

## **Crosslinguistic asymmetries in Noun-Movement: a view from Morphology**

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### **1. Introduction**

Since the establishment of the 'DP analysis' (Abney 1987, Horrocks & Stavrou 1987, Szabolcsi 1987 among others), research on the noun phrase opened up questions similar to those being asked about the number, the types and the role of functional projections in the CP/IP in the light of Pollock's (1989) and Ouhalla's (1988) 'split INFL' hypothesis. Moreover, there has been a widely spread literature on the strongly held assumption about N raising to D (or to an intermediate functional category, when there is one) for either morphological well-formedness reasons, syntactic constraints (checking of the case/number/gender features) or semantic reasons (checking of the definiteness/referentiality features cf. Longobardi 1994). Such a movement has been argued to be parametrized across languages, much like V-movement in the broader clausal domain.

In this paper we would like to take a fresh look at the issue of N(oun)-movement by comparing languages in which this movement is generally held to apply (Romance-Semitic) with languages in which it does not apply (at least not 'overtly') (Greek). Greek behaves like Germanic (English/German/Scandinavian in Giusti's 1994 account) in that no overt N-movement is observed, despite the fact that in this language there are both V-movement and a rich nominal morphology. Since the basic trigger for N-movement is standardly assumed to be the morphology of the noun (and/or the determiner), the main focus of our examination will be placed on the morphological properties of Greek nouns.

### **2. N-movement: general considerations**

N-movement within DP, a process conceived as parallel to V-movement, is argued for on the basis of (a) the need for licensing (checking) semantic features (definiteness, referentiality), (b) checking of morphosyntactic features (number, gender, case), (c) the affixal character of the determiner in certain languages. Assignment/licensing of the genitive case to a complement/possessor of the noun is usually taken as a concomitant feature of N-movement. These triggers of movement may, but they don't have to, co-exist. Overt movement of the noun, triggered by 'strong' morphology (Bosque and Picallo 1994, (B&P)), along the lines of Chomsky (1993, 1995), is testified by the position of the adjective(s) and/or the position of certain nominal arguments (the 'possessor' and the external argument of an (eventive) noun): taking the basic position for adjectives (and external arguments) to be crosslinguistically prenominal (but see Lamarche 1991), their postnominal occurrence is attributed to the movement of the noun. Of course, movement of the noun at LF is assumed to hold universally. 'Weak' morphology, on the other hand, is covertly checked. Both Spanish and Italian are standardly taken to display 'strong' morphology. In order to better understand the above assumptions we shall start by reviewing them as they are manifested in particular languages.

## 2.1. Romance (apart from Rumanian and Walloon)

In Romance, the general consensus is that the noun moves to the head of relevant intermediate functional projections to incorporate or check its gender and number morphemes features overtly expressed on the noun (Bernstein 1993; Picallo 1991; Crisma 1993,95; Bosque & Picallo 1994; Cinque 1993; Valois 1991, Zamparelli 1994)). Such a movement is made visible by the 'postnominal' position of the adjective, which is considered to be generated preminally, and by (the position of) the arguments of the noun which are also generated preminally but show up postnominally. Consider the following examples:

- (1) (a) Li distruzione romana di Cartagine  
the destruction Roman of Carthage (Zamparelli 1994)
- (b) \*La romana distruzione di Carthage

((1) shows that in Italian the noun moves past thematic/referential adjectives, to the head of a functional projection located above NP. There are at least two questions posed by this assumption: first, how far can the noun go and second, what is the content of the projection(s) to which the noun raises. Regarding the first question, the answer that has been given is that in Italian the noun can raise so far as to not leave behind more than one non-incorporated and non-predicative adjective (Zamparelli 1994; but see Crisma (1993) who assumes a two-step movement of the noun): moreover, conclusive evidence for this is provided by the fact that if there is a complement it appears after the adjective that has been crossed over by the noun (Cinque, 1993 and De Wit & Schoorlemmer (1996: 194) after him assume that N reaches the head of a projection equivalent to NumP). The same 'distance' of N-movement has been argued for for French by Valois (1991).

We shall deal with the second of the aforementioned problems momentarily.

In Spanish, N moves cyclically twice (Picallo 1991; Bernstein 1993) or three times (Bosque & Picallo 1994): consider the following examples:

- (2) (a) el temor d'ell als trons  
the fear of him to thunderclaps (Picallo 1991)
- (b) un libro rojo  
a book red
- (c) una comedia musical americana divertida  
a comedy musical American amusing (Bosque & Picallo 1994)

Where and why does the noun move in both Italian and Spanish? It does so either to incorporate the gender and number inflectional affixes (Picallo 1991; Bernstein 1991), or to check relevant features (Bosque & Picallo 1994) within the spirit of minimalism, where lexical items are inserted/merged fully inflected. Therefore, as all nouns in Romance inflect for number and gender, the general consensus is that the noun moves cyclically to at least the head of a Gender (a slight variant of which is called *Word Marker* by Bernstein) and a Number projection as illustrated in (3) below:

(3) [DP [NumP[ [[[gat-]i]+F]j+P] [GenP tj NP ti]]]] (from Picallo 1991: 283)

NumP and GenP are often conflated under a single AgrP node, parallel to non-split IP in the clause. Nevertheless, as already mentioned, the number of adjectives interfering with N-movement, often impose the 'split' of AgrP into two, or more, functional projections.

Some linguists go further, suggesting one more movement of the noun to a Case (or Kase) Phrase, although nominals in Spanish/Italian do not bear overt case morphology. B & P assume, along the lines of Giusti (1993), that N moves to the K head to check its (abstract) case features, thus putting weak and strong morphology on an equal footing wrt movement triggering (cf.: "Covert head to head N raising would allow the Noun to check its (overt) Number in Agr\_ and its (covert) Case in K<sup>o</sup>" (B & P: 47). Notice that this assumption is based on the separation of case features from D, which, in this case, keeps the semantic features of reference deixis.

### 2.2. Romanian

The noun may move up to D<sub>-</sub> to incorporate into the definite article which is of affixal character (Grosu 1988; Giusti 1994), as in (4):

- (4) (a) om-ul acesta  
man-the this
- (b) om-ul batrin  
man-the old

Since according to certain linguists in Romanian there are intermediate projections between DP and the NP, established independently (Cornilescu 1993), N, obeying strict cyclicity, passes through these intermediate Agr categories, from one of which it assigns the genitive case to its complement DP, in the spec of this category through ordinary spec-head agreement (Cornilescu 1993):

- (5) portretu-l rege-l-ui  
portrait-art king-art-Gen

This idea is implemented recently by Grosu (1994) in the spirit of minimalism: the DP assigned the genitive bears a strong feature which needs to be checked, so the possessor DP raises to spec AGRP (or NUMP) to check number specification. The head noun, which has incorporated the affixal (definite) determiner by moving to D is thus adjacent to the genitive (see also Grosu 1988).

### 2.3. Hebrew

The interference of N-movement with the assignment of the genitive is also seen in Hebrew. In Hebrew, the noun raises to the head D of the DP in order to lexicalise, thus licensing, the (phonologically unrealized) feature [Gen] which may be borne by it in construct state noun phrases, and further assigning this feature to the DP strict adjacent to it (Ritter 1991):

- (6) beyt ha-mora  
house the-teacher (the teacher's house)

Alternatively, the noun moves to the intermediate Num(ber) head in free genitive NPs, from where it doesn't need to raise to D (even when it is not filled by the article)-probably obeying Procrastinate:

- (7) (ha-) bayit sel ha-mora  
(the) house of the-teacher

It is perhaps worth mentioning here that the position of adjectives conforms/follows (from) with these movements and the position of the genitive phrase in both CS and FG constructions: namely, given that they are generated as NP adjuncts, they follow the subject (in Spec-NumP) and precede the object in CSs, whereas they are found between the head noun (in Num) and the genitive, which is either in Spec.NP if an argument of the noun, or a DP (right) adjunct if a possessor (Ritter 1991).

#### 2.4. Scandinavian

For Scandinavian there is not a uniform treatment. Thus, Delsing (1993), Kester (1993), among others, hold that N raises to D to incorporate the affixal (definite) article:

- (8) (a) huset  
house-the
- (b) mannen (Mainland Scandinavian)  
man-the

However, Giusti (1994) argues against this analysis and in favour of a minimalist account, according to which nouns are inserted fully inflected, thus with the affixal article already attached to them, and it is checked after spell-out, unlike what happens in Rumanian. Giusti's analysis unifies in fact all the Germanic languages as far as N-movement is concerned: in these (e.g. English, German), no overt N-to-D movement is observed, as, given the cyclic character of movement, there is no short movement to an intermediate (Agr) position either, as is clear from the fact that adjectives always precede the noun.

#### 2.5. Criticism

It is clear even from the above, even schematic excursus to the instantiation of N-movement across some typologically unrelated (Hebrew, Germanic) languages, that the idea of N-movement is based crucially, not only on the existence of a D head, but also on the separation of other functional projections, the existence of which is in turn justified by the separation from D of certain features with which it was originally associated. Thus, in earlier work D included both morphosyntactic (case & phi-features) and semantic (reference/deixis) features (cf. Abney: "D is the site of AGR in the noun phrase":59; Horrocks & Stavrou, 1987, according to whom DP is equivalent to C" in Greek, to I" in English, and Longobardi: "The crucial nature of the category D for argumenthood seems to be independently manifested by the fact that certain designation properties typical of arguments, such as the semantic import of grammatical number, lie precisely in the D position": 1994: 620; and further:

arguments...crucially rely on the D position in order to license their meaning with respect to number: 621)).

Soon, however, as research on this domain advanced, almost all of these features came to head their own projection. Thus, for Romance (and partly in Hebrew) phi-features head equivalent projections (GenP, NumP). It is interesting though that the data that motivates them are significantly uneven across languages: In Hebrew, e.g., Ritter shows that only Number is a syntactic feature, attached to the noun syntactically, whereas gender is derivational, hence a lexical (inherent) feature of the noun-stem; for her, Gen is not projected syntactically. For Romance, on the other hand, the same features are considered as syntactic heads, the affixes with which they are realized being trivially incorporated onto the stem noun: NumP is considered as parallel to IP (Carstens 1993). Importantly, it seems that the decisive piece of evidence for N-movement in Romance is the position of adjective(s) relative to the noun, whereas this is epiphenomenal in the case of Hebrew (and Rumanian, among Romance), as N-movement is triggered by the affixal status of the article. For Italian and Spanish, then, the features of number and gender are treated as (morphologically) 'strong' in the sense of Pollock (1989). This is pointed out by Di Domenico 1995, who makes a further distinction between a type of gender which she calls 'variable' (as in *ragazzo/ragazza* 'boy/girl') and which has independent semantic content, and the gender which is not variable and may not have semantic content (as in *sedia* 'chair'). She then considers only the first type to be syntactically projected, under NUMP, as a feature parasitic to Number and in direct correlation with [animacy], while the second is only lexically specified on the noun stem.

It should be brought into attention, that an AGR node has been originally proposed in the DP in view of those languages in which agreement operates in the DP in a strikingly similar way as in clauses, e.g. Hungarian, Turkish, Yup'ik (Szabolcsi 1987,1994 ("possessive inflection is almost identical to verbal inflection..": 187); Abney 1987: 37 et pass.), cf. (9):

- (9) (a) az én kalap-om  
the I (nom) hat- POSS ISG
- (b) a l' u-k kalap-ja  
the boy-PL (NOM) hst- POSS 3SG (Szabolcsi 1994: 187)

As already commented upon, establishing an (abstract) AGR node in languages not exhibiting the kind of agreement Hungarian does, needs some extra motivation and often causes disagreement among researchers.

Turning to Case features, they present us with a trickier situation. As regards the case on nouns, apart from the analyses like the one put forth by B & P (1994) and Valois (1991), in which a C(K)ase P is located between D and NP, there are also proposals about KP being the uppermost projection of noun phrases which selects DP as its complement (Lobel 1994; Giusti 1992, who calls it FP). In this case, the head K "does not assign Case but is a functional category which *is* case" (Lobel, 1994: 43). Under these analyses, D is stripped off from all the usual features but definiteness (and AGR according to Lobel, but not according to Giusti who posits separate AGR nodes in the DP).

Before we close this general section/overview on the treatment of N-movement in the literature, we think it is necessary to briefly mention the semantic trigger of such a movement in the light of Longobardi's analysis.

### 2.6 Longobardi's proposal

Longobardi (1994) has argued for an N-to-D analysis basically in terms of the original import of D but considering in detail the crosslinguistic variation as to whether N moves to D overtly (Romance) or covertly (Germanic) in order for its complement NP to be licensed as an argument (his Parameter: "N raises to D (by substitution) in the Syntax in Italian but not in English":641). Thus, given that D universally bears an R(eferential) feature which has to be checked wrt both of its values, languages are characterized as having the [+R] feature either strong (Romance) or weak (Germanic). These basic assumptions interfere with specific cases which instantiate the (independent) possibility for D to be lexically filled, contain a pronoun or be empty and the checking of the + or - value of R gives the expected result in every case. It is further assumed that an empty D must be properly governed (at LF) and that the existential interpretation is an 'anywhere' rule.

## 3. The Greek DP

Let us look more closely at the properties of the Greek nominal system. Greek has a rich nominal inflectional system, manifesting morphological distinctions for three distinct grammatical genders (masc. fem. neut.) and two numbers (sing., pl.) on both the noun and the determiner, as well as the adjective and, in fact, on any adjective-like element that may intervene between the determiner and the noun. In this respect Greek is similar to Romance, although it displays one more grammatical gender (neuter). Nevertheless, Greek is unlike Romance in that it further displays both a full case system on the noun (like Latin) and determiners (also inflected).

There are four distinct morphological cases in the singular and four in the plural, nominative, accusative, genitive and vocative (vocative is in most of the cases non-distinct from nominative). Case, number and gender are added to the end of the noun-stem in the form of inflectional affixes. There is a high degree of syncretism in the language, whereby different features are realised by the same affix. The highest degree of syncretism in nominal inflection occurs with neuter nouns and neuter determiners, the nominative, accusative and vocative forms are indistinguishable. Moreover, unlike Romance, number and gender are never affixed to the stem by distinct affixes (contrast *l-a pelicul-a* (sg.), *l-a-s pelicul-a-s* (pl) in Spanish, with *o anthrop-os* (sg.) 'the human' *i anthrop-i* 'the humans' (pl) in Greek ( see Ralli 1994: to appear, for a detailed description of the Greek nominal inflection system). But neither is case distinct from gender and/or number (*anthrop-os* MASC/SG NOM *-anthrop-u* MASC/SG GEN).

There is one more feature interfering with gender/number and case-what is usually called inflection class (marker) (Ralli 1994; to appear). Inflection class is essentially a classificatory feature shared by both the nominal stem and the ending, which indicates the exact declensional class of a particular noun. The specific value (see Ralli op.cit.) of this feature triggers a particular phonologically expressed marker (roughly corresponding to Bernstein's Word Marker and Picallo's Gender). Ralli does not specify the correlation between gender

and inflection class (notice further that for di Domenico Gender is just an abstract feature having always a specific 'morphological mark'/expression'. so, for her this mark is simply the realization of an abstract feature), but apparently the inflectional classes Ralli distinguishes are based on gender distinctions (e.g., her classes 5-8 comprise neuter paradigms, classes 3-4 feminine). Furthermore, crucial to her analysis is the assumption that whereas Gender triggers syntactic agreement between the adjective and the noun (and naturally between the determiner and the noun), inflection class marker does not ( cf. also di Domenico: 6) cf. (10).

(10) tin                                    epimel-i                                    mathitr-ia  
       theFEM/SG/ACC                    diligentFEM/SG/ACC                    pupilFEM/SG/ACC

Inflection marker, being a purely morphological feature, simply assigns nouns to declensional classes-according to Rali (op.cit) there are eight such classes in Greek.

Crucially, Greek falls under Carstens (1993) Type II languages which she calls Percolation Agreement (PA) languages, as the features of N plus the features of Num (ibid.) "spread throughout DP, surfacing as agreement on D° (Span. *las peliculas malas*), and on arguments and modifiers" (ibid). As expected and as seen already in (10), extended overt agreement between the determiner, the adjective and the noun in all the relevant morphosyntactic features is a typical characteristic of languages, cf. (11) below:

(11)(a) to                                    endhyaferon                                    piima  
       the(neut. nom. sing) interesting (neut. nom. sing) poem (neut. sing. nom)

(b) i                                    telia                                    ghlosa  
       the(fem. nom.sing) perfect (fem. nom. sing) language(fem. nom. sing.)

Agreement is not dealt with by Ralli, but it is stated that agreement is handled by syntactic operations which are fed with the appropriate distribution of morphosyntactic features on the relevant morphemes (both stems and affixes). Thus, for Ralli, it is fully inflected forms that are inserted at the word level in the syntax. Such morphologically complex words are the product of Word Formation Rules which combine a stem and an inflectional affix. This analysis assigns to the features which make up the inflectional affix a purely morphological character. However, certain inflectional features are allowed to percolate to the topmost word node, being from there accessible to syntactic mechanisms, whereas others are not. Gender belongs to the first subcategory; it is an inherent feature of the noun stem which percolates up to the highest word node (N) being relevant to agreement. Inflectional class does not percolate to the word level, as it does not participate in agreement. Number and case are features of the affix which percolate to the word non-level: they are checked against verbal categories in syntax (number is further involved in agreement along with gender).

In recent syntactic accounts of the phenomenon of agreement (Chomsky 1995; Kayne 1994, Cinque 1993, Zamparelli 1994 a.o.) the general assumption is that agreement is implemented within the structural configuration involving a head and a specifier within the same projection (spec-head agreement): or it may be a relation between two heads under selection (head-head agreement). The relationship between a specifier and its head has motivated to a great extent the existence of multiple agreement projections in the extended nominal projection, even though as already mentioned above, the exact content of these projections is usually unspecified. N-movement, as it is currently conceived, is largely a by-product of such an

extended nominal structure. Notice though an additional problem of this movement. DP will check its relevant features (appearing on D) against AgrS and/or AgrO (i.e. against the relevant verbal features) in the clausal domain. N-movement applies DP internally checking nominal features: this double checking for essentially the same features (case/number/gender) is surely uneconomical, therefore avoidable (cf. also di Domenico, 1995: 8). Notice in addition that due to the nature of the Greek language, as exemplified so far (i.e. syncretism) incorporation via head-to-head movement is inoperative. Our analysis of the asymmetries of N-movement avoids this both conceptually and empirically undesired consequence, by treating agreement in terms of the insertion of Agr at MS along the lines of Halle and Marantz's analysis.

The puzzle with Greek is, then that given its similarity with Romance in having gender and number distinctions, i.e. having strong nominal inflection, it would be expected to behave like Romance as far as N-movement is concerned, namely to allow the Noun to move overtly in order to incorporate/check the gender and number affixes. Such a movement however does not take place, as all adjectives always precede the noun:<sup>1 2</sup>

- (12) (a) \*to spiti meghalo  
           the house big  
       (b) \*i epithesi italiki  
           the attack italian  
       (c) \*i energhya skopimi  
           the action intended

It is further worth noticing that the existence of lexical material under D, which is not affixal, prohibits the N from moving there in order to license its case features (Giusti 1993; Lobel 1994). Greek then behaves unlike Romance and exactly like English and German, in that no overt (short) movement of the noun is observed.

Greek is idiosyncratic among the languages which have been analysed so far as N-movement languages, in that it is similar to Romance and unlike English wrt number and gender morphology on both the noun and the determiner, and unlike both Romance and English (but partly like German) in that it has overt case morphology. Finally, it is unlike Russian and like Romance and Germanic in that it also has overt determiners. As regards the existence of overt determiners Greek is further unlike Bulgarian, Macedonian and Albanian and Romanian in that Greek determiners are not affixal, thus not triggering N-movement.

<sup>1</sup> Note that even in an analysis of adjective placement as the one put forth in Kayne (1994), Greek is quite different from Romance. Specifically, Kayne (1994) proposes that the string *le livre jaune* has the following derivation:

- (i) le [ FP [livre<sub>i</sub>] [CP [XP jaune<sub>j</sub>] [C° [IP [e<sub>i</sub>] [I° [e<sub>j</sub>]]

crucially, for Kayne not only the adjective, which originates in a predicate position in a relative clause-like structure, moves to Spec,CP, but further movement of the Noun possibly via C° to F° takes place. Given that in Greek the noun follows all adjectives, this further movement does not take place.

<sup>2</sup> Here we do not consider the phenomenon of determiner spreading exemplified in (i) below

- (i) to vivlio \*(to) megallo  
       the book the big

in Determiner spreading adjectives can appear post-nominally, obligatorily preceded by a determiner. See Androusoπούλου (1994), Stavrou (1995) and Alexiadou & Wilder (1997) for discussion.



It is worth noting that according to Carstens (1993), lexical possessors and agents do not raise to (intermediate) projections in Percolation Agreement (PA) languages (although pronominal genitives are situated in spec. NUMP without triggering agreement in PA languages, a claim falsified by Greek, where genitive pronouns are clitics and follow the noun ). It is also interesting that PA and spec-head agreement cannot co-occur within the nominal projection system according to Carstens. We share with Carstens this view and we are going to elaborate it further in terms of basic principles of Distributed Morphology (DM).

In what follows, we are going to propose an explanation for the lack of (overt) N-movement in Greek and an account for the extended agreement in the DP without positing unnecessary intermediate projections. Our analysis will follow the basic assumptions put forward in Halle & Marantz's (1993) DM. In the next section, we will briefly outline the basic notions of DM. Before turning to that, we will present some core ideas of the Minimalist Program, as in Chomsky (1995), and we will illustrate our assumption that adopting the principles of DM is not incompatible with the assumptions in Chomsky's work.

#### **4. Minimalist Morphology**

##### *4.1 [+/-Strong] in the Nominal Domain*

In Chomsky (1995), it is assumed that overt operations are related to specific properties of the level which is mainly affected by these, namely PF. More specifically, overt movement is triggered by the presence of a strong feature F on a non-substantive category. F carries along enough material for convergence, obligatorily forcing generalised pied-piping, insofar as PF convergence is the driving factor. Given the discussion in sections 2 and 3, one can conclude that it must be a specific property of the morpho-phonological component that forces N-movement in Romance, but not in Greek. Note that within Chomsky's system, it is not clear what the [+/- strong] distinction amounts to morphologically. As already pointed out in section 2, there have been attempts to link morphological richness to the presence of a strong feature in the functional domain (for instance Pollock 1989, Ouhalla 1988 among others for the clausal structure and see the above references for the nominal domain, where it is assumed that nouns are automatically selected with a broader nominal configuration which includes a number of functional categories above N.). Given the discussion in the previous sections, clearly Greek presents an apparent counterexample to the strong (i.e. triggering movement) = rich morphology-type-of approach.

As Chomsky (1995: 238) points out, whatever information concerning lexical items feeds the phonological rules must be available for the computation as the item is introduced into the derivation, but the specific character of this information has to be determined case by case. As a consequence, a number of alternatives exists. Phi-features might be assigned as the items enter the numeration. Then overt movement is a result of checking. In other words, the functional projection merged with the lexical NP carries a strong feature which attracts the nominal head. As already discussed in section 2.5, movement for checking in the DP must be of somewhat different nature, so that 'double' checking is avoided. The most clear cases where movement takes place involve an affixal article or N-Movement to an empty D°. Thus, they fall under the second alternative suggested in Chomsky (op.cit), according to which movement of a lexical head to a functional affix takes place. This type movement can also

result into attaching phi-features located in the functional domain with the lexical stem. According to this option, surface forms result from operations that form complex words, where the category involved is marked as requiring affixation. These operations take place in overt Syntax. In this case, the noun moves to these functional categories so that affixes do not remain unbound/unattached.

Options (a) or (b) could be correct for Romance, but they do not seem to be accurate for Greek, though its morphology is similar to that of Romance.<sup>3</sup> It is further worth noticing that Alexiadou and Stavrou (1996a,b), capitalizing on certain morphological differences between Romance and Greek (see section 3), pointed out that since Greek nouns have [+interpretable] (PF) forms, in the sense of fully morphologically specified, movement for reasons of checking is not necessary. Similar ideas are presented in Longobardi (1997 and see also Pollock 1996), where he argues that if an item is [+interpretable] in one of the interfaces this item does not need checking at this level. These ideas are compatible with the DM account to be spelled-out below.

A third possibility outlined in Chomsky (op. cit) is that the lexical item reaches the phonological component uninflected, the PF form resulting from interaction with functional elements within the phonological component. What is crucial for the discussion to follow is that for Chomsky, it does not seem to matter whether this information that feeds the phonological rules is presented as a list of alternates, or by some coding that allows PF to pick the alternate, i.e. "late insertion" (as in the DM system). All these options are compatible with the Minimalist Theory, if checking is relevant for features only.

In the next sub-section, we turn to the specifics of DM. In section 5, we will propose, following Halle & Marant (1993), that for Greek, and perhaps generally for languages lacking (short) N-movement, overt forms are the result of the rules that relate the outcome of Spell-Out to the Morphological structure.

#### *4.2 Distributed Morphology: basic assumptions*

According to the basic tenets of DM, the level of Morphological Structure (MS) is a separate level of representation, with its own principles and properties, serving as the interface between syntax and phonology. DM consists of a machinery that takes care of complex word formation, insertion of phonological material/features under syntactic terminal nodes and provides a coherent account of certain morphological operations that can change/redistribute the feature bundles carried by the terminal syntactic nodes. In the light of such operations one can easily account for the mismatches often observed between the structuring of morphosyntactic and phonological features, or, in other words, the lack of one-to-one correspondence between components of meaning and components of form. In DM, there is, prior to PF, only hierarchical nesting between the morphemes; their linear ordering is attributed to the principles that relate SS to PF through MS.

The basic morphological operations that result in the lack of isomorphism between PF and SS are: the *insertion* of morphemes at MS for either universal or language-specific reasons, as is the case with the insertion of an Agr morpheme to the Tns node accounting for subject-verb

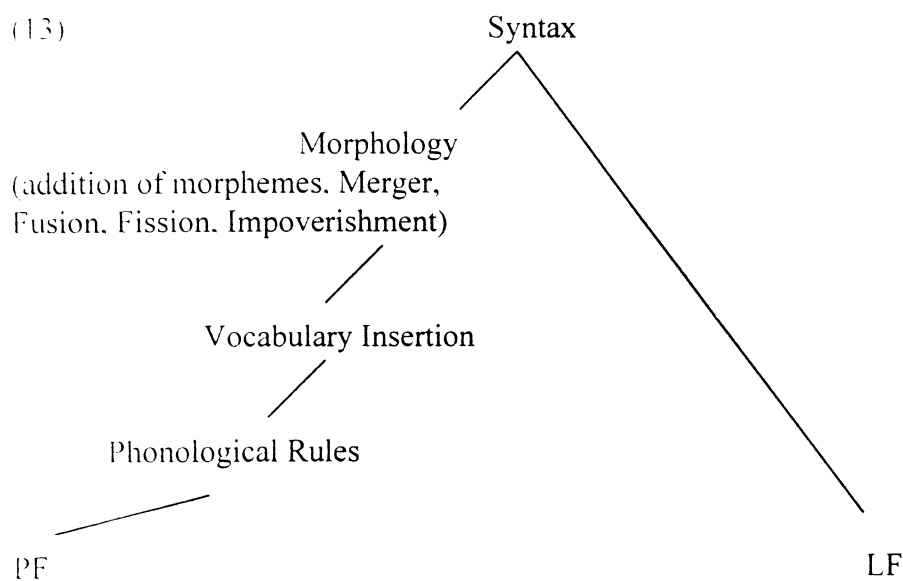
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<sup>3</sup> Note however, that if Lamarche's analysis is on the right track and Romance lacks N-movement, then Romance is amenable to an account as the one to be proposed for Greek.

agreement. The *Merger* of structurally adjacent nodes, whereby new words are formed out of the heads of independent phrases, which nevertheless, remain separate morphemes in the newly formed item. *Fusion* of sister terminal nodes under a single terminal node, as is the case of the single affix for Number and Case in Greek (and many other Indo-European languages). Finally, *fission* results in the split of features carried by one node into a sequence of nodes. Fission and Fusion are the two main morphological processes that immediately disturb the isomorphism between syntactic and phonological features. Nevertheless, discrepancies between the two kinds of features may also be due to the change of feature composition of a morpheme accomplished through the process of *impoverishment*, i.e. deletion of one feature bundle. To these operations, a morphological head-to-head operation can also be added, whereby a terminal element may be displaced and adjoined to another element. These morphological mechanisms render the lexical items interpretable by the external interfaces, as the lexical items must reach the interface fully specified for all features.

The application of the operations which modify the syntactic tree is completed before vocabulary insertion at MS. At the same time, the addition of terminal nodes at MS, changes the number of terminal elements that might find phonological realization and thus contributes to the noted lack of isomorphism between PF and SS (see Halle & Marantz 1993: 115).

In the framework of DM both lexemes (word-stems) and affixes are taken to be Vocabulary items made up by syntactic/semantic features. Vocabulary insertion supplies phonetic features to the feature bundles constituting the syntactic nodes in a tree. Crucially, the phonological features do not determine the terminal elements created in syntax, i.e. the word-internal structure is determined by syntax only. In addition, however, the phonological features may not be distinct from the features of the syntactically derived structure, but they may constitute just a subset of the morphosyntactic features of the syntactic nodes. (13) below presents the organization of the relevant components in the Grammar according to Halle and Marantz:



Concluding this brief sketch of the basic principles of DM, it is worth emphasizing once more the highly constrained way in which the morphological processes operate, nam. their strictly local character and their relying on a universal repository as well as theory of features. Only

under this constrained way can the ordering, feature composition and hierarchical positioning of the terminal nodes created by the syntax be changed at MS, on their way to PF.

## 5. Towards an account

The question that we are trying to give an answer to here has two sides, and we believe that the answer to anyone of these will lead to an answer to the other too. The double-faced question can be stated as follows:

a) what determines the (im-)possibility of N-movement across languages?

And given the well established assumptions about the formation of the  $N^{\circ}$  category in the languages where N-movement is attested

b) how is the lexical category Noun formed/analysed in a language without N-movement?

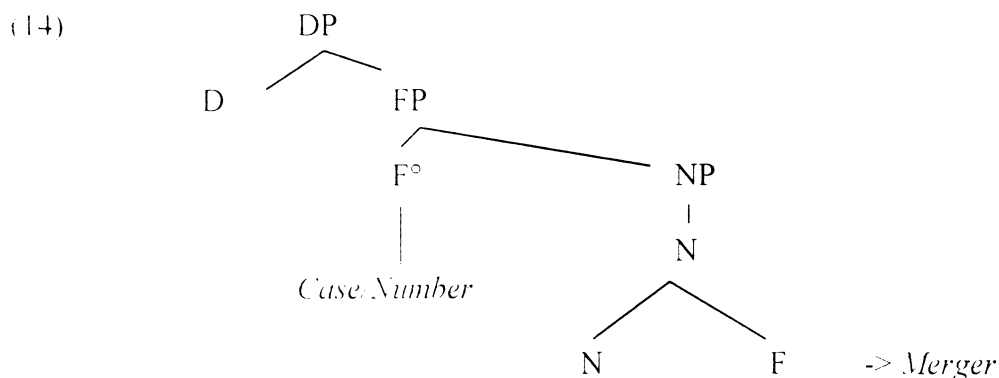
Our main assumption is that the (im-)possibility of N-movement is related to the specific options chosen in a language in order for the lexical items to enter the interface fully specified. In particular, it is related to the impossibility of lexical items to reach the phonological component unspecified in a given language. If this were the case, and under the assumption that interfaces are impoverished (see Alexiadou & Anagnostopoulou 1997 for elaboration), then the external interface could not assign an interpretation to these forms. Thus, both Greek and Romance reach PF fully specified but through different ways. In Romance, with (short) overt N-movement nouns are the result of complex word formation in the overt component (see section 4.1). The noun stem incorporates into the phi-features inserted the relevant functional nodes by means of syntactic head-to-head movement. But as far as Greek is concerned, how can we account for the state of affairs, i.e. rich morphology and lack of movement? We shall argue that overt nominal forms can be the result of the rules that relate the outcome of Spell-Out to the phonological component, i.e. MS. In what follows we will demonstrate how this can be done using the machinery introduced in section 4.2.

At this point, it should be mentioned once again that the morphological processes exploited by DM operate on the output of syntax, so that they have access to syntactic information but not vice versa. Concerning the syntax of the Greek DP, research has shown that no more than one functional projection between D and the lexical N is needed (see Alexiadou and Stavrou 1996a,b for evidence coming from both derived and common nouns, and Karanassios 1992 for the same conclusion based on different kind of evidence). Interestingly, the conclusion about just one intermediate projection in the DP is orthogonal to the lack of N-movement.<sup>4</sup> The exact content of this projection has not been specified, apart from the fact that it is the host of the definite article (see Karanassios 1992, Stavrou 1996). Nevertheless, this projection can be seen as parallel to the IP projection in the clausal domain, as well as the IP in the Hungarian DP and the separate NumP and GenP categories argued for in Romance (see the aforementioned references). As it has been shown convincingly by Ralli (1988, 1994, 1997) gender in Greek is not a feature of the inflectional affix as it is an inherent feature of the noun stem, so this feature will show up under the terminal node  $N^{\circ}$  (along with the feature of inflectional class). It is reasonable to assume then that this intermediate functional projection conflates the features of number and case, two features which are syntactically relevant

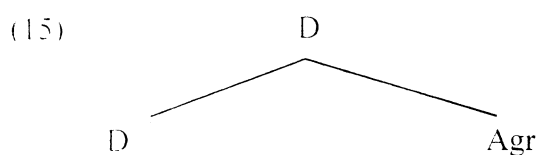
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<sup>4</sup> In fact, it has been proposed that a kind of semantically triggered N-movement takes place in indefinite DPs from  $N^{\circ}$  to the head of this intermediate head when this does not host the definite article taken to be generated there (cf. Karanassios 1992, Stavrou 1996, but see Alexiadou & Wilder 1997 for a different view.).

(determined by syntax). Halle & Marantz maintain that the single affix morpheme denoting number and case at the same time in many Indo-European languages, in contrast with many agglutinative languages, is the result of fusion of two nodes. Notice that Ralli considers the features of case and number as constituting the inflectional affix. We assume that only one intermediate functional node is needed. Further, we assume that Merger joins the number and case affix with the noun stem under structural adjacency, in a way similar to the way Tns is joined to the main verb in English and other languages.



If there is a pronominal adjective, in Spec.NP or Spec.FP (see Alexiadou and Stavrou 1996a,b) given the full agreement between it and the noun, it is assumed that an Agr node is inserted at MS on the adjective which is unspecified for phi-features (see Ralli op.cit) with the sum of features of the N+F copied on it. This is how gender appears on adjectives. The same applies for the determiner (cf. 15). In other words, at MS an Agr node is inserted at D° and Adj<sup>2</sup>, so that full agreement between determiners, nouns and adjectives occurs. Given that the existence of Gender under the N-stem and of the Case and Number under F°, we can account for the appearance of Gender on the adjective in a straightforward way:



We assume that the order of the application of the relevant morphological processes must be specified, so that the right results are obtained.

- 1) Merger of N and F (addition of features but two separate nodes)
- 2) Insertion of Agr on the adjective/determiner; these acquire a value for gender/number/case
- 3) Addition of the Inflectional Class.

As for the inflectional Class feature, since this is irrelevant for both the syntax and LF (cf. Ralli 1988, 1994), we assume that it is introduced by insertion, since it introduces idiosyncratic properties of the lexical item (Halle & Marantz 136: "in addition to phonological features, Vocabulary insertion supplies morphological features that signal idiosyncratic properties of specified vocabulary items").

However, the above analysis, though it can be extended to cover the facts in German, does not straightforwardly capture the situation in English. To account for the lack of N-movement in English, there are two options: either English nominal forms do interact with abstract

functional elements. i.e. *Merging* of abstract features, takes place so that they can be interpreted by the external interface. Or English nouns are the result of phonological operations, as suggested in Lasnik (1994) for English verbs.

## 6. Conclusion

In this paper we attempted to present a morphological account for a number of asymmetries in N-movement across languages. We believe that the main advantage of this proposal is that it can explain why N-movement seems not to take place in languages with no nominal inflection (English) and in languages with full nominal inflection (Greek), since our analysis relates (lack of) movement to properties of the morphological component, where crosslinguistic variation is held to be located.

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