Agreement and definiteness in Germanic DPs[*]

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1 Introduction

1.1 Two patterns in Germanic DPs

Morphological marking patterns in Germanic DPs exhibit properties that have challenged theories of morphosyntax over the years. In this paper, we will look at two patterns that have received attention in the literature. The first is the so-called weak/strong declension. Quite generally in Germanic, the definiteness marker shows case and ϕ-agreement morphology, which we gloss as C (1a, 1c). C does not appear on any modifying adjectives in the definite DP, where the adjectives exhibit an impoverished morphology (weak declension), glossed here as w. In many indefinite forms, however, modifying adjectives bear C (strong declension) rather than w (1b,1d):[1]

(1) The weak/strong declension (German)[2]

    a. da-s   alt-e Bier
        DEF-C(N.Nom/Acc) old-w beer
        'the old beer'

    b. (ein) alte-s   Bier
        (1)   old-C(N.Nom/Acc) beer
        'an old beer'

    c. de-r   alt-e Wein
        DEF-C(M.Nom) old-w wine
        'the old wine'

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[1]The reference to definiteness and indefiniteness in our discussion of the weak/strong declension is meant for ease of presentation only. As a reviewer notes, definiteness does not seem to play any direct role in the weak/strong declension in German, while in the Scandinavian languages it does. In German, the agreement pattern in the presence of the indefinite article (and certain other elements) is usually referred to as the *mixed* declension, while the term strong declension is reserved for the pattern in the absence of an article. For the cases in (1), there is no difference between the adjectival endings in the two declensions.

[2]Where relevant, we add the appropriate agreement information in parentheses following C. In the current examples, *-s* is C for N (= neuter singular) in either the nominative or the accusative, while *-r* is C for M (= masculine singular) in the nominative. The indefinite article will be glossed as 1 throughout.

    d. (ein) alte-r   Wein
      (1)   old-C(M.Nom) wine
    'an old wine'

What is puzzling about the weak/strong declension is not the possibility of agreement marking on a determiner (a common enough phenomenon in natural languages) but the fact that, systematically across the Germanic languages, this occurrence of agreement correlates with the disappearance of the very same agreement markers on the adjectives. To a first approximation, then, the puzzle can be stated as follows:

(2)   Puzzle I (Agreement): In certain noun phrases, every adjective appears with agreement morphology; in other noun phrases, the very same agreement morphology appears on a distinguished element (usually the definite article) but disappears on the adjectives

The second pattern we will look at is specific to the Scandinavian languages. In these languages, there is a post-nominal definiteness marker, which we will gloss here as $-EN$, that exhibits non-trivial distributional behaviour with respect to other elements within the noun phrase. The usual focus of the literature on this marker is the dependencies between this marker and a distinct, pre-nominal marker, dependencies that vary between the different Scandinavian languages. Let us start by looking at the basic pattern in three Scandinavian languages, Danish, Swedish, and Icelandic (3). In all three languages, a bare noun appears with the post-nominal definiteness marker; modification by a prepositional phrase does not affect this, as the (i) examples in (3) show. In the case of adjectival modification, however, the distribution of the definiteness marker varies across the languages, as shown by the (ii) examples in (3). In Danish (3a), adjectival modification correlates with the disappearance of the post-nominal definiteness marker and the appearance of a pre-adjectival one. In Swedish (3b), adjectival modification correlates with the appearance of a pre-adjectival definiteness marker in addition to the post-nominal one, a pattern sometimes referred to as double-definiteness. In Icelandic (3c), adjectival modification seems to make no difference: the definiteness marker remains post-nominal.

(3)   Post-nominal and pre-adjectival definiteness marking in Scandinavian
    a. Danish
        i. hest-en   (med blå pletter)
          horse-EN (with blue spots)
          'the horse (with blue spots)'
        ii. den gamle hest (med blå pletter)
          DEF old   horse (with blue spots)
   'the old horse (with blue spots)'
    b. Swedish
        i. häst-en   (med blå fläckar)
          horse-EN (with blue spots)
          'the horse (with blue spots)'

    ii. den gamla häst-en   (med blå fläckar)
         DEF old   horse-EN (with blue spots)
         'the old horse (with blue spots)'

  c. Icelandic

    i. hest-ur-inn (með bláum blettum)
      horse-EN (with blue   spots)
      'the horse (with blue spots)'

    ii. gamli hest-ur-inn (með bláum blettum)
       old   horse-EN (with blue   spots)
       'the old horse (with blue spots)'

In addition to the variation between the Scandinavian languages with respect to the effect of adjectival modification on definiteness marking, the patterns in (3) are interesting for a more elementary reason. If one assumes that $-EN$ has the semantic import of definiteness, the order $N - EN$ (PP) in all three languages is surprising from the perspective of compositionality. On standard assumptions, both regarding semantic types and regarding the presuppositions associated with definiteness, the noun must combine with the PP first, and the result is the argument that definiteness takes (see Partee (1975); Heim and Kratzer (1998)):

(4) Compositionality within the definite DP: N composes first with PP; D composes with the result

             DP
         ⌒
     D   NP
    -en   ⌒
        N   PP
      hest   ...
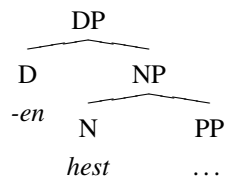
Informally, then, the second puzzle is this:

(5) Puzzle II (Definiteness):

  a. Adjectival modification correlates with a pre-adjectival definiteness marker in Danish and Swedish; in Danish this marker replaces post-nominal $-EN$, while in Swedish it supplements it. In Icelandic $-EN$ appears both with adjectival modification and without it.

  b. In all three languages, the surface morpheme order $N - EN$ PP is at odds with standard assumptions about compositionality.

1.2 Spreaders, realizers, and licensors; and why we ignore licensors here

The general Germanic agreement puzzle in (2) and the Scandinavian definiteness puzzle in (5) both involve the appearance and disappearance of various function elements– markers of ϕ-features, case, and definiteness–within the noun phrase. Traditionally, such elements can be one of two things. They might be independent syntactic heads,

possibly appearing in a dislocated position, and possibly also spreading certain features within an appropriately defined domain; we will call such elements *spreaders* to highlight this possibility. If C is a spreader, for example, it is an independent projection, presumably carrying the semantics of gender, number, etc., and possibly spreading a feature F_C onto elements such as the adjective. And if $-EN$ is a spreader, then it is an independent projection, presumably carrying the semantics of definiteness and possibly spreading a feature F_{DEF} onto elements such as the adjective or the head noun. Alternatively, elements such as C and $-EN$ might be meaningless agreement markers, surfacing according to an appropriate feature-realization mechanism such as the Subset Principle,[3] and possibly realizing various feature combinations on their host; we will call such elements *realizers*. For example, it seems reasonable to analyze the weak inflection w as a realizer.[4] If C is a realizer, it might express F_C, and if $-EN$ is a realizer, it might express F_{DEF}.

Existing accounts of the two patterns that rely on spreaders and realizers face various challenges, as has been pointed out in the literature. As a response, an account has been proposed in Katzir (2011) in which markers such as C and *-EN* are neither spreaders nor realizers but *licensors*, a third kind of function element, semantically vacuous and tied to features such as F_C and F_{DEF} only indirectly, via a requirement that every instance of a F_C and F_{DEF} be licensed (through c-command) by an instance of the appropriate licensor. A single licensor can license multiple instances of F_C or F_{DEF}. Licensors are also subject to a condition of economy: if fewer licensors suffice, more are ungrammatical.

Simplifying somewhat, the licensor-based account works for $-EN$ marking in Danish as follows. N and any instance of A bear F_{DEF} in definite noun phrases; PP does not. Post-nominal $-EN$ suffices for licensing F_{DEF} on an unmodified N, accounting for $N-EN$ (regardless of the presence or absence of PPs, which due to the absence of F_{DEF} are inert with respect to the pattern). Post-nominal $-EN$ is incapable of licensing F_{DEF} on A in Danish, thus necessitating pre-adjectival $d-EN$. From its high attachment position, pre-adjectival $-EN$ licenses F_{DEF} not only on A but also on N, making post-nominal $-EN$ redundant–and therefore impossible, due to economy–in this case. The main difference between Danish and Icelandic, on this view, is that, while in Danish post-nominal $-EN$ does not include adjectives within its licensing domain, in Icelandic it does. Katzir (2011) does not include an account of Swedish or other double-definiteness languages but does note that double-definiteness can be taken to support an account in which the pre-adjectival definiteness marker in these languages does not have the noun within its licensing domain. In non-Scandinavian Germanic languages, the account can posit an absence of post-nominal $-EN$. The distribution of C marking in Danish and Icelandic followed similar lines and was based on stating that $-EN$ and the adjective bear F_C that must be licensed. In Katzir (2011) it

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[3]The Subset Principle (Halle, 1997, p. 128): The Phonological exponent of a vocabulary item is inserted into a morpheme (i.e., the syntactic or morphological head), if the item matches all or a subset of the grammatical features specified in the morpheme. Insertion does not take place if the vocabulary item contains features not present in the morpheme. When several vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the morpheme must be chosen.

[4]This is not the only possibility. See Lohrmann (2010) for a proposal that treats w as a meaningful morpheme.

was argued that the licensor account of C and $-EN$ handles their distribution in Danish and Icelandic better than spreader or realizer accounts and that it extends to offer an account of the phenomenon of polydefiniteness in Greek

Recently, Norris et al. (2013) have provided new data, posing a challenge for licensors: in certain forms, such as vocative and possessive constructions, it is possible (or necessary) for $-EN$, which is treated in Katzir (2011) as a licensor, to be absent. For example, Norris et al. cite the possibility of the following vocative construction in Icelandic that shows the adjective bearing weak inflection despite the absence of an (overt) C that could serve as licensor:

(6) a. góð-a frú
        good-w married.woman
        'Dear Mrs. X' (letter opening)

For a licensor-based account, this seems to call for acknowledging null licensors, a process of licensor deletion, or some similarly unappealing option in order to account for the absence of an (overt) C within the noun phrase that could license the relevant F_C on the adjective. Before investigating such moves and their consequences, we believe that a productive response to Norris et al.'s data would be to take another look at the more traditional spreader and realizer accounts and examine the logical moves available to them if they are to handle the problems noted in the literature without an additional mechanism such as licensors. This paper attempts to do that.

We start by considering both spreader and realizer accounts of the weak/strong declension but find no straightforward way to account for the data using either mechanism. Moving on to the distribution of $-EN$ in Danish, we will conclude that realizer accounts are incapable of handling the facts but that spreaders might be able to fare better. We will further see that both the spreader and realizer approaches face challenges in accounting for definiteness marking in Icelandic and Swedish as well as definiteness spreading in Greek. Our conclusion will be that, in the absence of sufficient accounts of the data that can unify these phenomena using spreaders and/or realizers alone, some further mechanism–whether it be licensors or otherwise–should still be considered.

2   The weak/strong declension: two licensor-free accounts

We saw that in the weak/strong declension, the agreement morphology that appears on the adjective in indefinite noun phrases disappears in that position in definite noun phrases but appears on the definite marker. The following, the Danish counterpart of (1) above, illustrates:[5]

(7)   The weak/strong declension (Danish)

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[5]In Katzir (2011) the N forms *det* and *et* are analyzed as *den-t* and *en-t*, respectively. For the present discussion this analysis is not directly relevant: what matters is the acceptance that in Danish, *-t* is C(N) while CG is not overtly marked. The lack of overt marking of C on the definite marker in (7c) and on the indefinite article and the adjective in (7d) can be taken to show that the C for CG in Danish is null, as suggested by the glosses used here. Alternatively, it can be taken as an argument that Danish uses C for N but not for CG. We will not attempt to choose between the two positions in this paper.

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   a. de-t   stor-e hus
      def-C(N) big-w house
      'the big house'

   b. e-t   stor-t   hus
      1-C(N) big-C(N) house
      'a big house'

   c. den-∅   stor-e hest
      def-C(CG) big-w horse
      'the big house' (CG)

   d. en-∅   stor-∅   hest
      1-C(CG) big-C(CG) horse
      'a big horse' (CG)

The primary puzzle, which we schematized in (2) above, is to account for the distribution of this agreement morphology. Schematically, the pattern is the following:[6]

(8)   a. (1) A-C N
      b. DEF-C A-w N

As mentioned in the introduction, an additional generalization regarding the weak/strong declension is that, quite systematically across Germanic, w tends to make fewer distinctions than C. Accounts of the weak/strong declension thus face the additional challenge of capturing the relative impoverishment of w.

In both German and Danish, the difference between the two genders in the examples is clearly expressed by C (*-s* for NT and *-r* for M in German; *-t* for N and ∅ for CG in Danish). But in both languages, the distinction is not expressed by w (in both languages, it is *-e* for both genders). How discriminative w is varies across the Germanic languages. In some, such as Danish, w seems to be a straightforward 'elsewhere' marker, while in others, such as Icelandic, w still marks quite a few distinctions. But in all cases, w is significantly less discriminative than C, and one would expect an account to provide a handle on this fact.
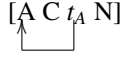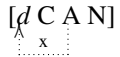
2.1 A spreader account of C

On a spreader account of C, the main puzzle of the weak/strong inflection is taken head-on: the morphological markers on the definite article in definite noun phrases and on the adjectives in indefinite noun phrases are identical because they are the same syntactic object. The different positions in which C surfaces are, on such an account, typically taken to be the result of movement. The w forms are then realizers for the appropriate feature combinations, surfacing only when C is not attached to the adjective.

The main challenge for a spreader account of C is finding an appropriate structure and movement mechanism that will derive the pattern. In its simplest form, which is close in spirit to the early transformational account of Milner and Milner (1972), C is

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[6]The availability of an indefinite marker varies, as does the marking on it when it is present. We mark it here in parentheses as 1 in the position where it appears when it does, but we will have nothing more to say about it in this paper.

always part of the noun phrase. The adjective, when present, attempts to move to a position to which C attaches, but this movement is blocked if the relevant position is already occupied either by d (occurring in definite noun phrases) or by certain other elements. The two configurations are schematized in (9) and illustrted for German in (10).

(9)   a.   [$_A$ C t_A N]

       b.   [$_d$ C A N]

(10) a.   schön-em   Tisch
            beautiful-C(M/N.DAT) table
            'beautiful table' (M)

       b.   d-em   / ein-em   (schön-en) Tisch
            def-C(M/N.DAT) / 1-C(M/N.DAT) (beautiful-w) table
            'the/a (beautiful) table' (M)

As noted by Leu (2008, 2009), the idea that C is always part of the noun phrase runs into a problem with respect to indefinite noun phrases in (Standard) German and both definite and indefinite noun phrases in Swiss German. In these languages, there seems to be a correlation between the appearance of C and adjectival modification. In (Standard) German, indefinite noun phrases (in the masculine singular nominative and the neuter singular nominative or accusative) with adjectival modification show evidence of C, but ones without adjectival modification do not:

(11) a.   ein (schön-er)   Tisch
            1 (beautiful-C(M.NOM)) table
            'a (beautiful) table' (M)

       b.   ein (schön-es) Haus
            1 (beautiful-C(N.NOM/ACC)) house
   'a (beautiful) house' (N)

In the definite (and in the indefinite outside the masculine singular nominative and the neuter singular nominative and accusative), no similar dependence of C on adjectival modification suggests itself in Standard German: exactly one instance of C appears, on the definite article, regardless of whether the noun is modified by an adjective or not. In this, Standard German behaves like most other Germanic languages. As Leu points out, however, Swiss German does show a dependence between C and adjectival modification in definite noun phrases: when the noun is unmodified, as in (12a), C is absent; when the noun is modified by an adjective, as in (12b), C appears.[7]

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[7]In addition, Leu notes that indefinites in Swiss German behave like those in Standard German in showing a dependence between C and adjectival modification. In (i), for example, C appears only in case the noun is modified by the adjective.

i.   ä (rot-i) rosä
    1 (red-C) rose
    'a (red) rose' (F)

(12) a. d rosä
DEF rose
'the rose' (F)

b. d-i rot rosä
DEF-C red rose
'the red rose' (F)

If, as in (9), the instance of *C* is present in the structure independently of the adjective, both (11) and (12) are surprising: in both cases, we would incorrectly expect *C* (*-er/-es* in (11) and *-i* in (12)) to surface regardless of whether the adjective is present. In response to this challenge, Leu proposes that *C* is part of a constituent specific to adjectival modification, call it *XP*, in which the adjective, *C*, and occasionally *d* occur to the exclusion of the noun. The following is a schematized version of Leu's proposed structure:[8]

(13)
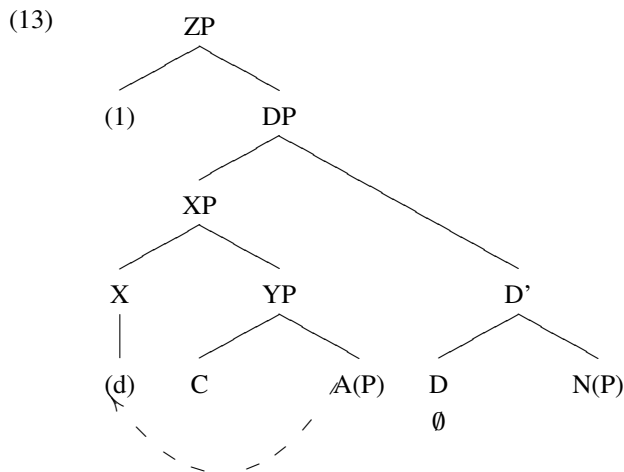
In (13), *X* is occupied by *d* if the noun phrase is definite and by the moved adjective if it is not. The strong ending *C* attaches to whatever is in *X*, accounting for the agreement puzzle. Meanwhile, keeping the interaction in a constituent that excludes both *D* and *N(P)* provides a handle on the absence of *C* in the absence of adjectival modification in German (11) and in Swiss German (12). Moreover, the availability of *X* and *D* as two distinct positions offers an interesting perspective on the phenomenon of double-definiteness in Swedish, Norwegian, and Faroese, a phenomenon we will briefly discuss in section 4.2, and on a possibly related phenomenon of multiple occurrences of definiteness markers in Greek, which we will briefly discuss in section 4.3.

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[8]The tree in (13) differs from Leu's actual structures in certain respects. In particular, Leu assumes that what we have listed as *XP* is a clausal structure, and that the noun raises from within it, followed by remnant movement of that structure. As far as we can tell, this assumption is not directly relevant to our discussion below, and so we do not incorporate it into the tree structure, hoping that this will simplify the presentation. We have also collapsed the structure for the definite and the indefinite noun phrase onto one structure in order to show all the different positions within the noun phrase at a glance.

While appealing for the reasons just mentioned, Leu's movement account faces several nontrivial challenges, of which we wish to highlight three. First, the account requires that certain co-occurrence restrictions are enforced. For example, it is crucial for the account to ensure that D become silent exactly when $X(P)$ is present (and X is occupied with d). Similarly, $X = d$ has to be prevented from co-occurring with the indefinite 1. A second challenge is accounting for what looks like the appearance of C on elements other than d or A. In particular, the full morphological identity between D in unmodified noun phrases and d in modified noun phrases (using the labels in (13)) in all Germanic languages outside of Swiss German remains puzzling. Similarly, the structure in (13) makes it hard to account for what looks like C marking on 1 in Danish (discussed in Katzir (2011)). Finally, the success of the account in capturing the cases in which C and adjectival modification correlate comes at the expense of its ability to handle the more common case (both within German and across the Germanic languages) in which they do not. C appears regardless of whether an adjective is present. For example, the definite forms in (1) above show C that does not depend on whether an adjective is present: *da-s (alte) Bier* 'def-C (old) beer' (N.Nom/Acc), and *de-r (alte) Wein* 'def-C (old) wine' (M.Nom). Similarly, the dative (10) is no longer accounted for under the analysis schematized in (13).[9] And even in those configurations of case, gender, and number in which (13) correctly captures the contrast in German between the absence of C in the absence of adjectival modification and its presence when a single adjective is present, cases with more than one adjective remain puzzling. In such cases, as schematized in (14) and shown in (15), each adjective receives its C in the strong declension (14a,15a) but there is still only one instance of C, on the definiteness marker, in the weak declension, while the adjectives all surface with w (14b15b). It is not clear what kind of structure and movement might handle such configurations.

(14)   a. (1) A-C A-C N

          b. Def-C A-w A-w N

(15)   a. (ein) gut-er   alt-er   Wein
              (1)   good-C(M.Nom) old-C(M.Nom) wine
              '(a) good old wine'

          b. de-r   gut-e alt-e Wein
              Def-C(M.Nom) good-w old-w wine
              'the good old wine'

2.2 A realizer account

Many of the proposals in the literature treat C not as an independent syntactic head but rather as a realizer, akin to w, that expresses various feature combinations. This means that, differently from a spreader account of C, a realizer account of C treats w

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[9]For oblique case marking in German (including the dative and the genitive), Leu (2008) proposes to analyze what we have been referring to as C as a different morpho-syntactic kind of element from other strong inflection markers (such as those for the nominative and accusative). Specifically, he analyzes oblique case markers as possessive clitics. This is done in order to account for a pattern of syncretism among oblique case markers. As far as we can tell, this treatment of oblique case markers does not derive the identity of the form of such markers on d/D regardless of whether adjectival modification is present.

and *C* as the same kind of grammatical object: both are morphological realizations of feature combinations on the adjective (and sometimes on −*EN*). The particular combinations that are chosen, along with the mechanism that matches realizers to feature combinations, must ensure the appearance on the adjective of *w* in the definite and of *C* in the indefinite. The challenge is to find the appropriate feature specifications and feature-realization mechanisms.

Let us start with the relatively simple *C* and *w* forms in Danish:

(16)   a. en-∅   stor-∅   hest
              1-C(CG) big-C(CG) horse
              'a big horse' (CG)

          b. e-t   stor-t   hus
              1-C(N) big-C(N) house
              'a big house' (N)

          c. den-∅   stor-e hest
              DEF-C(CG) big-w horse
              'the big horse' (CG)

          d. de-t   stor-e hus
              DEF-C(N) big-w house
              'the big house' (N)

          e. stor-e heste/huse
              big-w horse.PL/house.PL
              'big horses/houses' (Pl)

          f. de stor-e heste/huse
              DEF big-w horse.PL/house.PL
              'the big horses/houses' (Pl)

On a simplistic view, the paradigm of endings that can appear on determiners and adjectives is handled as a list that includes a fair amount of homophony:

(17)

SG	-def	+def	PL	-def	+def
-neut	-∅	-e	-neut	-e	-e
+neut	-t	-e	+neut	-e	-e

This is unappealing: the *w* form, *-e*, appears to be an 'elsewhere' realization–in fact, the weak forms include an 'elsewhere' form across Germanic–and one might expect an account of Danish to capture this behavior. Not surprisingly, most realizer accounts of *C* attempt to provide a principled derivation of this 'elsewhere' behavior. One attempt to do so, articulated by Börjars and Donohue (2000) and adopted by Norris et al. (2013), is the following:

(18)   a. -t: [N, sg., -def]

          b. ∅: [cg., sg., -def]

          c. -e: elsewhere

According to the entries in (18), the marking of indefinite singular neuter elements is *-t*, that of the corresponding CG elements is null, and *-e* serves as an elsewhere element. This compactly captures the paradigm in (17), and it does so while maintaining the correct markedness relation between *-t* and $\emptyset$ on the one hand and *-e* on the other.

We wish to point out two concerns with the view expressed in (18). First, it relies crucially on the marking of indefiniteness rather than of definiteness. This assumption, in turn, makes the appearance of the strong inflection marker *C* on the definite marker $-EN$, such as the appearance of *-t* on $-EN$ in the Danish example (16d), rather surprising: across Germanic, one would need to assume that the definiteness marker $-EN$ must be marked as indefinite.

A second concern comes from two complex patterns of *C* marking in German: the dative singular masculine and neuter, discussed by Schlenker (1999); and the genitive singular masculine and neuter, as discussed by Sternefeld (2004). We start from the former. The strong *C* marker for this combination of features is *-m*, and the weak marker is *-n*. Differently from other languages and feature combinations, it is possible to have the strong *-m* only on the leftmost adjective–more accurately, the leftmost declinable adjective: some adjectives, like *prima* 'excellent' bear neither the strong nor the weak ending–and the weak *-n* on all subsequent (declinable) adjectives:[10]

(19) a. mit gut-em/*-en roten Wein
          with good-C/*w   red-w wine
          'with good red wine'

      b. mit prima   rot-em/*-en Wein
          with excellent(indecl.) red-C/*w   wine
          'with excellent red wine'

For the realizer approach to *C* expressed in (18), Schlenker's challenge is particularly hard to capture: the noun phrases in (19) are indefinite–in fact, there is no reason to expect any featural difference between the adjective *rot* 'red' in (19a) and in (19b)– and the prediction of (18) seems to be that the same strong marker would appear on it in both cases. That this does not happen seems, on the realizer account of *C*, to be surprising.

Turning to the genitive pattern, let us start from two well-known facts. First, while the feminine exhibits the usual distinction between weak and strong declension (its *w* is the usual *-n* and its *C* is *-er*), there is no *C* form for adjectives in the masculine or neuter. Second, most masculine and all neuter nouns appear in the genitive with a final *-s*, which can be thought of as an instance of *C*. For the minority of masculine nouns, final *-s* is not possible; instead, they appear in the genitive with a final *-(e)n*, which can be thought of as an instance of *w*.

(20) a. (de-s/manch-es/manch) gut-en Wein-(e)s
          DEF-C/many-C/many   gut-w win-C
          'of (the/many) good wine(s)'

      b. de-s/manch-es/*manch gut-en Student-en
          *(DEF-C)   gut-w student-w

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[10]For some speakers, it is also possible to have *-m* on all modifying adjectives.

'of the/many good student(s)'

As mentioned, the only possibility for a modifying adjective in the genitive masculine or neuter is to bear *w*, and the same is true for a subset of masculine nouns. Whether the result will be grammatical depends on other elements within the DP. If a *C*-bearing element such as *de-s* 'the' or *manch-es* 'many' appears, the result is grammatical. Otherwise, as in the case of *manch* 'many' (in its *C*-less version), everything depends on the noun: if the noun bears *C*, as in *Wein-es* 'wine', the result is grammatical; if not, as in *Student-en* 'student', it is not. Crucially, the pattern revolves not around definiteness but rather around what seems like a peculiarity of German nouns, namely the difference between those that bear *C* in the Genitive and those that, like adjectives, bear *w*. Why *w*-bearing nouns require a *C*-bearing element such as *de-s* 'the' or *manch-es* 'many', while *C*-bearing nouns can also do without such an element remains, on the realizer account, quite puzzling.

2.3 A brief comparison

We examined two licensor-free approaches to the weak/strong paradigm in Germanic: one in which *C* is a spreader and one in which it is a realizer. Both fall short. The treatment of *C* as spreader provides a handle on its identity in its two main positions, on the definiteness marker and on *A*, but finding an appropriate mechanism to account for its distribution–presumably some kind of movement–proved elusive. In particular, the strong declension suggests for a spreader account that each adjective brings along its own instance of *C*, while the weak declension shows exactly one such instance, regardless of whether there is one adjective, more than one, or none at all. Meanwhile, a realizer account of *C* seems to be committed either to massive homophony or to systematically treating the definiteness morpheme as marked for indefiniteness across Germanic. Moreover, both possibilities within the realizer account face the challenge of explaining Schlenker (1999)'s dative puzzle and Sternefeld (2004)'s genitive puzzle. At this point, then, it seems that finding an account of the weak/strong declension in which *C* is a spreader or a realizer remains an open problem.

3 Two licensor-free accounts for Danish $-EN$

3.1 A spreader account of $-EN$

On a spreader account of $-EN$, the main burden of accounting for the marking patterns in (3) above falls on the specifics of a movement process. For the Danish case, the movement mechanism should deliver the following pattern:

(21) Reminder: the basic pattern of $-EN$ for Danish

    a. N-en (PP)

    b. d-en A N (PP)

Across several spreader accounts of $-EN$ in Scandinavian languages (see Taraldsen (1991), Delsing (1993), Kester (1993), and Embick and Noyer (2001), among others),

the account is as follows.[11] $-EN$ originates in D, and N, which originates further down within the NP, attempts to move up to D.[12] When it succeeds, it surfaces with $-EN$ as an ending, as in (21a), the result of the adjunction of N to D. When N fails to raise, it appears without $-EN$; in that case, $-EN$ surfaces with an anchor d, as in (21b), yielding the surface form $d - EN \ldots N$. Adjectives block the raising of N to D, thus explaining why we find the form $d - EN \ A \ N$. PPs, on the other hand, do not block this kind of movement, explaining why they are inert with respect to the distributional pattern. The structures (with PPs omitted for simplicity) are schematized below.

(22) a. Unmodified N raises to D
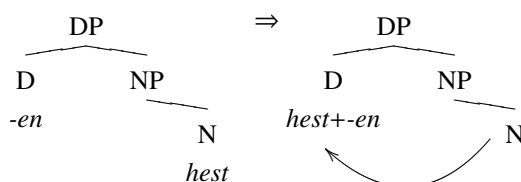
b. Intervening adjective blocks raising
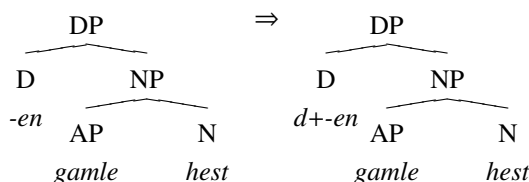
In order to make the account appealing, it must be shown that the blocking mechanism is plausible. One natural idea, discussed by Kester (1993), is to use the Head-Movement Constraint (HMC; Travis, 1984): if the adjective is a head intervening between D and N, the HMC will prevent N from skiping it on its way up to D. As pointed out by Hankamer and Mikkelsen (2005) and Roehrs (2006), however, this is problematic: A is probably AP (that is, a phrase rather than a head), which makes it irrelevant for the HMC, or at least no more relevant than the (post-nominal) adjunct PP, which is inert with respect to the phenomenon. Worse, Hankamer and Mikkelsen point out that restrictive relative clauses (RRCs), which are clearly phrasal, can act similarly to adjectives:

(23) (Examples from Hankamer and Mikkelsen, 2005:108)

a. hest-en   som vandt løb-et
    horse-DEF that won   race-DEF
    'the horse, which won the race' (*non-restrictive, all speakers*)
    'the horse that won the race' (*restrictive, some speakers*)

---

[11]In some cases, the accounts are proposed for languages other than Danish. In particular, Taraldsen (1991)'s N-to-D movement account is proposed for Norwegian. As far as we can tell, however, the application to Danish, which is our focus in this section, is fairly straightforward.

[12]N-to-D raising, on which we focus here, has been a common choice for spreader accounts of $-EN$ in the literature, but other movement processes, such as phrasal roll-up Vangsnes (2004), D-raising (Roehrs, 2006), and post-syntactic D-to-N movement (Embick and Marantz, 2008), have been considered as well.

b. den hest som vandt løb-et
   DEF horse that won race-DEF
   'the horse that won the race' (*restrictive only*)

We believe that a spreader account of $-EN$ can be made to to address Hankamer and Mikkelsen's RRC challenge. Let us sketch one possibility, which, following Roehrs (2006), relies on a feature-based mechanism and on Chomsky (2000)'s notion of defective intervention. As in several other spreader accounts (though not that developed by Roehrs 2006), N attempts to move up to D, which we implement as D_{DEF} attempting to attract $N[F_{DEF}]$; when $N[F_{DEF}]$ manages to move up, it adjoins to D and surfaces with *-en*. And as in most other accounts, adjectival intervention blocks this kind of movement.[13] Differently from HMC-based accounts, what makes the adjective block movement in the present sketch is not the hierarchical configuration on its own but rather a form of defective intervention. Like N, A bears F_{DEF} (spread from D_{DEF}) in definite noun phrases. This makes $A[F_{DEF}]$ a closer goal for D_{DEF}, but it is a defective goal: it cannot move to D. Consequently, in the presence of adjectives, no N-to-D movement occurs. Of the other elements within the DP, we would claim that the relative pronoun (in RRCs) bear F_{DEF}, explaining why they block N-to-D movement, while P does not.

3.2   A realizer account of $-EN$

On a realizer account there is no direct connection between *-en* and the pre-adjectival *den*. In fact, the account attempts to derive the distributional pattern from the grammatical distinctness of the two markers. One idea, proposed by Börjars and Donohue (2000) and adopted by Hankamer and Mikkelsen (2002), is that *-en* is lexical, attaching to the word that is the noun, when that is all there is to the noun phrase, while *den* is phrasal, attaching to the entire noun phrase in case it is too big to count as one word. Adjectives and RRCs behave as expected from this perspective: both make the noun phrase too big to fit into a single word, so *den* is the only option. The behaviour of PPs, on the other hand, is surprising: the result of modifying a noun with a PP (or of adding a PP complement) seems no more word-like than the result of modifying a noun with an adjective, and yet a noun phrase with a PP appears with *-en* and not *den* (in the absence of other modifiers). Hankamer and Mikkelsen (2002) handle the case of complement PPs via various stipulations about the percolation of PP selection from the noun to the entire DP, but this does not suffice to account for adjunct PPs. In order to accommodate adjunct PPs, Hankamer and Mikkelsen (2005) develop an alternative (stated in terms of DM; Halle and Marantz, 1993) on which all PPs in Danish–both adjunct and complement–attach so high that they do not really belong within the noun phrase. However, the position of the PP between the noun and the RRC in (25) makes this proposal look unappealing:

(24)   -en N PP RRC

(25)   den gris med blå pletter som vi fik af   nabo-en
       DEF pig with blue spots   that we got from neighbor-DEF

---

[13]We assume that $A(P)$ asymmetrically c-commands $N[F_{DEF}]$.

'the pig with blue spots that we got from the neighbor' (Hankamer and Mikkelsen, 2005:112)

In order to save the realizer approach to $-EN$ in the face of examples such as (25), Hankamer and Mikkelsen suggest that such forms are the result of raising of indefinite [*NP PP*] from within the relative clause (on the raising analysis, Schachter (1973); Vergnaud (1974); Kayne (1994); Bianchi (2000); motivation for Scandinavian comes from Åfarli (1994)), combined with various assumptions about the definiteness and the phonological content of the elements participating in this construction.

Raising [*NP PP*] from within the RRC faces nontrivial challenges. For example, when an adjective modifies the noun in such cases, it appears with *definite* morphology, rather than with the indefinite morphology required by this particular raising analysis.

(26) a. * det/den   gammelt glas med blå pletter som vi fik af
DEF-C(N)/∅ old-C(N) glass with blue spots that we got from
nabo-en
neighbor-DEF

b. det   gamle glas med blå pletter som vi fik af   nabo-en
DEF-C(N) old-w glass with blue spots that we got from neighbor-DEF
'the old glass with blue spots that we got from the neighbor'

Moreover, as pointed out in Katzir (2011), *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:

(27) 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'

We are not aware of proposals to address these challenges.

3.3 A brief comparison

We examined two licensor-free accounts of $-EN$ in Danish: a spreader account and a realizer account. We noted that the spreader account faces well-known obstacles. We suggested, however, that these obstacles can be overcome by the use of defective intervention: N-to-D movement is feature-based, conditioned on the presence of F_{DEF} on N; adjectives (and relative pronouns) also receive F_{DEF} but cannot move to D. The realizer approach also faces various obstacles, as we saw, especially when one takes into account the pattern of interaction with PPs and RRCs. Differently from the spreader account, we can see no straightforward way to make the realizer account work.

Let us now turn to the more general challenge of accounting for the distribution of $-EN$ across the Scandinavian languages. We start, in section 4.1, by considering the distribution of $-EN$ in Icelandic. We will then discuss the double-definiteness pattern of Swedish, Norwegian, and Faroese. Finally, we will briefly discuss the phenomenon

of definiteness marking in Greek, which has sometimes been taken to rely on the same mechanisms as those that derive the Scandinavian patterns.

4 Some additional challenges

4.1 Icelandic

In Icelandic, the post-nominal $-EN$ in the definite remains in place even with adjectival modification. This is schematized in (28b) and illustrated in (29b), both showed along with their indefinite counterpart in the (a) example for completeness.[14]
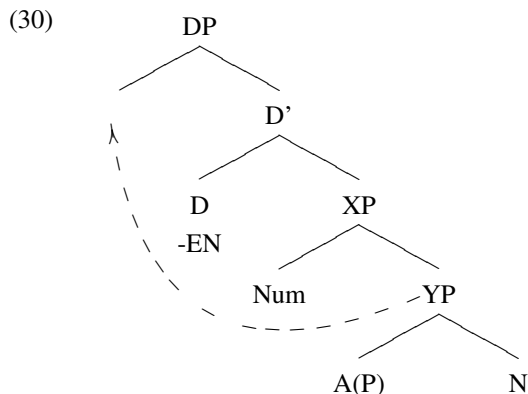
(28)   a.   Indefinite: $[Adj - C] \dots [Adj - C] [N] (PP)$

      b.   Definite: $[Adj - w] \dots [Adj - w] [N - EN - C] (PP)$

(29)   a.   feit-ur gul-ur   hestur (með blettum)
           fat-C   yellow-C horse (with spots)
           'a fat yellow horse (with spots)' (M.Nom.)

      b.   feit-i gul-i   hestur-in-n (með blettum)
           fat-w yellow-w horse-DEF-C (with spots)
           'the fat yellow horse (with spots)' (M.Nom.)

If Icelandic $-EN$ is a spreader, accounting for its position is a challenge. Its morphophonological appearance as a nominal suffix, regardless of whether the noun is modified, suggests that it forms a constituent with the noun to the exclusion of all adjectives and PPs within the noun phrase. As mentioned above, standard assumptions about compositionality militate against having the semantics of definiteness contributed in such a position: the noun is expected to combine first with its modifying adjectives and PPs, and it is the result of this composition that serves as the argument of definiteness. Earlier we considered a solution of the superficially similar compositionality puzzle in Danish using N-to-D movement. In the present case, however, N-to-D movement is not helpful, since it would give rise to the ungrammatical word order $* N - EN \ A \ \dots \ A \ (PP)$. To obtain the observed word order, N must move not on its own but rather together with any modifying adjectives present. That is, movement must be of a $[A \ \dots \ A \ N]$ constituent.[15] Such a constituent is presumably too big to land in D. A more plausible landing site for it would be [Spec, D]. This is not an innocent assumption (for example, it raises the question of how $-EN$ ends up surfacing as an affix on N); however, as argued by Sigurðsson (1993) and Vangsnes (2004), it is an assumption that receives support from other word-order facts of Icelandic. For example, the $[A \ N]$ complex 'famous books' appears after a numeral such as 'four' in (31a) and in (31b), which do not involve $-EN$; in (31c), which does involve $-EN$, the

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[14]Nominal morphology in Icelandic involves further case and ϕ-marking immediately following the noun. For example, *hestur* 'horse' in (29) can be further decomposed *hest-ur*, where *-ur* (or perhaps more plausibly *-r*, with an epenthetic *u*) is a marker of nominative masculine singular (see Orešnik, 1972). As far as we can tell, this additional decomposition is not directly relevant to the present discussion, and we omit it here to simplify the presentation.

[15]Any PPs would have to be outside of this constituent, perhaps through an earlier operation of PP-extraposition.

same [*A N*] complex appears immediately before −*EN* and before rather than after the numeral. This word order pattern can be explained if the [*A N*] complex moves from its original position below the numeral to [Spec, D], where −*EN* is identified with *D*.

(30)

```
                        DP
                       /  \
                      /    D'
                     λ    /  \
                    ||   /    \
                    ||  D      XP
                    ||  -EN   /  \
                    ||       /    \
                     \     Num    YP
                      \         /  \
                       `------·    \
                             A(P)   N
```

(31) a. Þessar fjórar [frægu   bækur] mínar
          these   four   [famous books] my
          'these four famous books of mine'

      b. fjórar [frægar bækur]
          four   [famous books]
          'four famous books'

      c. [frægu   bækur]-nar mínar fjórar
          [famous books]-EN   my   four
          'my four famous books'

A realizer account of Icelandic −*EN* superficially seems simpler than a spreader account, at least as far as compositionality is concerned. If Icelandic −*EN* is not a spreader but a realizer, its post-*N* position no longer raises a puzzle for semantic interpretation: one could assume a high position for a silent *D* and maintain that −*EN* simply realizes F_{DEF} spread by this silent *D* onto *N*.

While simpler in terms of the basic compositionality puzzle, it is not clear that the realizer account provides any overall savings. The word-order facts in (31) would still require an account, and if an account along the lines of Sigurðsson (1993) or Vangsnes (2004) is on the right track, the position of *D* with respect to *A*, *N*, and *PP* will be derived as a by-product of a general account of the order of the elements within the noun phrase; this, in turn, erases the advantages with respect to compositionality of not identifying −*EN* with *D* (though accounting for the affixation of −*EN* onto *N* may well remain difficult). Moreover, as has often been noted, Icelandic does have a Danish-like prenominal definite article. When it appears (subject to various semantic and stylistic considerations that we will not attempt to characterize), the post-nominal marker disappears:

(32) a. * hinn góði hestur-in-n
             DEF   good horse-EN

b. hinn góði hestur
    DEF good horse
    'the good horse'

Accounting for this non-local dependency–that is, explaining why the post-nominal instance of $-EN$ disappears exactly when a pre-nominal definiteness marker is present–raises the same problem for the realizer account that we saw in Danish.

4.2 Double definiteness

In Swedish, Norwegian, and Faroese, the pattern of definiteness marking is similar to Danish in many respects but different in one crucial point: the prenominal marker can (and usually does) co-occur with the post-nominal one. Let us recall the Swedish example (3b), repeated here:

(33) Swedish
      a. häst-en   (med blå fläckar)
         horse-EN (with blue spots)
         'the horse (with blue spots)'
      b. den gamla häst-en   (med blå fläckar)
         the old   horse-EN (with blue spots)
         'the old horse (with blue spots)'

For a spreader account of $-EN$, double definiteness seems surprising: such an account uses movement to predict that what looks like the same morpheme can appear sometimes before the noun and sometimes after it, but never in both positions simultaneously. For Danish, this was what we wanted. For double-definiteness languages, on the other hand, this seems wrong.

A natural move for a spreader account, and one that is made by Embick and Noyer (2001), is to say that only the pre-nominal instance of definiteness is a spreader and that the post-nominal one is a realizer (expressing F_{DEF} on N). Swedish, on this view, is Danish in which F_{DEF} is always realized on N and in which D is lexicalized (with *den*) exactly when N does not move into it.[16] Other than that, the two languages are the same.

If the pre-adjectival and the post-nominal definiteness markers in double-definiteness languages are indeed distinct (the former being a spreader and the latter a realizer), it would not be surprising if in certain cases the two markers had different forms. In fact, this seems to be the case, as the following example from Faroese shows:

(34) tí góða barninum
      the good boy-DEF.DAT
      'the good boy' (Faroese)

Note that the expectation of spreader accounts that pre-adjectival and post-nominal forms might differ does not extend to single-definiteness languages such as Danish

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[16]Recall that in Danish, spreader accounts of $-EN$ maintained that F_{DEF} is not realized on N and that $-EN$ is always present in D.

and Icelandic (though it does for realizer accounts, since those tend to treat the pre-adjectival and the post-nominal forms as two different kinds of realizer quite generally, as discussed in section 3.2 above). As far as we can tell, identity of the two definiteness markers in Danish and Icelandic indeed holds.[17]

The analysis of post-nominal $-EN$ as agreement (that is, as a realizer) runs into difficulties once single-definiteness forms in double-definiteness languages are considered. As discussed by Delsing (1993, pp. 116ff.) and Julien (2002, pp. 280–283), among others, single-definiteness forms are sometimes possible in double-definiteness languages, even in the presence of adjectival modification. Significantly, the conditions under which the pre-adjectival form alone or the post-nominal form alone can appear depend on semantic and pragmatic factors. This has led to the development of proposals, such as Vangsnes (1999), Julien (2002) and Lohrmann (2010), that attribute different semantic denotations to the two forms. Taken at face value, the observation that the post-nominal form correlates with particular meanings clashes with the idea that this marker is a meaningless realizer. We are not aware of attempts to address this matter within such hybrid accounts (in which the pre-adjectival marker is a spreader and the post-nominal one a realizer), but we note that, in principle at least, it is possible that the relevant semantic contribution is made by a spreader higher in the structure and that the post-nominal form is a realizer.

For realizer accounts of $-EN$, the basic pattern of double-definiteness, as in the Swedish example in (33) above, might seem to be easier to explain than the Danish pattern of single-definiteness: F_{DEF} is always realized on N, and in addition it is realized phrasally on D whenever the noun phrase is big enough (in particular, when it is big enough to include adjectival modification). This ease, however, is only apparent. As we saw in section 3.2, attempts to treat the pre-adjectival definiteness marker in Danish as a phrasal realizer, appearing only when the structure is big enough in the relevant sense, have so far been unsuccessful. If we try to treat the pre-adjectival definiteness marker in double-definiteness languages as a phrasal realizer, we will run into the very same problems.

4.3 Greek

Modern Greek allows the configuration, familiar from non-Scandinavian Germanic, in which a definiteness marker is followed by any number of adjectives, which in turn are followed by the head noun:

(35) to   (megalo) (kokkino) vivlio
      def (big)   (red)   book
      'the (big) (red) book'

Differently from Germanic, it is also possible for one or more of the adjectives to appear after the head noun. In this case, however, each of the post-nominal adjectives must appear with its own instance of definiteness marking. And it is also possible for

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[17]A potential counterexample is the marking of plural definiteness in Danish, where the pre-adjectival form is *de* and the post-nominal form is *-ne*. As noted in Katzir (2011), however, Danish phonology makes it quite possible that the pre-adjectival *de* is underlyingly *d-ne*.

the adjectives to appear, each with its own definiteness marker, on the left end of the noun phrase. The possibilities are schematized in (36) and illustrated in (37).

(36) Word order possibilities in definite Greek noun phrases:[18]
      (*Def A*)∗ *Def A*∗ *N* (*Def A*)∗

(37) a. to megalo kokkino vivlio
          the big   red   book
          'the big red book'

      b. to vivlio to megalo to kokkino
          the book   the big   the red

      c. to vivlio to kokkino to megalo
          the book   the red   the big

      d. to megalo to kokkino vivlio
          the big   the red   book

      e. to megalo to kokkino to vivlio
          the big   the red   the book

      f. to megalo to vivlio to kokkino
          the big   the book the red

The occurrence of multiple instances of definiteness marking, sometimes referred to as determiner spreading and sometimes as polydefiniteness, has been the topic of considerable attention in the literature. See Androutsopoulou (1994), Alexiadou and Wilder (1998), Kolliakou (2004), Lekakou and Szendrői (2007), Marinis and Panagiotidis (2007), Ioannidou and den Dikken (2009), Leu (2009), Katzir (2011), among others. For our purposes, the main relevance of the pattern is the intriguing possibility, noted and pursued by Leu (2009), that the Greek pattern is a manifestation of the same mechanism that gives rise to the patterns of definiteness marking in Scandinavian.

While tempting, spreader and realizer accounts of the definiteness marker in Greek are not easy to construct. We will not be able to discuss the possibilities in detail within this paper, but we will try to show the general problems for each approach. A spreader account would need to explain how multiple occurrences of what looks like the same head appear within the same noun phrase. This is not a simple task, and spreader accounts in the literature have typically analyzed polydefiniteness as involving multiple nested noun phrases, each bringing along its own instance of the definite article. This still leaves open the question of how to account for the actual distribution of these definite articles, again a non-trivial task. Moreover, the semantics seems to pose a challenge to this idea. If each instance of *to* is indeed the definite article, then we would expect *to megalo to vivlio* 'the big the book' to be acceptable only if there is exactly one (salient) big entity and one (salient) book in the discourse. In fact, however, *to megalo to vivlio* is not possible in such a context, as discussed by Lekakou and Szendrői (2007).[19]

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[18]We use ∗ 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*.

[19]In our discussion of double-definiteness languages in section 4.2 we mentioned hybrid analyses, in which one definiteness marker is a spreader and the other a realizer. The same route is open for Greek

For a realizer account of *to*, what seems most puzzling is that polydefiniteness looks like a phenomenon of anti-agreement. The domain between the last instance of *to* before the head noun and up to the head noun, including any intervening adjectives (that is, the part of the noun phrase that has the form *Def A∗ N*), is arguably the basic definite DP: in this domain, labeled the monadic domain by Kolliakou (2004), the adjectives appear in a rigid order, along the lines of Sproat and Shih (1988), and intensional adjectives such as *former* and *alleged*, which arguably require a close relation to the head noun, may appear. Outside this domain, the order of adjectives becomes flexible, and adjectives like *former* and *alleged* often become degraded, as discussed in detail by Alexiadou and Wilder (1998). This would make sense if the DP is born as a monadic domain, and movement of individual adjectives from within it to a higher position gives rise to polydefiniteness. This direction, however, is puzzling for a realizer account of *to*: why should the adjectives not bear their own realizer of definiteness when inside the scope of the actual definite article but bear such a realizer obligatorily as soon as they exit the scope of the definite article? Similarly to spreader accounts of *to*, realizer accounts of *to* thus seem to face substantial obstacles.

5   Discussion

We have looked at two patterns of morphological marking in Germanic languages: the weak/strong declension across Germanic, and the marking of definiteness in the Scandinavian languages. In each pattern, the appearance and disappearance of certain markers–C in the weak/strong declension and $-EN$ in the definiteness pattern–formed a puzzle. Katzir (2011) proposed a unified account of C and $-EN$ as licensors, elements that c-command feature-bearing targets of agreement and that are subject to a condition of structural economy. Norris et al. (2013) have provided cases in which a target of agreement is present but licensors are absent. Such cases challenge the idea of licensors directly: to maintain the licensor-based account without change, one would need to posit null licensors or a process of licensor-deletion that applies exactly in the kinds of contexts that Norris et al. present. Here we have instead taken a closer look at how a licensor free account relying on spreaders and realizers would need to be modified in order to account for the data.

We concluded that it may be possible to build up a spreader account for $-EN$ given an appropriate constraint on N-to-D raising that distinguishes between RRCs, APs, and PPs in accordance with the data. For the other three cases, however– the realizer account for $-EN$ and both the spreader and realizer accounts for C–we see no straightforward way to fully account for the data. We further noted that both the spreader and realizer approaches face challenges in accounting for definiteness marking in Icelandic and Swedish as well as definiteness spreading in Greek. We conclude, then,

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as well, and it has the potential both to alleviate the semantic problems of a spreader-only account. In particular, if the second occurrence of *to* in *to megalo to vivlio* is the realizer, we will no longer make the incorrect prediction that the noun phrase presupposes that there is exactly one big individual and exactly one book (though explaining why it cannot be used in a context in which this is the case remains a challenge). While perhaps more promising than a spreader-only approach, a hybrid account would still need to derive the actual word order pattern in (36). We are not familiar with a hybrid solution to this problem, and we will not attempt to develop one here.

that in the absence of sufficient accounts of the data that can unify these phenomena using spreaders and/or realizers alone, some further mechanism–whether it be licensors or otherwise–should still be considered.

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