proposals, as pointed out independently by two *LI* reviewers. For theories that treat movement traces as silent copies, the syntactic object left behind by noun movement is presumably the same as that in noun ellipsis. Semantically, however, the two can be different, as their DP counterparts are usually assumed to be, so perhaps the difference between movement and ellipsis in stacking contexts can be attributed to interpretation (see also footnote 58). A different perspective that makes ellipsis and movement similar is that of Kayne (2006), who proposes that null pronunciation, including in the case of ellipsis, is always the result of placement in the specifier of a phase. As an *LI* reviewer points out, the contrast between ellipsis and movement in stacking contexts is hard to reconcile with Kayne’s proposal.

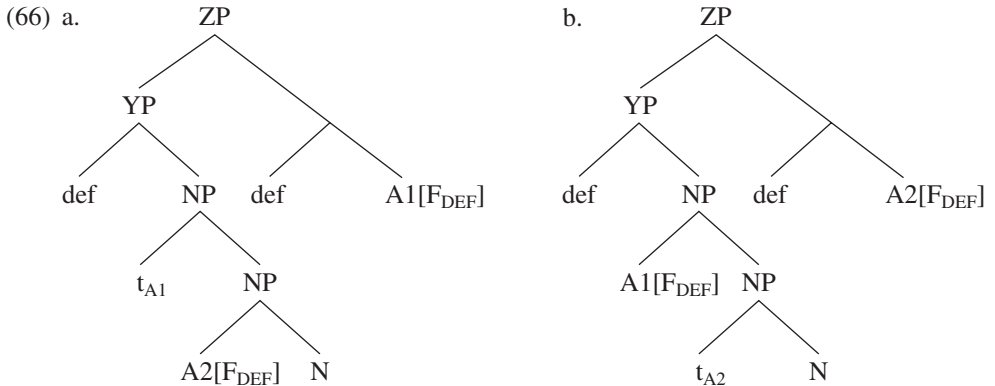
⁵⁸ I don’t know why adjectives cannot stack on their own, but it seems to me that type mismatches, along lines discussed by Irene Heim in a couple of unpublished handouts, would be a promising direction to explore. In the framework of Heim and Kratzer (1998), adjectives are of the same type as nouns, and their combination is intersective, using Predicate Modification (PM). If PM is indeed available, we would predict stacking to be a general phenomenon, contrary to fact. On the other hand, if Function Application (FA) were the only option for combining two elements, we would predict that two items of the same type could never combine. This would correctly rule out adjective stacking in the absence of an element of a different type down below. If we can further assume that N-movement leaves behind a semantically vacuous trace (or copy), we will predict that N-movement can leave behind one adjective but not more: movement of N from an NP with a single A will result in the bracketing [A t] N, which, if t is vacuous, will let A and N combine directly; with two adjectives, on the other hand, movement will result in the bracketing [A₁ A₂ t] N (ignoring irrelevant bracketings in the leftmost constituent), forcing the adjectives to combine with each other before encountering N, an impossible task if FA is the only semantic mode of combination.



(64) is an attempt to cluster A1 and A2 together on the right. This would allow them to use a single instance of *def* to license both of their occurrences of F_{DEF} . Even if we could find some way to move the adjectives to the relevant positions, the prohibition on nounless adjectival stacking would rule out the structure. We should therefore not be surprised to discover that [*def* N *def* A1 A2] is not a possible order.

- (65) *to vivlio to megalo kokkino
 the book the big red

We have just seen two things that cannot happen with multiple adjectives. Let us now look at some things that can happen. One thing that should be fine is the movement of a single adjective to a postnominal position. As before, this adjective will have an unlicensed F_{DEF} , so it will cause an extra licenser to appear. Either adjective can do that, as shown in (66).

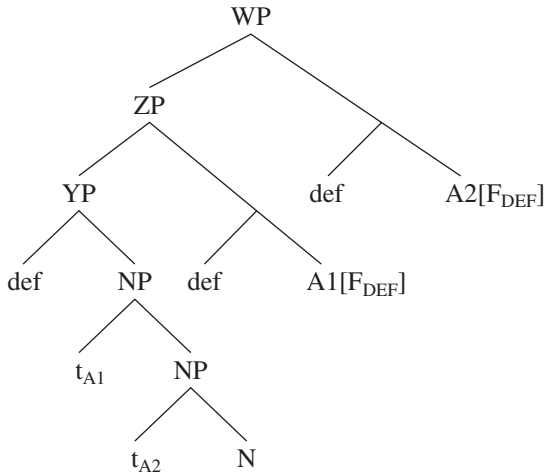


- (67) to kokkino vivlio to megalo
 the red book the big

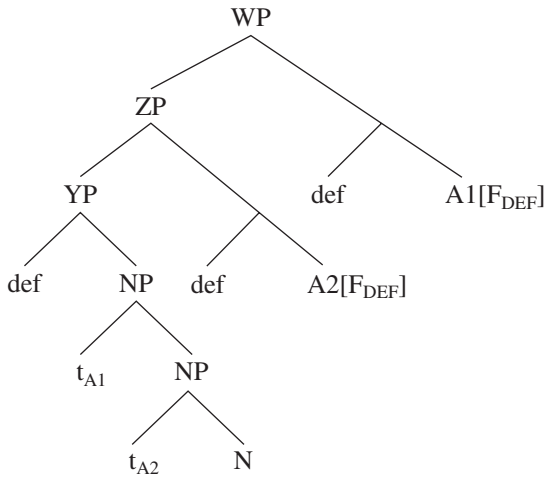
- (68) to megalo vivlio to kokkino
 the big book the red

Or both adjectives can move, one after the other, stacking above N. Either adjective can be the first to move, as shown in (69).⁵⁹

(69) a.



b.

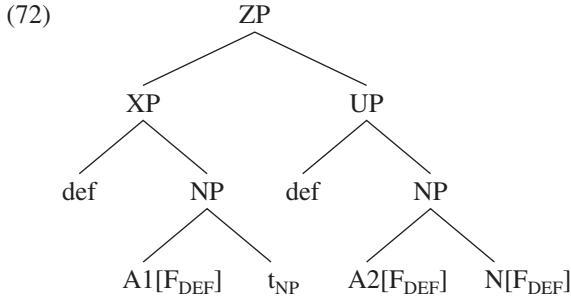


(70) to vivlio to megalo to kokkino
 the book the big the red

(71) to vivlio to kokkino to megalo
 the book the red the big

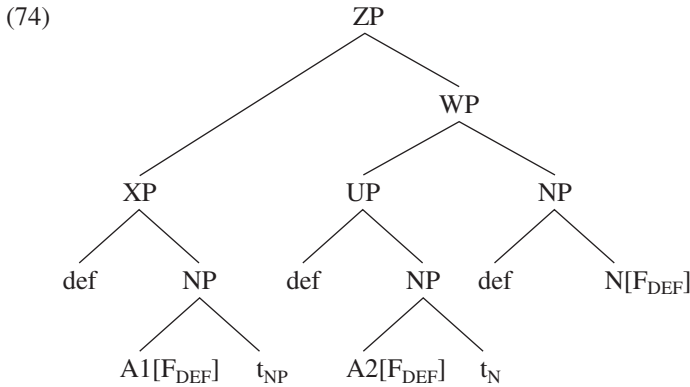
Another thing that can happen, assuming that movement can target intermediate projections, is that the whole A2 + N combination moves, as shown in (72).

⁵⁹ This assumes that the operation that dislocates the adjectives is not subject to intervention effects and does not render the remnant domain opaque.



- (73) to megalo to kokkino vivlio
 the big the red book

Finally, the movement in (72) can be combined with local movement of N above A2 or of A2 above N. As long as N lands below ZP, no adjective stacking will occur, as shown in (74).⁶⁰



- (75) to megalo to kokkino to vivlio
 the big the red the book

- (76) to megalo to vivlio to kokkino
 the big the book the red

In other words, we predict that any number of adjectives can stack above the noun and appear to its left, sharing a single licensor; any other adjective, either pre- or postnominally, will require its own licensor. Schematically, we could write the predicted possibilities as follows:⁶¹

- (77) *Predicted word order possibilities in definite Greek noun phrases*
 (def A)* def A* N (def A)*

⁶⁰ As an *LI* reviewer points out, these word orders could also be derived by moving A2 and N separately.

⁶¹ * is used to mark zero or more occurrences of the preceding element: A* means zero or more occurrences of A, and (def A)* means zero or more occurrences of the sequence def A.

As far as I can see, these predictions capture precisely the patterns described in the literature by Alexiadou and Wilder (1998), Kolliakou (2004), Marinis and Panagiotidis (2007), and others.⁶²

5 Discussion

I have argued that grammar can make use of licensors, elements that are related to semantically contentful heads, but only via features that those heads spread and that require licensing. The distribution of licensors, I argued, is constrained by economy: if a certain number of licensors suffice to license all the features in a structure, any additional licensor will lead to ungrammaticality. The evidence in favor of this theory, which I have called the SRL account, came from mismatches between morphology and semantics, where what looks like the expression of a semantic notion like definiteness appears in places that make a compositional account difficult to maintain. As shown in the article, the SRL proposal offers a uniform account for a variety of such mismatches and their interactions, both within one language and across languages.

I also addressed a familiar concern about morphological theories. Despite the richness of some paradigms, it is often hard to rule out the possibility that the observed patterns are accidental and do not reflect an underlying system. A theory can all too easily describe a system where none exists. To address this problem, I added complexity to the structure of the Danish noun phrases I started with, first by considering various modifiers and their combinations, and then by combining two marking patterns, that of definiteness and that of gender. I used Icelandic to investigate a phrase-structural variation that was not testable in Danish. Finally, I discussed an environment, the Modern Greek DP, in which the predictions of the proposed theory could be tested on increasingly complex structures.

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⁶² Some speaker variation exists. In particular, Sabine Iatridou and Giorgos Spathas, in independent personal communications, reject out of hand any combination of a nontrivial monadic domain with a polydefinite one, in either order. I will not attempt to characterize this variation here.

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