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When movement must be blocked: A reply to Embick & Noyer*

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Embick and Noyer (2001) develop an analysis of definiteness marking in Danish and Swedish employing the central assumptions of Distributed Morphology (DM) together with the syntactic operation of head movement of N to D. We expose some theoretical and empirical shortcomings of the analysis and conclude that the assumption of N-to-D movement is incompatible with the central assumptions of DM. We further show how these shortcomings are avoided by the lexicalist analysis proposed by Hankamer and Mikkelsen (2002) and compare it with an alternative DM analysis which does not rely on head movement in the syntax. We conclude that while a lexicalist or a DM analysis is viable, with interesting trade-offs, neither of the viable analyses involves any movement.

Keywords: definiteness marking, morphosyntax, Distributed Morphology, Scandinavian, head movement, blocking

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1 Introduction

Embick and Noyer (2001) (henceforth E&N) develop a theory of morphology that shares the key assumptions of Distributed Morphology (Halle and Marantz 1993). In particular, E&N assume that:

- Morphology operates on the output of the syntactic derivation (p. 557).
- there is no Lexicon and no Lexical mode of derivation (p. 560).
- Morphology is a complex component in which at least the following processes can take place:
 - *Lowering*: downward movement of a syntactic head to adjoin to another syntactic head (p. 561). Operates on hierarchical, non-linearized structures.
 - *Vocabulary Insertion*: insertion of a phonological representation drawn from the Vocabulary into a terminal node in the syntactic structure (p. 558).
 - *Local Dislocation*: movement of a head, “defined in terms of peripherality within the constituent”, to adjoin to a string-adjacent element (p. 562). Operates on linearized structures.
- Lowering precedes Vocabulary Insertion, which in turn precedes Local Dislocation (p. 562).
- the elements of a phrase marker are linearized at Vocabulary Insertion (p. 562).

It is central to E&N’s approach that there is movement in both syntax and Morphology, and that the nature of the movement operations that occur in the two components of the grammar is different. They articulate their position as in (1).¹

¹See also Embick (2000:188) where a slightly different formulation of this principle is presented under the name Feature Disjointness.

- (1) Syntax generates and moves terminals according to its own principles and is oblivious to morphophonological concerns. PF [i.e., Morphology; JH & LM] takes the output of syntax and resolves morphophonological dependencies according to its own principles. (E&N: 556–557)

E&N apply their system to a range of data to illustrate how it works. One of their case studies is definiteness marking in Swedish and Danish DPs (pp. 580–584). E&N build their analysis on the syntactic proposals of Delsing (1993) which involve head movement of N to D. The goal of the present paper is to show how this assumption leads to problems in accounting for the full range of facts relating to definiteness marking in these languages. Like Delsing’s original head movement analysis, E&N’s analysis can account for the core facts, but there are additional facts and complications that are not accounted for by either analysis. We investigate how these facts could be accounted for in the system proposed by E&N and conclude that the assumption that N moves to D in the syntax leads to the following disjunction: *either* the Morphological component has to be able to essentially undo the effects of head movement in the syntax *or* syntactic movement has to be sensitive to morphological properties of individual words (contra (1)).

What is at issue is how morphology interacts with syntax. E&N present an analysis in which definiteness marking in Danish and Swedish is accounted for by a combination of syntactic head movement and postsyntactic morphological processes. We argue that the assumption of head movement prior to morphology only impedes a satisfactory analysis of the full set of facts. We will contrast the E&N analysis with the lexicalist analysis proposed in Hankamer and Mikkelsen (2002), which does not involve head movement, and show how that analysis accounts for the core facts as well as the additional facts and complications. We further sketch an alternative DM analysis, which does not involve head movement in the syntax, and show how that too avoids the shortcomings of E&N’s analysis. We conclude that in the domain of definiteness marking in Danish and Swedish DPs the assumption of syntactic head movement of N to D is incompatible with the core principles of DM.

2 Definiteness marking in Swedish and Danish

In the Scandinavian languages definiteness can be marked prenominally, in the form of a definite article, or postnominally, in the form of a suffix on the noun.² The distribution of the two definiteness markers differs across the Scandinavian languages and their dialects, as discussed in detail in Delsing (1993). E&N discuss only definiteness marking in standard Swedish and standard Danish, and this will be our focus too.

In both Swedish and Danish, only the postnominal definiteness marker may be used if the noun phrase contains no modifiers:³

(2) a. mus-en [Swedish]

mouse-DEF
'the mouse'

b. *den mus

DEF mouse

(3) a. hest-en [Danish]

horse-DEF
'the horse'

b. *den hest

DEF horse

The string (3b) is grammatical when *den* is stressed and interpreted as a demonstrative ('that horse'). Swedish *den* is also used as a demonstrative when stressed, but requires the noun it combines with to show definiteness marking:

(4) dén mus-en [Swedish]

that mouse-DEF
'that mouse'

²Exceptions to this generalization include Western Jutlandic, which has only the prenominal definiteness marker (Delsing 1993:121), Northern Swedish, which has only the postnominal definiteness marker (Delsing 1993:122), and possibly modern Icelandic, where the prenominal definite article is "literary style and seldom used" (Delsing 1993:120).

³As we discuss in section 4.3, there are important exceptions to this generalization.

When an attributive adjective is present, pronominal definiteness marking is obligatory in both languages. Swedish requires the noun to show definiteness marking in agreement with the definite article, whereas such double definiteness marking is impossible in Danish. Compare the b and c examples in (5) and (6).

- (5) a. *gamla mus-en [Swedish]
 old mouse-DEF
- b. den gamla mus-en
 DEF old mouse-DEF
 ‘the old mouse’
- c. *den gamla mus
 DEF old mouse
- (6) a. *gamle hest-en [Danish]
 old horse-DEF
- b. *den gamle hest-en
 DEF old horse-DEF
- c. den gamle hest
 DEF old horse
 ‘the old horse’

These are the core facts, which have received a great deal of attention in the literature (see e.g. Börjars (1995, 1998), Börjars and Donohue (2000), Cooper (1986:33–42), Delsing (1988, 1993), Hankamer and Mikkelsen (2002), Hellan (1986), Hoeksema (1985:29–30), Holmberg (1987), Julien (2002), Kester (1993), Mikkelsen (1998), Neville (2000:93–145), Payne and Börjars (1994), Sadock (1991:113–117), Santelmann (1993), Svenonius (1993), Taraldsen (1991), and Vangsnes (1999:106–144)).

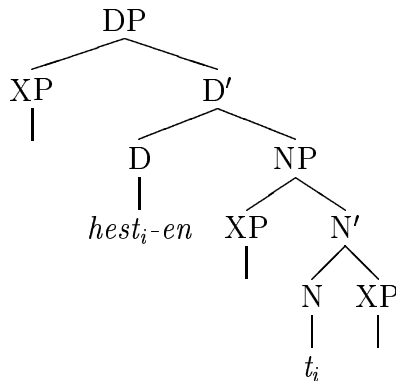
E&N build their morphological analysis on the syntactic proposals of Delsing (1993), so we start by outlining Delsing’s analysis in section 2.1. To show how the facts might be accounted for without involving head movement, we contrast this with the lexicalist analysis

proposed in Hankamer and Mikkelsen (2002) in 2.2, and then outline E&N’s analysis in section 3. In section 4 we present three difficulties for the E&N analysis which result directly from the assumption of syntactic head movement together with the assumptions of DM. In section 5, we sketch a DM analysis that dispenses with syntactic movement of N to D and show how it overcomes the difficulties faced by E&N’s analysis. In section 6, we turn to DPs containing relative clauses and postnominal PPs and explore the interactions between relative clause interpretation and definiteness marking, and how these might be accounted for under each of the analyses. We conclude in section 7 with a discussion of trade-offs and architectural issues.

2.1 The head movement analysis of Delsing (1993)

Delsing proposes that the suffixed definite forms are derived by head movement of the noun to the determiner position occupied by the definiteness marker:⁴

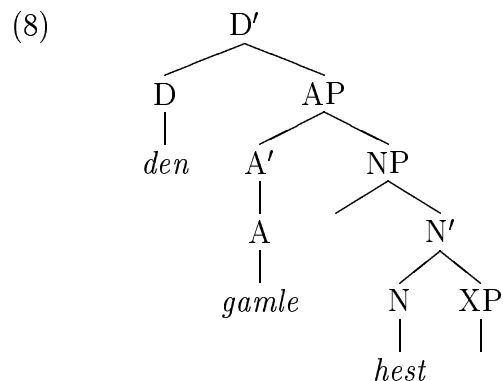
(7) (= Delsing’s ex. (14), p. 74)



After movement the definiteness marker attaches to the noun resulting in a lexical form like *hesten* ‘the horse’ in (3a) (Delsing 1993:73–77). According to Delsing, head movement is blocked when an attributive adjective intervenes between the base position of the noun and the determiner position, as in (8), adapted from Delsing (1993:81, ex. (28)).⁵

⁴We assume that what is intended by the notation *hest_i-en* under D in (7) is left-adjunction of the N to D.

⁵Specifically, Delsing assumes that in such a structure AP is the complement of D and NP is a specifier of AP, as shown in (8). Thus head movement of the N to D would not be possible, assuming that head



In this case definiteness is spelled out in the determiner position as a lexical article *den*, correctly yielding the definite phrase *den gamle hest* ‘the old horse’ in (6c) (Delsing 1993:90–91).

This is all Delsing has to say about Danish, where the two definiteness markers are in complementary distribution. To account for the double definiteness marking in Swedish (see (5b)) Delsing assumes (p. 129–131) that Swedish, unlike Danish, allows definiteness to be generated in the N position. In the case of an unmodified noun like (2a), the noun-definiteness complex *mus-en* ‘mouse-DEF’ raises from N to D to “lexicalise the D position” (Delsing 1993:130). In a noun phrase containing an attributive adjective, such as (5b), movement from N to D is blocked, the noun-definiteness complex stays in the N-position, and the D-position is filled by an expletive article.

2.2 A lexicalist alternative

Hankamer and Mikkelsen (2002) (henceforth H&M) argue that the distribution of definiteness marking in Scandinavian DPs is best accounted for not by syntactic head movement, but by a morphological rule, Rule D, that converts Ns to Ds in the lexicon:⁶

movement out of a specifier to a higher head position is not possible. E&N adopt a slightly different structure, as we will see in section 3, but again one in which the presence of the A blocks head movement.

⁶We discuss here only the application of the derived-determiner approach to Danish and Swedish nominals. H&M suggest (p. 172) that a similar analysis might be of utility in an account of definiteness marking in Swiss German. Additionally, a parallel analysis involving the conversion of adjectives to degree words could be imagined for English comparatives.

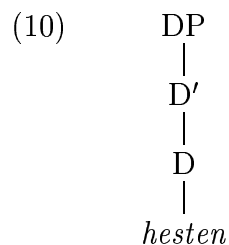
(9) RULE D (from H&M p. 155)

$$\left[\begin{array}{ll} PFORM & \alpha \\ CAT & N \end{array} \right] \Rightarrow \left[\begin{array}{ll} PFORM & \alpha + EN \\ CAT & D \\ DEF & + \end{array} \right]$$

Where:

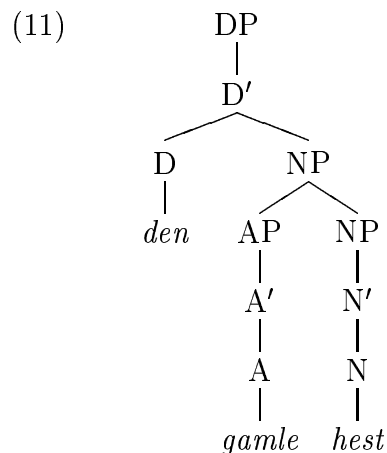
- a. EN represents the appropriate form of the definite suffix relative to the number and gender of the noun,⁷
- b. DEF is a morphosyntactic feature defined for determiners, but not for nouns (in Danish), introduced by the rule, and assigned the value '+', and
- c. parts of the lexical entry not mentioned in the rule are not affected.

Intuitively, the rule takes a noun, combines it with the definite suffix and yields a definite determiner (see H&M §3.1 for details). The reason such definite determiners do not cooccur with adjectives is that adjective phrases adjoin to NPs, not DPs, and a definite determiner like *hest-en* 'horse-DEF' projects a non-branching DP structure like (10), with no NP for the AP to adjoin to (see H&M's (42), p. 158).



Attributive adjectives are assumed to adjoin to NP as in (11), where the definite article is a transitive determiner taking an NP complement (see H&M's (44), p. 159)

⁷i.e. *-en* for singular, common gender nouns, *-et* for singular, neuter gender nouns, and *-ne* for plural nouns.



H&M’s account of the lack of prenominal definiteness marking in DPs without modifiers (see (2) and (3) above) relies on the notion of blocking proposed by Poser (1992). Poser argues that the well-attested phenomenon of morphological blocking (see e.g. Paul (1896), Aronoff (1976:43–5)), whereby the existence of one form renders an equivalent and otherwise well-formed form ungrammatical, extends to blocking of phrasal forms by lexical ones (see also Di Sciullo and Williams (1987:10–14), Andrews (1990), and Bresnan (2001)). H&M (pp. 161–162) propose that this is exactly what is going on in (2) and (3): the existence of the lexical item *hesten* in (3a) blocks the phrase *den hest* in (3b), and similarly for the Swedish pair in (2). We refer to this as *Poser-blocking*.

A phrase like *den gamle hest* ‘the old horse’ is not Poser-blocked, because there is no corresponding word form to block it. Similarly *dén hest* ‘that horse’, with the stressed demonstrative *dén*, is not blocked because it doesn’t mean the same thing as *hesten* ‘horse-DEF’, and the two forms are not competing for expression of the same morphological category.

The definitization rule is active in both Danish and Swedish, but H&M suggest (p. 169) that in Swedish (and Norwegian) the category change (N → D) part of the rule is optional. This means that a form like *mus-en* ‘mouse-DEF’ can be a D, as in (2a), or an N, as in (5b) (see H&M §5 for details). Double definiteness in DPs with a modifier is enforced by the prenominal definite article selecting a morphologically definite NP complement (as in Svenonius (1993) and Börjars and Donohue (2000:331)).⁸

⁸As pointed out by one of our reviewers, Rule D should also involve a semantic change (whatever is the

Except for the somewhat radical assumption of a morphological rule creating derived determiners, H&M adopt fairly conservative assumptions about the interaction of syntax, morphology, and the lexicon.⁹ Morphology is presyntactic, and morphological processes operate on lexical material to form the lexical units that are inserted into D-structures. This is in contrast with the assumptions adopted by E&N, namely that Morphology is postsyntactic, that there is no lexicon, but only postsyntactic Vocabulary Insertion, and that syntax manipulates feature bundles, not words.

2.3 Beyond the core data

The head movement analysis proposed by Delsing (1993) and the lexicalist alternative provided by H&M both account for the core data, but H&M show that there are complications involving definiteness marking in DPs containing a relative clause and systematic gaps in the distribution of the definite suffix. We argue here that a serious engagement with these facts leads to the conclusion that the assumption of N-to-D movement in this case is incompatible with other fundamental assumptions of DM.

In section 3 we present E&N's analysis of the core facts of definiteness marking in Swedish and Danish, and point to advantages it has over Delsing's original proposal. In section 4 we first discuss some theoretical problems for the head movement analysis assumed by E&N (sections 4.1 and 4.2). We then turn to the morphological gaps in the distribution of the definite suffix discussed by H&M, and show that these are not accounted for by E&N's analysis, and discuss the problems involved in adapting a head movement analysis to account for these (section 4.3). The main conclusion is that while assuming head movement of N to D yields an elegant and simple account of the core facts, it complicates the account of the non-core data immensely, precisely because of the assumption that Morphology follows head

semantic representation of "definiteness") concomitant with the category shift from N to D, but this semantic change should not take place in the Swedish case where the category does not shift: the definite-marked N in a double definiteness construction is presumably only morphologically definite, not semantically definite (though see the discussion in Delsing (1993:128–129)).

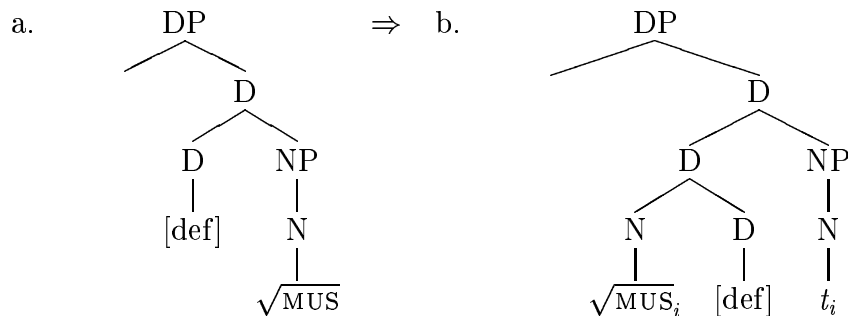
⁹These conservative assumptions, admittedly, require H&M to assume that lexically formed elements can block phrasal ones. See discussion in section 7.

movement.

3 Embick and Noyer (2001) on definiteness marking in Danish and Swedish

E&N assume, following Delsing (1993), that postnominal definiteness marking involves head movement of N to D in the syntax. They do not provide tree diagrams illustrating this movement, but the trees in (12) are based on their discussion on p. 582.¹⁰ (Following the practice of E&N we use the notation ‘ $\sqrt{\quad}$ ’ for a feature bundle that is destined to be spelled out as an open class item.)

(12)



They further suggest that at the level of PF Swedish has the following two requirements (= E&N’s (61), p. 581):

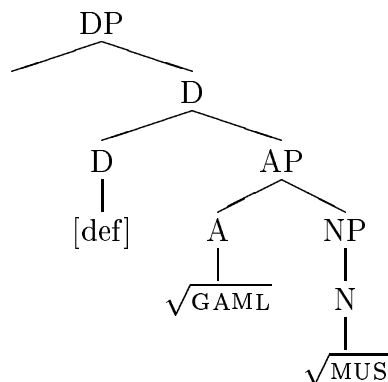
- (13) a. The head N must be marked with definiteness when D is [def].
 b. $D_{[def]}$ must have a host.

In the cases where N has moved to D, the structure produced by syntax (i.e. 12b) meets both of these conditions: the head noun is marked with definiteness by virtue of having moved to $D_{[def]}$ and, in return, the noun provides a host for $D_{[def]}$. Under these circumstances (12b) is spelled out (by Vocabulary Insertion) as *mus-en* ‘mouse-DEF’.

¹⁰E&N appear to be assuming something like Bare Phrase Structure (Chomsky 1994), though they retain traditional node labels like D and DP.

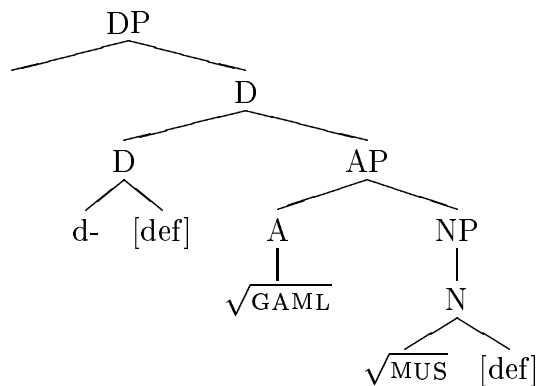
Following Abney (1987:323–334), E&N assume that a DP containing an attributive adjective has the syntactic structure in (14), where AP is a complement to D and NP a complement to A.

(14) (= E&N's (63), p. 582)



E&N state that head movement of N to D “will not occur if N is dominated by a modifier” (p. 582). This must be interpreted so that it has the effect that N cannot move to D in (14). Presumably the Head Movement Constraint (Travis 1984:131) would prevent head movement of N to D in this structure. If head movement does not take place, (14) is the syntactic structure that is input to Morphology. This structure satisfies neither of the PF requirements in (13): N is not marked with definiteness and $D_{[def]}$ does not have a host. To satisfy these requirements two postsyntactic processes are invoked. An agreement process that “assign[s] [def] to the head of N in a DP with the [def] property” (p. 583), and a support process which supplies phonological material (*d-*) to host $D_{[def]}$:

(15) (= E&N's (64), p. 583)



This structure is spelled out as (16) (= (5b)).

- (16) den gamla mus-en [Swedish]
 DEF old mouse-DEF
 ‘the old mouse’

The analysis of Danish is identical, except that Danish lacks the agreement requirement in (13a). This is what explains the contrasting patterns in (5) and (6) above.

One advantage of E&N’s analysis over Delsing’s is that it minimizes the differences between Danish and Swedish with respect to definiteness marking. Recall from section 2.1 that Delsing assumes that Danish and Swedish differ in where the definiteness morpheme is base-generated: in Danish it is generated in D, but in Swedish it is generated in N.¹¹ This somewhat troublesome assumption can be dispensed with in E&N’s analysis: here Danish and Swedish differ just in that the agreement requirement in (13a) is active in Swedish, but not in Danish. The fact that earlier stages of Danish show evidence of double definiteness marking (Falk and Torp 1900:63–64) lends further plausibility to the agreement analysis: the difference between the languages today can be understood as the result of Swedish maintaining the agreement requirement, while Danish lost it at some point after the 16th century.¹²

4 Three problems with E&N’s analysis

4.1 Syntactic structure

The presumed structure in (14), for the case where an adjectival modifier is present, is implausible for several reasons. First, as Svenonius (1992:100-102) shows, A fails most of the criteria proposed in Zwicky (1985) for head of the nominal phrase: it is not obligatory

¹¹To account for instances of double definiteness in Swedish (see (5b)) Delsing assumes that an expletive definite article is inserted in D⁰ to lexicalize this position (see end of section 2.1).

¹²Historically, the two definiteness markers developed from different sources. The prenominal article *den* is the descendant of the Old Norse demonstrative pronoun *þann* (masculine, accusative), while the definite suffix *-en* is the descendant of the Old Norse definite article *hinn* (masculine, nominative), see Hansen (1927:119ff), Skautrup (1944:138), and Mikkelsen (1998:5–11).

in that phrase, it is not unique in that phrase, and it does not control features on the NP it modifies (see Svenonius (1994:441–452) and Julien (2002:269) for further arguments against treating A as the sister of D). In contrast, N passes all of these criteria.¹³

Second, in the N-to-D movement analysis of Longobardi (1994) it is crucial that AP is not a complement of D, since when N raises to D in Italian N does move across an intervening A. In fact this overt movement provides the principal empirical support for Longobardi’s proposal that proper names raise to D, see Longobardi (1994:622–626).

Finally, recalling that one of Abney’s original arguments in favor of NP being the complement of A is that prenominal attributive adjectives in English do not take complements (Abney 1987:326–328), notice that this is not true for Swedish and Danish, as Delsing (1993:80–83) points out (the Swedish examples in (17) are from Delsing (p. 82)):

- (17) a. en över sin insats stolt försvarsadvokat [Swedish]
 a over his accomplishment proud defense-attorney
 ‘a defense attorney (who is) proud of his accomplishment’
- b. den sin hustru trogne mannen
 DEF his wife faithful man-DEF
 ‘the man (who is) faithful to his wife’
- (18) a. den af sin datter stolte mor [Danish]
 DEF of her daughter proud mother
 ‘the mother (who is) proud of her daughter’
- b. den overfor sælgere vrantne mand
 DEF towards sales-people grumpy man
 ‘the man (who is) grumpy towards sales people’

¹³These and other criteria have also been used in attempts to settle the question of whether D or N is the head of the entire noun phrase. Börjars (1998:89–134) discusses this question in detail for Swedish, showing that the various criteria for headedness proposed in the literature do not converge on one or the other as the head (some criteria favor the noun, some the determiner, and some are inconclusive). She concludes (p. 133) “that the issue of the headedness of noun phrases is still open” and that the choice between a DP and an NP analysis is more likely to be made on theoretical grounds (see also the discussion of Danish in Mikkelsen (1998:75–79)).

Note that the complements must occur to the left of the adjective. Thus Abney’s argument does not translate to Scandinavian, and it is hard to see how the adjective in DPs like those in (17) and (18) could have complements both on the left and on the right.

We believe, therefore, that the assumption of a structure like (14) is both theoretically and empirically problematic; nevertheless, in order to fully explore the specific empirical problems to be discussed in section 4.3, we will temporarily grant the structure, since it is critical to the head movement analysis of definiteness marking.

4.2 Head Movement

There are also problems related to the assumption of head movement and getting it to work in the necessary way to account for the facts.

First, the assumption of structure (14) raises the question why A cannot move to D in such a case. It cannot, of course:

- (19) *gaml-en hest.
 old-DEF horse

Note that D and A in (14) are in the exact same structural configuration as D and N in (12a), where, crucially, head movement is assumed to take place. E&N follow Delsing in stipulating that head movement to D is limited to nouns:

- (20) N moves to D if possible. [= E&N’s (62), p. 582]

The seemingly innocuous statement in (20), in addition to incorporating the stipulation that A cannot move to D, conceals a rather interesting theoretical problem.¹⁴ E&N need (20) to account for the contrast between (21) and (22) (repeated from (3) above).

- (21) hest-en
 horse-DEF
 ‘the horse’

¹⁴Thanks to Peter Alrenga for pointing this out to us.

(22) *den hest

DEF horse

But what will force N-to-D raising (and thus bleed *d*-insertion) here? It cannot be the PF constraint stated in (13b), that $D_{[def]}$ must have a host, since this constraint can be satisfied by *d*-insertion when prenominal adjectives intervene. Rather, it seems that the movement must be forced by some constraint stated over syntactic structure, since head movement is a syntactic operation. Suppose, for concreteness, that nouns are marked with some feature [+def-mark], which requires that a [def] marker be attached to them: (22) would then be blocked by a constraint stating that [+def-mark] must be “checked”. If we assume that raising the N to $D_{[def]}$ can accomplish such feature checking, then we also predict (21) to be grammatical. However, a DP like *den gamle hest* ‘the old horse’ (= (6c)) ought to then be ungrammatical, since the [+def-mark] on *hest* goes unchecked here. One could of course assume that nouns do not possess the [+def-mark] feature when they occur as complements to A, but this sort of complementary distribution seems suspicious. Analogous problems arise if we instead locate the movement-triggering feature on D.

4.3 Morphological gaps

In Danish and in Swedish there are various gaps in the distribution of the definite suffix. The suffix does not occur with proper names used as common nouns, nor with a large group of loan words, nor with various kinds of deverbal nouns (for data and discussion see Mikkelsen (1998:61–62, 135–138) on Danish and Börjars (1998:52–56) on Swedish).

Here we concentrate on a class of deverbal nouns discussed by H&M (pp. 146–151), which exhibits an exceptional pattern of definiteness marking. We base our discussion on Danish, but the facts are similar in Swedish (Kersti Börjars, personal communication 10/24/02).

In Danish the class includes words like *besøgende* ‘visitor’, *døende* ‘dying person’, *forbipasserende* ‘passer-by’, *forretningsdrivende* ‘shopkeeper’, *henseende* ‘regard’, *logerende* ‘lodger’, *medvirkende* ‘participant’, *næstkommanderende* ‘person second in command’, *pårørende*

‘relative’, *rejsende* ‘passenger’, *studerende* ‘student’, *udenforstående* ‘outsider’, and *vagthavende* ‘person on duty’. With these nouns a prenominal article is used in all contexts, as illustrated for the word for ‘student’ in (23) and (24). Note that (23a) and (23b) display the exact opposite of the standard pattern exemplified in (21) and (22) above.

- (23) a. *studerend-en [Danish]
 student-DEF
 b. den studerende
 DEF student
 ‘the student’
 c. den fattige studerende
 DEF poor student
 ‘the poor student’

- (24) a. *studerend-e-ne [Danish]
 student-PL-DEF
 b. de (fattige) studerende
 DEF poor students
 ‘the poor students’

It appears that this exceptional class includes all and only the common gender nouns formed with *-ende*. Neuter nouns formed with *-ende* behave normally.^{15,16}

- (25) a. mellemværend-et [Danish]
 between-being-DEF
 ‘the unfinished business’

¹⁵We know of one exception to this, namely the neuter *ende*-noun *forblivende* ‘continuation’, which only occurs with the prenominal article (Mikkelsen 1998:138).

¹⁶Gender is an inherent lexical feature on nouns in Danish. Except for a handful of cases, a noun is either common gender or neuter gender. The gender is reflected in the form of the definite suffix, prenominal articles, possessive pronouns, other determiner-like elements, and adjectival modifiers. There is no phonological or morphological correlate of gender apparent on the noun itself. For singular neuter nouns the definite suffix is *-et* and the prenominal definite article is *det*.

- b. *det mellemværende
DEF between-being
- c. det nu afklarede mellemværende
the now clarified unfinished-business
'the previously unfinished business that has now been dealt with'

Other neuter nouns in *-ende* include: *anliggende* 'matter', *forehavende* 'project', *foretagende* 'undertaking', *forgodtbefindende* '(at somebody's) discretion', *forlangende* 'demand', *ildebefindende* 'indisposition', *indestående* 'positive account balance', *udestående* 'outstanding debt', *udseende* 'appearance'.

Morphologically, a word like *studerende* ('student') is a present participle form composed of the verbal stem *studere* 'to study' and the morpheme *-ende* (Allan et al. 1995:239).¹⁷ Syntactically and semantically, it behaves as a noun: it can be modified by adjectives, but not adverbials, and, in combination with the indefinite article, it can be used to introduce a new discourse referent (see H&M (pp. 146–151) for data and discussion).

The problem for any analysis of definiteness marking is how to account for the exceptional behavior of common gender *-ende*-nouns (CG-*ende*-nouns), while maintaining an account of the general pattern. In the lexicalist analysis proposed in H&M the definite suffix is governed by a morphological rule, Rule D (p. 155), which takes a noun, combines it with the definite suffix and yields a definite determiner. The ungrammaticality of **studerenden* is attributed to a failure of Rule D to apply to CG-*ende*-nouns. This is a stipulation, but one that can be stated without requiring syntax to access morphological information. H&M's account of why (23b) is grammatical is that Poser-blocking fails to block it since the lexical form that could trump it (*studerenden*) does not exist.

Within a head movement analysis like that of E&N's, the situation is quite different. As we see it, there are two main options:

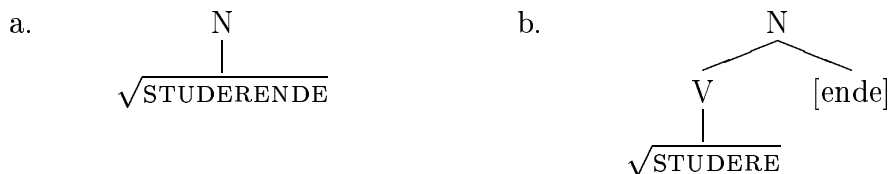
¹⁷It is a general fact about Danish morphophonology that two schwas brought together by combination of morphemes reduce to one (Basbøll 1998:45). This is reflected in the orthography by a reduction of *ee* to *e* as in *studere* + *ende* → *studerende*. When indicating morpheme boundaries in the examples we will for concreteness assume that the single *e* goes with the rightmost morpheme.

A. Prevent head movement of CG-*ende*-nouns somehow

B. Permit CG-*ende*-nouns to raise in the syntax, but then undo the effects of the raising in the Morphology.

We discuss these in turn below, using *studerende* ('student') as a representative for the class. Before we get into the discussion of these two options, we need to make some assumptions about the syntactic structure of $\sqrt{\text{STUDERENDE}}$ in E&N's system.¹⁸ There are two basic options. Either $\sqrt{\text{STUDERENDE}}$ has no internal structure in the syntax, as represented in (26a); or it has internal structure, in particular, it is assembled in the syntax from a verbal root $\sqrt{\text{STUDERE}}$ and the feature bundle corresponding to *-ende*, which we represent as [ende] in (26b).

(26)



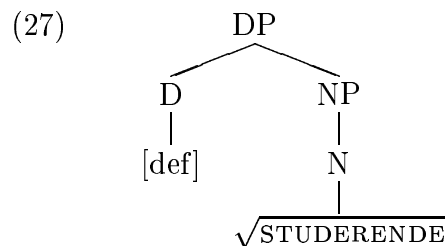
The difficulties presented by definiteness marking of these nouns are slightly different under the two sets of structural assumptions, but for reasons of space we only discuss the structure in (26a), which we have found to be the one that presents the least difficulties for extending E&N's analysis to account for CG-*ende*-nouns.¹⁹

4.3.1 A: Don't move

If N does not raise to D in the syntax, the structure submitted to Morphology is as in (27):

¹⁸It is important to remember that according to the assumptions of DM, specifically the assumption of Late Vocabulary Insertion, $\sqrt{\text{STUDERENDE}}$ represents a feature bundle which might be replaced by *studerende* or any other member of the open class to which *studerende* belongs (in this case CG-*ende*-nouns). Similarly, in (26b) $\sqrt{\text{STUDERE}}$ represents a feature bundle which might be replaced by *studere* or any other verb.

¹⁹No matter which structure we assume for *-ende*-nouns the gender feature must be present in the syntactic representation, since Vocabulary Insertion cannot add morpho-syntactic features (Halle 1997:428). That is no problem in (26a), since there is just one feature bundle and it contains the category feature N; in a structure like (26b), it is not clear where the gender feature would be located. It cannot be associated with the verbal root, nor can it be associated with the *-ende* suffix (see footnote 21). Our understanding is that N is just a label, so it could not host a feature either. Further, if the structure is as in (26b), some Morphological operation must fuse the terminal nodes $\sqrt{\text{STUDERE}}$ and [ende] before Vocabulary Insertion.



This structure would be spelled out as *den studerende*, assuming that the support process operative in structures like (15) supplies phonological material (of the form *d-*) to host $D_{[def]}$, and that the Danish Vocabulary contains the relevant phonological item to spell out the NP as *studerende*. Within the framework of DM, both of these seem reasonable assumptions.

Preventing head movement in the syntax and letting Morphology do its usual business thus generates the grammatical definite DP *den studerende* and fails to generate the ungrammatical **studerenden*, since this form only comes about through head movement of N to D. While this gets the facts right, preventing head movement of CG-*ende*-nouns comes at a cost. As far as we can tell it requires one of the following three:²⁰

- i. that head movement be sensitive to internal morphological structure of the N (in a way that lets it distinguish CG-*ende*-nouns from other nouns); OR
- ii. that CG-*ende*-nouns have a feature [– head movement] that does nothing but make them ineligible for head movement (cf. the related suggestion in Delsing (1993:92)); OR
- iii. some kind of look-ahead mechanism that prior to raising N to D performs a check to determine whether the outcome of raising will result in a well-formed structure (one that can be spelled out by Vocabulary Insertion in the usual way). If the check comes back positive, raising takes place, but if the check comes back negative, raising does not take place.

We assume that nobody would be happy with the third solution. The second option would be an ad hoc use of an otherwise unmotivated diacritic feature. So if we want to prevent

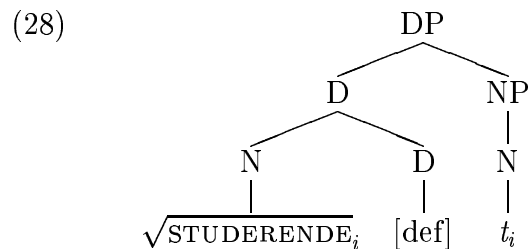
²⁰A similar point is made by Andrews (1990:529) about syntactic movement analyses of inflectional morphology. See also the detailed discussion of the status of the [pass] feature in the derivation of the Latin perfect in Embick (2000:200–211).

head movement in the syntax we are left with the first solution: let syntax be sensitive to the internal feature structure of CG-*ende*-nouns, in particular the co-presence of the common gender feature and some feature characteristic of [ende]-nouns.²¹

Assuming that such an analysis can be worked out, there is a problem with option (i): it seriously weakens E&N’s claim that “syntax generates and moves terminals according to its own principles and is oblivious to morphophonological concerns” (E&N pp. 556–557, cited in (1) above). Let us therefore examine the other option: to let $\sqrt{\text{STUDERENDE}}$ raise in the syntax, but have Morphology undo the effects of the raising.

4.3.2 B: Move and then undo

If we take the B path, and let $\sqrt{\text{STUDERENDE}}$ raise to D in the syntax, the input to Morphology is as in (28).



The Morphology needs to do two things. First, it must block spell-out of the ungrammatical **studerenden* and second, it must generate the grammatical *den studerende*.

Blocking of **studerenden* could be achieved at the level of Vocabulary Insertion. The Vocabulary contains the list of phonological exponents (of morphemes) and their privileges of occurrence (E&N p. 558). It could be stipulated that the exponent *-en* of the definite morpheme [def] has as a condition on spell-out that its phonological host cannot be *studerende* or one of the other nouns of that type (i.e. a CG-*ende*-noun) (see section 5.1 for details).

²¹It will not do to say that head-movement of N is sensitive to the presence of some verbal feature inside the N complex, since neuter *-ende*-nouns do take the definite suffix. Moreover, there are other classes of nouns derived from verbal roots that take the definite suffix, e.g. nomen agentis forms like *løber* ‘runner’, which is composed of the verbal root *løb-* and the suffix *-er*. Like neuter *-ende*-nouns, these follow the general pattern of definiteness marking: *løber-en* ‘the runner’, **den løber* ‘DEF runner’. Note that the nomen agentis forms are all common gender, indicating that we cannot generalize from the behavior of CG-*ende*-nouns with respect to definiteness marking to other common gender deverbal nouns.

To generate the grammatical *den studerende* two things have to happen: *-en* must move to the left of $\sqrt{\text{STUDERENDE}}$ and a phonological host with the shape *d* must be inserted to the left of *-en*. The obvious mechanism to perform the movement is Local Dislocation, since Local Dislocation is permitted to be Vocabulary sensitive, as it takes place after Vocabulary Insertion. Assume that Vocabulary Insertion has inserted *studerende* in the position of $\sqrt{\text{STUDERENDE}}$ and *-en* in the position of [def]. As hypothesized above, *-en* requires that its phonological host not be *studerende*, so *-en* needs to move to find another host. Local Dislocation moves *-en* to the left of *studerende*. Adapting the notation for linearized structures used by E&N this operation can be represented as in (29):²²

$$(29) \quad [\textit{studerende} * \textit{en}] \rightarrow [\textit{en} \oplus \textit{studerende}] \quad (\text{Local Dislocation})$$

This movement is legal because *studerende* and *-en* are both subwords and string adjacent (see E&N's (47), p. 577). Having rearranged the linear order, we need to provide a host for *-en*, and this host must be *d*-:

$$(30) \quad [\textit{en} \oplus \textit{studerende}] \rightarrow [\textit{d-en} \oplus \textit{studerende}] \quad (\text{Phonological support})$$

However, we seem to have created a PF structure that consists of one word *denstuderende* and not a two word sequence *den studerende*. We have not investigated whether there is phonological evidence for or against the wordhood of *den studerende*, but native speakers of Danish have a strong intuition that *den studerende* consists of two words. Notice also, that under the derivation just sketched the wordhood of *studerende* is predicted to be different in *den studerende* 'the student' and *den gamle studerende* 'the old student'. Again, native speaker intuitions do not support this. Moreover, it is unclear why *d*-insertion cannot take place first, obviating the need for Local Dislocation of *-en*. The resulting string [*studerende* * *d-en*] is ungrammatical. Finally, the analysis just sketched, while managing to produce the correct sequence of sounds as output, does so in a manner that makes it purely

²²*a* * *b* indicates that *a* must linearly precede *b* and be adjacent to *b* (E&N p. 562) while \oplus indicates adjunction of one Subword to another (p. 577). Roughly speaking, a Subword is a terminal node which is contained inside another X^0 ; see E&N (p. 574) for a more precise definition.

accidental that that sequence happens to be the same as what would have resulted from no movement at all. The principal reason for rejecting it is thus very similar to Chomsky's (1970) reason for rejecting a transformational analysis of derived nominals that derives these from verbal structures.²³

A further problem for the E&N analysis is posed by the behavior of double definiteness marking in Swedish. As noted in section 2 (examples in (2)), Swedish exhibits double definiteness marking when a prenominal adjective is present. E&N propose to account for this (pp. 581–583) with a post-syntactic agreement rule (their (65)):

(31) Assign [def] to the head N in a DP with the [def] property.

This seems reasonable, but there is an interesting limitation to the phonological realization of this [def] feature on N. Swedish CG-*ende*-nouns, like Danish ones, cannot ever receive the definite suffix (Kersti Börjars, personal communication 3/28/03):

(32) a. *studerenden [Swedish]
 student-DEF

b. den studerende
 DEF student
 'the student'

(33) a. *den gamla studerenden
 DEF old student-DEF

b. den gamla studerende
 DEF old student
 'the old student'

This indicates strongly that the resistance to the definite suffix is a morphological feature of these nouns, and consequently not a feature that a syntactic process like head movement should have access to.

²³The reinterpretation of Chomsky's arguments put forth by Marantz (1995:23–30; 1997:213–223) does not affect the argument we are making here.

Above we have considered how to undo the effect of head movement using Local Dislocation. Another possibility, which seems available in the DM framework, would be to put the N back where it was before head movement using Lowering, literally undoing the effect of syntactic head movement. We will not pursue this line of thought in any detail, but just note that Lowering, according to E&N (p. 566), takes place prior to Vocabulary Insertion, and is therefore expected to be insensitive to “the specific identity of Vocabulary items (i.e. whether *beech* has been inserted into a morpheme, as opposed to *elm* or *poplar*), including any idiosyncratic properties of the inserted item, such as its phonological features or its inflectional or other diacritical class features” (E&N, p. 565).

We conclude that the various consequences we are driven to if we assume that head movement occurs and then its effect is reversed in the Morphology are more unpleasant than the least unpleasant consequence of assuming that head movement is prevented in the first place: namely that head movement of N to D must be made sensitive to morphological properties of the particular lexical item being moved. However, this least unpleasant consequence is at odds with the core DM assumption that syntax is “oblivious to morphophonological concerns” (see the quote in (1) above).

5 A DM analysis without head movement

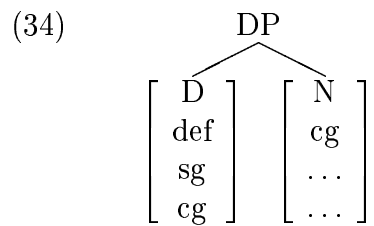
Above we have examined E&N’s analysis of definiteness marking in Danish and Swedish and found it that it has several empirical and theoretical problems. We have further suggested that the lexicalist analysis proposed by H&M fares better, both with the particulars of definiteness marking and general facts about DP structure in Scandinavian.

Most of the theoretical problems with E&N’s analysis stem from their syntactic assumptions, particularly those connected with N-to-D movement. In the interest of a fair comparison with the lexicalist analysis of H&M, it therefore seems appropriate to also consider a DM analysis that does not rely on these problematic syntactic assumptions. In this section we will present such an analysis, one which follows the syntactic assumptions of the lexi-

calist analysis of H&M fairly closely, and thus avoids the problems pointed out in section 4.1, and which takes into account some suggestions from our reviewers. We will call this the Alternative Distributed Morphology (ADM) analysis. In presenting the analysis we focus on Danish, but section 5.3 sketches how it could be extended to Swedish.

5.1 Simple definite DPs

In a definite DP without any modifiers, D merges with N to form the syntactic structure in (34). We have included the features of N and D that are relevant for Vocabulary Insertion (‘def’ is definite, ‘sg’ is singular, and ‘cg’ is common gender).²⁴



Since we will assume that there is no head movement in the syntax, this is the input to Morphology. We further assume that there is no Lowering prior to Vocabulary Insertion. Rather, the Vocabulary contains two entries for the feature bundle [D, def, sg, cg].²⁵

²⁴In the development of this ADM analysis, we adopt, as E&N do, modified minimalist assumptions regarding phrase structure; where relevant, we represent terminal nodes as bundles of features, including features that represent the lexical category.

²⁵In the environment for *-en* we refer to a *minimal N*. By this we mean a nominal projection that does not contain any maximal projections, i.e. no complements, specifiers or XP-adjuncts. In the terms of Bare Phrase Structure, what we have in mind is a projection that is both minimal (because it does not contain any maximal projections) and maximal (because it is the complement of a head).

- (35) a. $-en \longleftrightarrow [D, \text{def}, \text{sg}, \text{cg}]$ if sister to a minimal N containing the features [sg] and [cg] and whose exponent is not *besøgende*, *døende*, *forbipasserende*, *forretningsdrivende*, *henseende*, *logerende*, *medvirkende*, *næstkommanderende*, *pårørende*, *rejsende*, *studerende*, *udenforstående*, *vagthavende* ...²⁶
- b. $den \longleftrightarrow [D, \text{def}, \text{sg}, \text{cg}]$ elsewhere.

When Vocabulary Insertion applies to the structure in (34), *-en* is inserted under the D node, since this is the entry that best matches the syntactic context of D in (34). We suggest that this choice is decided by an extension of the Subset Principle proposed by Halle (1997:428) (see also Harley and Noyer (1999:5), Embick (2000:187)):

(36) **Subset Principle**

The phonological exponent of a vocabulary item is inserted into a position if the item matches all or a subset of the features specified in the terminal morpheme. Insertion does not take place if the vocabulary item contains features not present in the morpheme. Where several vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

To cover the competition between *-en* and *den* we need to extend the matching condition to the syntactic context of insertion, since the way in which *-en* is a better match than *den* for the definite morpheme in (34) is not in terms of a greater number of matching morphosyntactic features (they are the same, namely four), but in terms of a better fit with the syntactic context of insertion. We thus propose the Extended Subset Principle in (37).

²⁶Here we have only included the condition that will prevent postnominal definiteness marking on CG-*ende*-nouns. To account for the other gaps in the distribution of the definite article documented in Mikkelsen (1998:61–62, 135–138), further conditions targeting each of these gaps will have to be added to the vocabulary entry for *-en*. A reviewer questions whether this kind of negative context specification is permissible in DM, and suggests decomposing *-ende*-nouns in the syntax, as in (26b) above, and letting the vocabulary entry for the definite suffix reference the [-*ende*] morpheme instead. While we recognize this as a potentially more attractive solution, it faces the challenges mentioned in footnote 19, in particular the question of where the gender feature is located. What remains clear is that there is a morphological category, including the CG-*ende* nouns and other (partially systematic) subsets, which must be somehow identified as refusing to accept *-en* as a suffix. See the discussion at the end of section 4.3.2 and in section 5.3.

(37) **Extended Subset Principle**

The phonological exponent of a vocabulary item is inserted into a position if the item matches all or a subset of the features specified in the terminal morpheme. Insertion does not take place if the vocabulary item contains features not present in the morpheme. Where several vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme *or the item whose syntactic conditions on insertion most closely match the syntactic context of the terminal morpheme* must be chosen.

In addition to the syntactic conditions on the insertion of *-en*, there are four PF requirements on the linearization of *-en* (the first two are embodied in the use of the dash in the phonological representation (Marantz 1995:19)):

- (38)
- a. *-en* must have a host (cf. E&N's (61b))
 - b. *-en* appears to the right of its host
 - c. the host of *-en* must be the syntactic sister of D
 - d. the host of *-en* must be a N

All four requirements are satisfied by an application of Vocabulary Insertion that inserts and linearizes *-en* immediately to the right of its N sister.

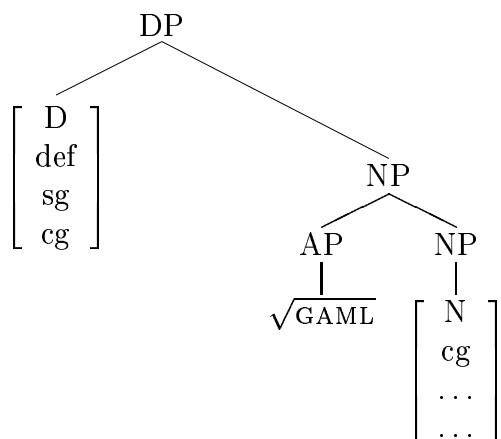
In definite DPs containing CG-ende-nouns, like *studerende* 'student', the context for inserting *-en* is not met, since the N sister of D has the exponent *studerende* which is blacklisted by the entry in (35a). Thus the elsewhere form in (35b) is inserted, yielding the correct form: *den studerende* 'the student'.²⁷ Notice that under this analysis the CG-ende-nouns do not involve Local Dislocation and, consequently, we avoid the problematic prediction that *den studerende* is one word.

²⁷Other morphological gaps in the distribution of *-en* can be accounted for analogously, assuming the more comprehensive lexical entry for *-en* sketched in footnote 26.

5.2 Definite DPs with adjectival modifiers

Following H&M, the syntactic structure of DPs containing an adjectival modifier is as in (39).

(39)



As there is no head movement in the syntax, (39) is the input to Morphology. In this case the context of insertion for *-en* is not met, since [D, def, sg, cg] is not the sister of a minimal N. Instead the elsewhere form *den* from (35b) is inserted. To account for the ordering of *den* with respect to the adjective and noun, we assume the existence of default linearization principles, similar to the Linear Precedence Rules of GPSG (Gazdar et al. 1985). Such principles might say that, in general, heads precede their complement(s), whereas specifiers and adjuncts precede their sister(s) in Danish.²⁸ In (39), the noun is the head of the complement of D and AP is adjoined to NP, and the default linearization principles thus yield the correct order: D A N.

In the case of (34), the default linearization (D before N) does not satisfy the PF requirement on *-en* imposed by (38b), and hence Vocabulary Insertion of *-en* overrides the default linearization to produce the correct order (N before D). Note that we are taking seriously the assumption (E&N p. 562) that linearization occurs “at Vocabulary Insertion”: before Vocabulary Insertion the structures are not linearized and contain only hierarchical relations

²⁸Default linearization principles, or something like them, are needed to account for the ordering of major syntactic constituents (Rolf Noyer, personal communication 8/12/03), which in DM are assumed to be unordered before Vocabulary Insertion.

between elements. When a Vocabulary item is inserted, its linear relation to other (already inserted and thus linearized) elements is determined by a possibly complex interplay between default linearization principles and PF requirements of particular Vocabulary items.

5.3 Swedish

To account for the double definiteness marking found in Swedish we follow Svenonius (1993), Börjars and Donohue (2000:331), and H&M (p. 169) in assuming that in Swedish, but not in Danish, the definite determiner selects a morphologically definite-marked head N. Equivalently, as proposed by E&N (p. 581; (61a), p. 583; (65)), a PF process might append the definite suffix to the head N in the presence of a definite D. Whichever way this agreement process is implemented, however, it will be necessary to take into account the fact, noted at the end of section 4.3.2, that Swedish CG-*ende*-nouns, like Danish ones, cannot ever take the definite suffix, and consequently appear unsuffixed even in those contexts where most Ns exhibit definiteness agreement:

- (40) a. **studerenden* [Swedish]
 student-DEF
- b. *den studerende*
 DEF student
 ‘the student’
- (41) a. **den gamla studerenden*
 DEF old student-DEF
- b. *den gamla studerende*
 DEF old student
 ‘the old student’

Under the H&M analysis, this was an automatic consequence of the fact that morphologically definite Ns in Swedish are derived by Rule D. In the ADM account we will have to assume

that CG-*ende* nouns (and the other nouns that are resistant to the definite suffix) have some morphological property that prohibits the attachment of the definite suffix, and that both (the Swedish counterpart of) Vocabulary item (35a) and the double definiteness agreement rule are sensitive to this property.

6 Relative clauses

As E&N note (p. 581, fn. 34), the pattern of definiteness marking in noun phrases containing relative clauses differs from the standard pattern outlined above. In particular, such noun phrases allow either postnominal or prenominal definiteness marking (the Swedish data are from Börjars (1998:142)).²⁹

- | | | | | |
|------|----|---------------------------------|-----------------|-----------------|
| (42) | a. | mus-en som vi såg | | [Swedish] |
| | | mouse-DEF that we saw | | |
| | | ‘the mouse, which we saw’ | NON-RESTRICTIVE | |
| | | ‘the mouse that we saw’ | RESTRICTIVE | |
| | b. | den mus som vi såg | | |
| | | DEF mouse that we saw | | |
| | | ‘the mouse that we saw’ | RESTRICTIVE | |
| | c. | den mus-en som vi såg | | |
| | | DEF mouse-DEF that we saw | | |
| | | ‘the mouse that we saw’ | RESTRICTIVE | |
| (43) | a. | hest-en som vandt løbet | | [Danish] |
| | | 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] |

²⁹The syntactic category of the word *som* is controversial (see Vikner (1991), Mikkelsen (2002) for discussion). For concreteness we treat it as a complementizer and gloss it as *that*. Note that it can be used with both restrictive and non-restrictive relative clauses.

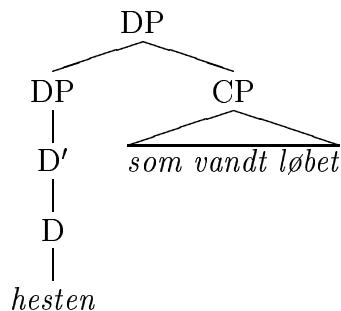
- b. den hest som vandt løbet
 the horse that won race-DEF
 ‘the horse that won the race’ RESTRICTIVE [all speakers³⁰]

The interpretations of these DPs are somewhat complicated. In the examples with prenominal definiteness marking ((42b,c) and (43b)), the only possible interpretation of the relative clause is as a restrictive one. Moreover, the otherwise obligatory definiteness agreement on the noun in Swedish appears to be optional in this context, as (42b,c) show. In the examples with only postnominal definiteness marking ((42a) and (43a)) a restrictive or non-restrictive interpretation of the relative clause is possible. In Swedish this seems to be true for all speakers, whereas for some Danish speakers the only possible interpretation of the relative clause in (43a) is non-restrictive, while for others a restrictive interpretation is also possible (H&M: 166, Mikkelsen (1998:39–42)).

6.1 The lexicalist analysis

H&M (pp. 166–168) show that part of the pattern of definiteness marking in DPs containing relative clauses follows from an interplay between their analysis of the core facts, in particular the notion of Poser-blocking, and the syntax of DPs containing relative clauses, in particular the attachment site of the relative clause. They propose that to get the nonrestrictive interpretation, the relative clause must be adjoined to DP (or higher), as in (44).

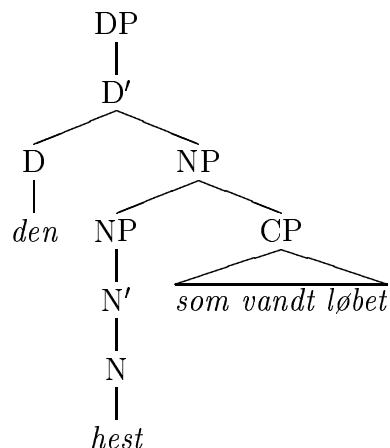
(44) (= H&M (56), p. 167)



³⁰This is not quite true. A few Danish speakers do not accept (43b) as a definite DP, but only as a demonstrative DP. See footnote 31.

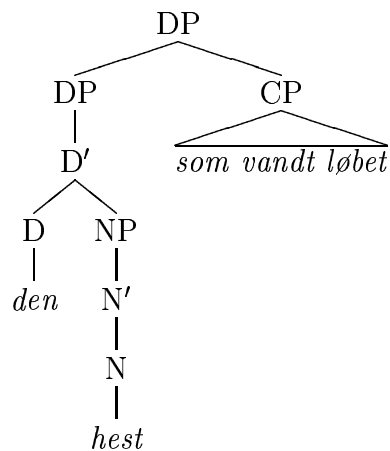
A relative clause attached to NP, as in (45), has only a restrictive interpretation.

(45) (= H&M (55), p. 167)



H&M observe that under these assumptions the only way to get a nonrestrictive interpretation of a relative clause in a DP with prenominal definiteness marking would be from a structure like that in (46).

(46) (= H&M (56), p. 168)



But this structure contains the DP *den hest*, which is Poser-blocked by the existence of *hesten*. Thus there is no way for the (b) examples to have a nonrestrictive interpretation. The reason that the restrictive relative clause construction in (45) is not blocked is that in this structure *den hest* does not form a phrase and only phrases can be Poser-blocked by lexical items.

H&M offer no account of the fact that some speakers accept a restrictive interpretation of the relative clause in (43a) nor of the fact that definiteness agreement appears to be optional in (42b,c). For the first, we propose that for such speakers there is a mechanism whereby a relative clause that is adjoined (at surface structure, or at the end of (overt) syntax) to DP can be interpreted as adjoined to NP for semantic purposes. In the ADM analysis, where Vocabulary Insertion is post-syntactic, this could be accomplished by assuming that the relative clause originates as an NP adjunct and moves (via a DP-internal extraposition operation) to adjoin to DP. Then at Vocabulary Insertion it would no longer be in a position to prevent the insertion of *-en*, while its interpretation as a NP modifier could occur via reconstruction. The syntactic extraposition mechanism would not do any good in the H&M analysis, where Lexical Insertion is pre-syntactic. In that analysis, the relative clause would have to originate adjoined to DP (or higher), and be interpreted as restrictive via an interpretive mechanism such as that proposed in Bach and Cooper (1978).

We will offer an account of the second mysterious fact at the end of section 6.4.

6.2 Relative clauses in a head movement analysis

The E&N analysis, dependent on syntactic N-to-D raising, does not provide an obvious account of the relative clause facts, on the assumption that restrictive relative clauses are adjoined, as assumed by H&M. If N-to-D movement is obligatory where possible, either something must prevent it in examples like (42b) and (43b) or some post-raising manipulation must undo its effects, along the lines of section 4.3.2. In this case, however, the form produced directly by raising is not ungrammatical, and consequently it is not clear what could trigger any such morphological restructuring.

The alternative sketched in section 5 above, however, would not be subject to such difficulties. Recall that one of the conditions on the insertion of the suffixed form of the [D, def, sg, cg] exponent (*-en*) is that it must be inserted as a sister to a *minimal* N; thus the configuration that triggers Poser-blocking in the H&M analysis (see tree in (44)) permits

-en insertion, while the configuration that does not trigger Poser-blocking (see tree in (45)) prohibits -en insertion and results in the insertion of *den*. The ADM account thus seems equal in descriptive coverage to the H&M account of the relative clause facts.

6.3 Postnominal PPs

There is, however, a problem for both the H&M and ADM analyses. This problem concerns definiteness marking in DPs that contain postnominal PPs:

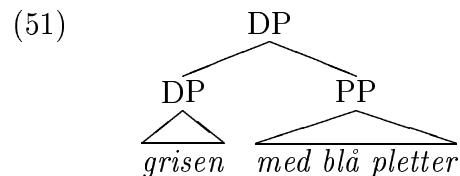
(47) *grisen*
 pig-DEF
 ‘the pig’

(48) **den gris*
 DEF pig

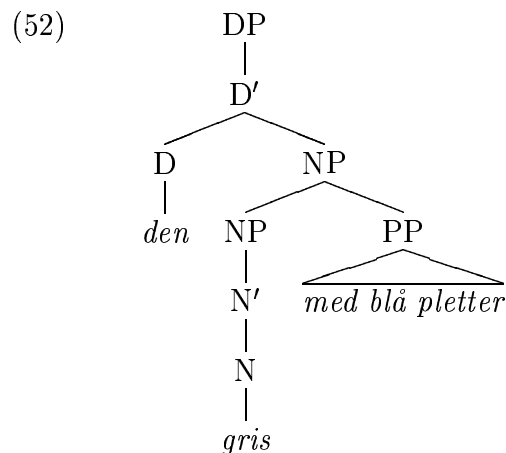
(49) *grisen med blå pletter*
 pig-DEF with blue spots
 ‘the pig with blue spots’

(50) **den gris med blå pletter*
 DEF pig with blue spots

Note that (as examples (48) and (50) show) postnominal PPs do not license the prenominal article: like (48), (50) has only a demonstrative reading. In the analysis of H&M, this would indicate that the PP is adjoined to the DP rather than to NP:



For if the PP were adjoined to NP, as in (52),



the postnominal PP should license the prenominal article, just like a restrictive relative does (cf. (44) – (46)).

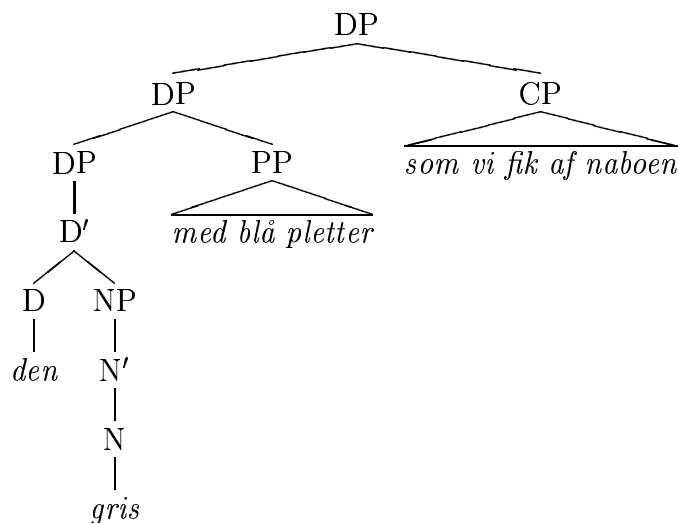
This leads to a prediction, namely that a restrictive relative clause attached outside a postnominal PP should not be able to license the prenominal article, since it would not prevent Poser-blocking (nor block insertion of *-en*). This prediction turns out to be incorrect, as shown by (53).³¹

- (53) *den gris med blå pletter som vi fik af naboen*
 DEF pig with blue spots that we got from neighbor-DEF
 ‘the pig with blue spots that we got from the neighbor’

On the H&M analysis, the PP *med blå pletter* has to be adjoined to DP, not to NP, so that Poser-blocking can apply to rule out (50); but then the relative clause must also be adjoined to DP, and it is a mystery why Poser-blocking does not apply to rule out the prenominal article in (53) (compare (54) with the blocked (46)).

³¹Not all speakers accept (53) as a definite DP. Two of the ten speakers we consulted rejected the definite reading of (53), allowing only a demonstrative reading of *den* in this construction. However, both speakers also do not accept (43b) as a definite DP (see footnote 30), so this divergence seems independent of the PP and hence irrelevant for the point at hand.

(54)



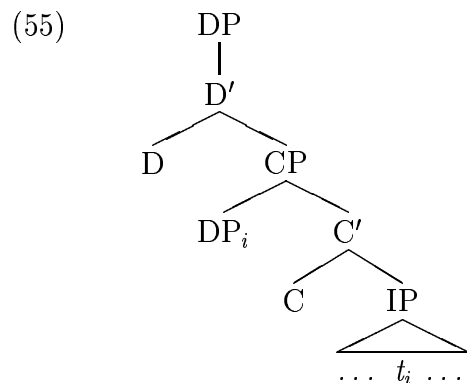
Similarly, in the ADM analysis developed in section 5, the facts in (47)–(50) would seem to indicate exactly the same conclusions regarding structure, and exactly the same puzzle remains: if (54) is the structure of (53), the DEF morpheme is the sister to N and should obligatorily take the suffixed form, and yet the prenominal definite article is possible.

6.4 A DP raising analysis of relative clauses

We believe that there is a solution to this puzzle which rescues both analyses, though its adoption will open up another set of questions. This solution involves two assumptions: first, that postnominal PPs are adjoined to DP, not to NP (essentially forced on both analyses by the facts in (47)–(50)); and second, that restrictive relative clauses are derived by DP raising, as proposed in Bianchi (1999, 2000).

The central elements of Bianchi’s DP raising analysis (a modification of the NP raising analysis of Kayne (1994), itself a resuscitation of ideas developed in unpublished work by Michael Brame in the 1960s and by Vergnaud (1974, 1982)), are that restrictive relative clauses are not adjoined, but rather originate as CP complements to D, and that a DP from within the relative clause is raised to Spec CP:³²

³²Áfarli (1994) proposes a DP raising analysis for Norwegian restrictive relative clauses, but it differs from Bianchi’s in a very important respect; there is no external D, instead the whole structure is a TP whose specifier is occupied by the raised DP:



Bianchi provides various arguments in favor of the DP raising analysis, including arguments from relativization of idiom chunks (Bianchi 1999:43–45) and from binding of reflexives in Italian (Bianchi 1999:115–122). Áfarli (1994:85–88) provides similar evidence from Norwegian and such evidence is also available in Danish. Since the argument from idioms is well-known, we limit ourselves to discussing reflexive licensing in restrictive relative clause constructions.

Evidence for DP raising in Danish Danish has a third person possessive reflexive *sin*, which must be bound by, roughly, a clause-mate subject (Diderichsen (1966:55–58); Vikner (1985:23)). Topicalization constructions like (56) indicate that the reflexive need not be c-commanded by its antecedent at surface structure, and that the licensing can take place under reconstruction of A-bar movement:

- (56) Preceding context: *Harvey knows most of his extended family, but ...*
 [Sin_i yngste fætter]_k har han_i aldrig mødt t_k.
 SELF'S youngest cousin has he never met

If restrictive relative clauses also involve A-bar movement (of a DP to Spec-CP) then we expect that a raised non-subject DP could similarly contain a reflexive that was bound by the subject of the relative clause. As (57) shows, this is indeed the case:

-
- i. [TP slike sko_i [T' [T som] [VP han købte t_i]]] (Áfarli 1994:84, ex. (13b))
 such shoes SOM he bought

Bianchi (1999:71–74) argues against this analysis and in particular for the presence of an external D (pp. 41–49).

- (57) De [aspekter af sin_i personlighed] $_j$ som Harry $_i$ havde sværest ved at akceptere
 the aspects of SELF'S personality that Harry had hardest by to accept
 t_j ødelagde hans karriere.
 ruined his career.
 'The aspects of his_i personality that Harry $_i$ had most difficulty accepting ruined his
 career.'

In contrast, the reflexive is not licensed if the raised DP is itself the subject of the relative clause, i.e. if the licensing conditions are not met prior to the DP raising:³³

- (58) *De [aspekter af sin_i personlighed] $_j$ som t_j ødelagde Harry $_i$'s karriere var forbløffende
 the aspects of SELF'S personality that ruined Harry's career were surprisingly
 få
 few
 Intended meaning 'The aspects of his_i personality that ruined Harry $_i$'s career were
 surprisingly few.'

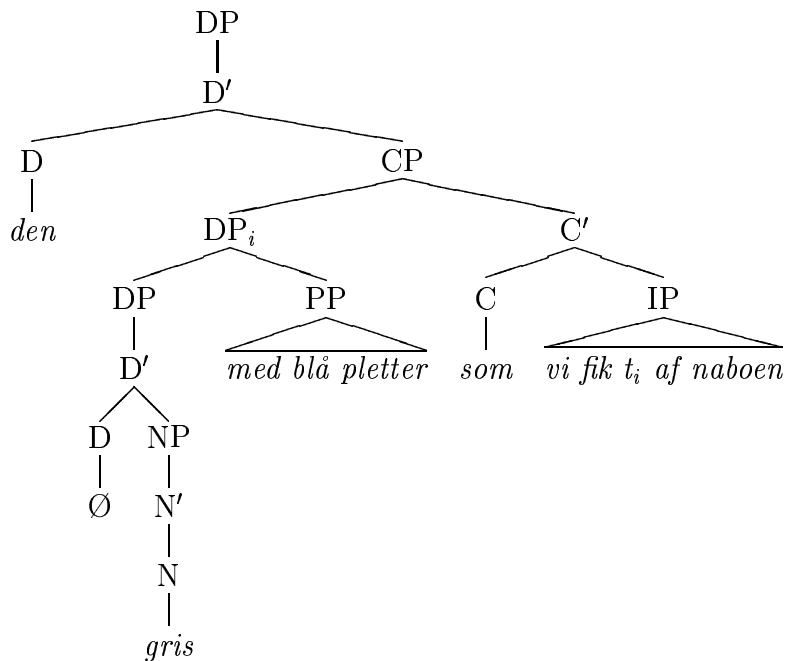
These facts provide evidence for Danish restrictive relative clauses being derived by DP raising.³⁴

Back to definiteness marking With these assumptions in place, the structure of (53) is not (54), but (59).

³³A note about these judgments is in order. Of the twelve speakers we consulted ten reported a contrast between (57) and (58). These ten speakers all judged (57) to be better than (58), though not everyone among the ten found (57) completely acceptable, nor did everyone find (58) completely unacceptable. The remaining two speakers accepted both (57) and (58). Åfarli (1994:87, fn. 3) reports similar variability in the judgment on the corresponding Norwegian data. This clearly deserves further investigation.

³⁴We propose this DP raising analysis only for *restrictive* relative clauses. Also note that we are adopting this analysis because it solves an empirical puzzle; but we are not adopting Kayne's Linear Correspondence Axiom. In particular, we assume that postnominal PPs are right-adjoined, which would not be permitted by the LCA.

(59)



And now both the H&M analysis and the ADM analysis make the correct prediction regarding the realization of definiteness. Under the analysis of H&M, Poser-blocking does not apply because *den gris* is not a phrase; under the ADM analysis the [D, def, sg, cg] morpheme is not a sister to a minimal N, hence *-en* cannot be inserted, and instead the default form *den* is inserted. It is crucial for both of these accounts that the inner D is the null one, and the outer D the one that bears the [def] feature. Bianchi (1999:41–49) provides a number of arguments (based on the indefiniteness of the trace, the distribution of the definite article and the N of the raised constituent, idiom chunks, scope assignment, and floating quantifiers) that the overt D is always the external D.³⁵

Now we are ready to propose an account of the second mystery mentioned at the end of section 6.1: that Swedish double definiteness marking appears to be *optional* in the presence

³⁵H&M argued that the relative clause facts constituted a problem (in addition to those discussed in section 4) for the head movement analysis of Delsing (1993), because they assumed an adjunction analysis of restrictive relative clauses and there was no apparent reason why head movement should be blocked in the presence of an adjoined restrictive relative clause. As noted in section 6.2, the same problem arises for E&N, as long as one assumes an adjunction analysis of restrictive relative clauses. Given the DP raising analysis proposed here, however, that particular problem goes away, since movement of the N to the outer D would not be expected in the configuration in (59). Any version of the Head Movement Constraint should permit movement only of the head of the complement to the upper head position; nothing should be able to move out of a specifier to the upper head position. Besides, this particular specifier has already been moved, and movement out of a previously moved constituent is also not expected. The problems with N-to-D raising discussed in section 4 still remain, however.

6.5 “Complement” PPs

A final puzzle does remain. (47)–(50) showed that postnominal modifier PPs seem to be adjoined to DP, i.e. outside NP. But argument PPs are just like modifier PPs in not licensing the prenominal article:³⁶

(63) forfatteren til bogen
 author-DEF to book-DEF
 ‘the author of the book’

(64) *den forfatter til bogen
 DEF author to book-DEF

If, as is commonly assumed, argument PPs are sisters to N, these facts are not accounted for under either the H&M analysis or the ADM analysis. H&M do predict the grammaticality of (63), since their Rule D ensures that a derived determiner inherits the subcategorization properties of the corresponding noun (pp. 155–156). However, their analysis would not account for the ungrammaticality of (64), since *den forfatter* does not form a phrase and Poser-Blocking should not take effect. The ADM analysis, on the other hand, predicts the opposite of the attested pattern: (63) should be ungrammatical and (64) grammatical, since the D would not be a sister to a minimal N.

Following the reasoning of section 6.3, it seems that we are driven to the conclusion that PP arguments are not complements to N, but rather adjuncts, and indeed adjuncts to DP,

³⁶However, just as is the case with modifier PPs, a restrictive relative clause “outside” the PP licenses the definite article (to allow for a restrictive interpretation of the relative clause we must assume multiple authors, one of whom came to the party, which is indeed what is implied by (i)):

- i. den forfatter [_{PP} til bogen] [_{CP} som kom til festen]
 DEF author to book-DEF that came to party-DEF
 ‘the author of the book that came to the party’

7 Conclusion

We have seen that while the assumption of N-to-D movement (with an Abney-style structure for DPs containing modifiers) together with the postsyntactic morphology of DM can provide an apparently elegant account of the core facts of definiteness marking in Danish and Swedish, this very assumption (that N moves to D) is difficult to reconcile with the assumptions of DM when a fuller range of data is considered. In particular, it appears that the adoption of head movement as a central part of the analysis requires admitting that syntax is sensitive

³⁷This, while it sounds radical, is not implausible. It is easy to construct examples in which “argument” PPs are outside “adjunct” PPs:

- i. the destruction in the 18th century of all the manuscripts
- ii. the destruction by Visigoths of the cities of the empire
- iii. the author in the 80s and 90s of more than 20 novels

³⁸In order to evade the problem posed in this section, an anonymous LI reviewer suggested an alternative to our ADM analysis, in which some of the work done in our analysis by reference to hierarchical structure is done by reference to linear adjacency. Basically, the idea is to make the choice of *-en* in rule (35a) sensitive both to sisterhood, as in our version, *and* to linear adjacency. Thus the suffixed form is chosen when the head of the complement to D is an N (not necessarily minimal) *and* phonologically adjacent to D. To make this analysis distinguish between AP modifiers, which intervene linearly between D and N, and thus block the choice of the suffix, and PP modifiers, which do not, it will be necessary to assume a theory of linearization that has AP and PP linearized with respect to NP before the choice between *-en* and *den* occurs. This could be arranged if linearization happens cyclically (with a cycle on each node), along with Vocabulary Insertion. Thus in *den gamle hest*, *hest* and *gamle* would be inserted and linearized before *den* is inserted. *-en* cannot be inserted because the D is not at this point linearly adjacent to the N *hest*. In *hesten på marken*, it will not matter at what level the PP is adjoined, because at the time *-en* is inserted, the PP will already be linearized to the right of the head N (by whatever principles do that job) and it will not linearly intervene between D and N. The same will be true of PP arguments to N.

The licensing of *den* by restrictive relative clauses would still depend on the DP raising analysis: the D and N would be adjacent, but N would not be the head of the complement of D.

A problem arises, however, when we consider how the adjacency condition works to block the insertion of *-en* when an AP intervenes. In order to get APs to intervene linearly and PPs not to, linearization has to be cyclic. But it is also necessary to assume that D is linearized with respect to its complement NP *before* the choice is made between *-en* and *den* (for only after D is linearized with respect to its complement NP will it be possible to tell whether it is adjacent to a N or separated from it by an intervening AP.)

It is hard for us to reconcile this with the assumption that linearization happens “at Vocabulary Insertion”. It looks like for this to work linearization must happen *before* Vocabulary Insertion. If this is the case, what reason is there to assume that linearization happens late at all?

Because we take seriously the assumptions that pre-Vocabulary Insertion structures are not linearized, and that linearization coincides with Vocabulary Insertion (cf. discussion of this in section 5.2), we have to reject this proposal.

to word-internal morphological structure (including properties of particular lexical items). Furthermore, we have seen that in the E&N analysis the crucial element in accounting for the distribution of the two definiteness markers is the stipulation that N-to-D raising is obligatory where possible, and that this stipulation is theoretically problematic (section 4.2). We have consequently dismissed N-to-D movement as part of a DM analysis of definiteness marking in Danish and Swedish.

Now that we have, on the one hand, abandoned N-to-D raising, and on the other adopted the DP raising analysis of restrictive relative clauses, we have two empirically equivalent alternative analyses: the lexicalist analysis of H&M and the Alternative DM account devised in section 5. In comparing these analyses, we can see that there is a rather direct trade-off between Poser-blocking in the H&M analysis and the Extended Subset Principle in the ADM analysis. In H&M, the suffixed definite noun forms are formed lexically, and Poser-blocking is called on to eliminate phrasal structures formed in syntax that compete with the lexically formed ones. In ADM the same competition is resolved by disjunctive ordering of the Vocabulary Items realizing the definiteness morpheme, governed by the Extended Subset Principle. We have seen also that once the DP raising analysis of restrictive relative clauses is adopted, the Extended Subset Principle in the ADM analysis again plays a role exactly parallel to Poser-blocking in the H&M analysis in accounting for the complex distribution of the definiteness markers in structures involving restrictive relative clauses. This trade-off is particularly interesting, as it bears directly on the interaction between morphology and syntax and the different views of this interaction within lexicalist and DM frameworks.

To lay groundwork for the ensuing comparison, it will be useful first to attempt a characterization of Poser-blocking as a phenomenon, ignoring for the moment its treatment within a theoretical framework. As Poser (1992:123–128) was careful to note, an adequate statement of the conditions under which a lexical form is expected to block a phrasal construction depends on an adequate theory of morphological categories, specifically a theory which recognizes the expression of morphological categories either in sublexical (affixal, stem change,

etc) ways or in phrasal constructions. Beard (1995), for example, provides a useful distinction between *lexemes* (members of open class categories such as N, A, V) and *morphemes* (members of closed categories, whether sublexical elements or independent words; Anderson (1992:198–224) provides an extensive discussion of word-level and phrase-level morphology; see also Harley and Noyer (1999:4)). The particular kind of competition that leads to Poser-blocking arises only in situations where a morphological category is expressible in either a sublexical way or an analytical way. The reason, for example, that *stallion* does not block *male horse* (and *pink*, contra Householder (1971), does not block *pale red*) is that *stallion*, *male*, and *horse* are *lexemes* in Beard’s terms, and no expression of a *morphological* category is at issue. In the case of Danish definiteness marking, DEF is a morphological category, and one which can be realized either sublexically (as a suffix) or analytically (as an article). The two forms are in complementary distribution and this constitutes an instance of the Poser-blocking phenomenon.

Now let us examine how the two analyses before us deal with this phenomenon. The lexicalist H&M analysis involves an admittedly transderivational constraint, according to which a phrasal construction is ruled out because of the existence of a presyntactically derived lexical form.³⁹ One reviewer raised the question whether Poser-blocking is implementable (a worry that is surely on a lot of people’s minds). The answer to this question is not straightforward. In this particular case, the desired effect can be easily implemented. Mechanically, all that would be required is the following: when a DP is formed by merging a definite D with a single N, the lexicon is checked to see if there is a derived D expressing the same category. If there is, the phrasal construction is blocked and its derivation crashes.^{40,41}

³⁹As shown in Potts (2001), the kind of transderivational power required for Poser-blocking is rather weak; it falls within the weakest of the three classes in his classification (p. 38).

⁴⁰Potts (2001:26–28) provides a declarative formulation of Poser-blocking using the metarule format of Gazdar et al. (1985:57–74).

⁴¹A reviewer raised the objection that this lexical search might not terminate, under the assumption that a lexicon constructed in part by productive rules might not be finite. This is an interesting worry, and might be responded to in several ways. First, we could deny that the existence of productive rules like Rule D would lead to an infinite lexicon. Rule D itself surely does not, since it adds at most a number of derived Ds equal to the number of Ns (fewer, of course, because of the morphological gaps). Nevertheless, it is conceivable that other productive rules might (through recursion) make the lexicon in principle non-finite.

There is something unsatisfying about this, though, and it is interesting to contemplate what it is. It is clear that the Poser-blocking effect can be got in this case by this mechanical procedure, but it is not clear how Poser-blocking *in general* is to be implemented. And it is precisely the general predictive power of Poser-blocking that constitutes its appeal. The problem with a *general* implementable formulation of Poser-blocking is that (as Poser (pp. 125–128) recognized) without a well worked out theory of morphological categories which recognizes both sublexical and phrase-level morphological processes, it is impossible to say exactly when, in general, a syntactic formation (an instance of Merge, for example) should trigger an examination of the lexicon and what should be looked for there.

Let us now turn to the ADM and the Extended Subset Principle, and ask if we have any dissatisfaction with that. Empirically, we have none, since the ADM analysis we devised appears to account for the facts exactly as well as the H&M analysis. In terms of generality, the two analyses might seem to be on equal ground, since each appeals to a purportedly universal principle (H&M that lexical forms trump phrasal forms, ADM that more specific environments beat less specific ones in disjunctive rule application). But here we do have a difference, and it seems to favor Poser-blocking: there is nothing in the Extended Subset Principle that predicts that the more restricted environment will be the one selecting the

Second, if the lexicon is not finite, there is a danger of an infinite search only if it is assumed that the lexicon is not sorted; but if we make the rather minimal assumption that the lexicon is sorted by length (measured any way at all: by segments, by syllables, by moras, by feet ...) then the search for an item of a given length (e.g. two segments longer than a given noun) would have to consider in the worst case the finite sublexicon consisting of items of that length.

On the even more plausible assumption that the lexicon is sorted by initial substring (as it would be if it were stored as a trie, for example), the search for a D corresponding to a given N would be virtually done by the time the N had been recognized.

Finally, though, and this is our real response to the objection, it is a matter of empirical observation that (whether lexicons are finite or not) humans seem to be able to look things up in them (and very fast, too). There is no general agreement on how we go about it, but it is known that we are very good and very fast at finding (“accessing”) an item in our mental lexicon given its phonetic shape as auditory input (see, for example, Marslen-Wilson (1989), where it is argued that lexical access is so fast precisely because words with common initial substrings form “cohorts” which are simultaneously activated during word recognition). So if a Danish speaker’s mental lexicon had *hesten* in it, (s)he would probably find it. And if no such entry existed, (s)he would probably be sure after a short while that it was not there.

One more thing, though, needs to be said. The reviewer pointed out that an alternative would be not to check the lexicon for an existing entry, but to try Rule D and see if it produced anything. If it did, the syntactic construction would be aborted, otherwise not. This is a plausible, though not very lexicalist, way to encode what happens. This is in essence what the ADM analysis (developed in section 5) does.

sublexical spell-out of the DEF morpheme. Poser-blocking predicts this. This is a virtue if you believe that Poser-blocking expresses a true general property of language. Is there a way to build the principle expressed in Poser's generalization directly into the ADM framework? It seems that there is, and a rather straightforward one. We propose now to explore the possibility that Poser-blocking effects, within a DM framework, are always the result of the following generalization, which we will call the Sublexical Preference Generalization:

(65) **Sublexical Preference Generalization**

In disjunctive exponent selection, if the competition is between sublexical and analytical expressions of a single morpheme, there will always be more stringent constraints on the insertion of the sublexical form.⁴²

The Sublexical Preference Generalization in conjunction with the Extended Subset Principle causes the sublexical form to be favored, where it can occur. If this is accepted, we will have captured Poser's generalization without the problems of a transderivational formulation. The effect will reduce to a consequence of the Sublexical Preference Generalization together with the Extended Subset Principle, a version of the Elsewhere Principle. To follow up this line of thought, the next thing to do would be to examine all the proposed cases of Poser-blocking and see if they are susceptible to analysis along the lines suggested here.

To sum up, we have come to several intermediate and a couple of final conclusions. First, we have concluded that the E&N analysis, which crucially depends on N-to-D movement, cannot be maintained; second, that an Alternative DM analysis without N-to-D movement can be devised and extended to cover the non-core facts as well as the H&M analysis does. Along the way, we have concluded that under *either* the H&M analysis *or* the ADM analysis, two surprising auxiliary assumptions are required: that postnominal PPs, whether modifiers or arguments, are not within NP but adjoined to DP; and that restrictive relative clauses are derived by DP raising. We have shown that the Poser-blocking effect, which is treated as (weakly) transderivational in the H&M analysis, can be reduced to a non-transderivational

⁴²We have stated the generalization in its strongest form, as a linguistic universal. It is conceivable that it is instead a statistically predominant tendency.

Elsewhere-Principle effect in the ADM analysis, if the Sublexical Preference Generalization is adopted. Finally, we have seen that while it is possible to construct an analysis under lexicalist assumptions in which morphology is presyntactic, and possible to construct an analysis under DM assumptions, where morphology is postsyntactic, in neither of the two viable accounts of definiteness marking in Danish and Swedish is there any movement at all.

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