Nominal Constructions: The Structure of NP and DP

1 The starting point for NP: Radford (1988)

In what follows Radford’s (1988) account of the structure of NPs is discussed. It serves as a starting point because it provides a detailed analysis of the structure of NPs and, at the same time, highlights issues that this approach does not address, thereby introducing other relevant aspects of the analysis of nominal constructions. This section describes a comprehensive approach to modification inside an NP and it introduces structural notions such as ‘complement’, ‘adjunct’ as well as it highlights main points related to the syntactic behaviour of these constituents in relation to the N head and in relation to each other.

1.1 Postmodifying complements and adjuncts

For Radford there exist so-called ‘word-level categories’, e.g. N – Noun, V – verb, Adj – Adjective, M – Modal, D – Determiner, etc… and so-called ‘phrase-level categories’, e.g NP-Noun Phrase, VP – Verb Phrase, etc… However, there is a third type of constituent, N-bar, which represents an intermediate level between the two, i.e. it is a constituent larger than N but smaller than the full NP, see (1):

1 a Who would have dared defy the [king of England] and [ruler of the empire]?
   b The present [king of England] is more popular than the last one.
   c *The [king] of England defeated the one of Spain.

(p. 174-175)

In (1a) the full NP is ‘the king of England’ as that is used as an answer to a wh-question such as Who would they have not dared defy?, however, part of that constituent can be coordinated with another sequence that does not contain the determiner. In (1b), again, the full NP the present king of England is the equivalent of the last one, and these are larger than the constituent replaced by the pronominal one, which is reduced to king of England. The pronoun one is assumed to replace constituents which are larger than just the head, cf. (1c). Thus, coordination and pronominalisation seem to support the idea that there exists an intermediate level between the word-level and the phrase-level constituents: N-bar.

First, the various structural levels inside the NP are discussed. The following Phrase Structure Rules are introduced:

2 a N” → (D) N’ (Determiner Rule)
   b N’ → N’ (PP) (Adjunct Rule: optional)
   c N’ → N (PP) (Complement Rule)

(p.183)

As they stand, the rules capture the following basic generalizations: determiners expand N-bar into N-double-bar, adjuncts extend N-bar into N-bar, while complements extend N (the head, a word-level category) into N-bar. In addition, it must be noted that as opposed to the other two the adjunct rule is recursive, i.e. the same constituent is found on both sides of the arrow. The brackets indicate the optionality of the given constituent. The examples in (3) demonstrate that the two PPs inside the NP are not on the same structural level, the examples in (4) show that PP complements are closer to the head than adjuncts.

3 a the student of Physics with long hair
   b *the student of Physics and with long hair
   c the student of Physics and of Mathematics
   d the student with long hair and in jeans

(p. 174-175)
The ungrammaticality of (3b) is readily explained if it is assumed that the two PPs of Physics and with long hair do not have the same structural status: the former is a complement, the latter is an adjunct. The examples containing co-ordinated PPs are grammatical as two constituents on the same structural level are conjoined in them.

4

a the student of Physics with long hair
b *the student with long hair of Physics
c the student with long hair in jeans
d the student in jeans with long hair

Again, the ungrammaticality of (4b) stems from the mismatch in the structural status of the two PPs. In (4c) and (4d) the order of the PPs can be reversed without loss of grammaticality as both those PPs assume an adjunct status, i.e. both of them are sisters of N-bar. Further differences between complements and adjuncts are that the number of the former is limited while that of the latter is not, it is possible to extrapose an adjunct but not a complement and it is grammatical to prepose the complement of a P heading a complement but not an adjunct, see, (5).

5

a the student with long hair in jeans
b *the student of Physics of Mathematics
c a student came to the office with long hair
d *a student came to the office of Mathematics
e which branch of Physics was he a student of?
f *what kind of hair is he a student with?

In addition, there are so-called co-occurrence restrictions imposed by particular nouns on which P may head the PP complement but no such restrictions are imposed on an adjunct, as shown in (6).

6

a a student of Physics
b *a boy of Physics
c *a punk of Physics
d a student with long hair
e a boy with long hair
f a punk with long hair

It is not only PPs that may function as postmodifiers inside a NP, cf. (7).

7

a the claim [that he made]
b the claim [that he made a mistake]

In (7) the postmodifying construction is a clause but while in (7a) the type of clause is a so-called restrictive relative clause\(^1\), in (7b) it is a Noun Complement Clause. The terminology already suggests that the two clauses do not share their syntactic status: the restrictive relative clause is analysed as an adjunct (hence, it can be used recursively) whereas the other type of clause functions as a complement. This difference is reflected in the syntax of these clauses: with a restrictive relative clause exemplified in (7a) it is grammatical to use a wh-pronoun

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\(^1\) It should be noted that there are two other types of relative clause, so-called non-restrictive (non-defining) and free relative clauses. A non-restrictive relative provides extra information and is only grammatical if it is introduced by a relative pronoun (my sister, who lives in Paris, has two cats) and a free relative can also be grammatical with the relative pronoun ‘what’ (what he said was true) and lacks the antecedent noun present in the other types of relatives. The structure of relative clauses is not discussed in detail here.
(called a relative pronoun) instead of the complementiser *that*, or even to leave out both. On the other hand, the Noun Complement Clause in (7b) is only grammatical if it includes the complementiser.

1.2 Premodification
Premodifiers inside an NP include prenominal NPs and APs (also termed attributes). The distinction between postnominal modifiers in terms of whether they function as complements or adjuncts carries over to pronominal modifiers as well, see (8).

8 a a student of Physics at Cambridge
   b *a student at Cambridge of Physics
   c a Cambridge Physics student
   d *a Physics Cambridge student

Just as the ungrammaticality of (8b) is accounted for in terms of the structural status of postmodifying complements and adjuncts, the ungrammaticality of (8d) can be explained if it is assumed that one of the NPs is an adjunct (*Cambridge*) the other is a complement (*Physics*). Often a postmodifying complement PP can have a premodifying NP counterpart, as in (9).

9 a an appeal for charity
   b a charity appeal
   c a campaign against drugs
   d a drugs campaign

Premodifying APs are the most frequent type of attributes. In Radford (1988) these are analysed as adjuncts, since, for instance, they are recursive, see (10).

10 a a tall stranger
   b a tall dark stranger
   c a tall dark intelligent stranger

The ambiguity of examples that contain premodifying NPs and/or APs can be explained in structural terms if the distinction between premodifying complements and adjuncts is considered.

11 a a French teacher
   b a foreign language teacher

In (11a) the premodifying NP can refer to the nationality of the teacher in which case it is an adjunct or the subject taught in which case it is a complement and the difference between them is made explicit in the tree-diagram associated with the two interpretations. Similarly, in (11b) the premodifying AP adjunct can refer to the NP ‘language’ or ‘teacher’.

In sum, Radford (1988) provides a detailed analysis of the internal structure of NPs: first he demonstrates that there is a structural difference between the various types of modifiers that may occur inside an NP, i.e. between determiners (which, in his early analysis, are assumed to occupy the specifier position), complements (which are sisters of the N-head) and adjuncts (which are sisters of the intermediate constituent N-bar). It is demonstrated that both postmodifying PPs and clauses can act as complements or adjuncts and that

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2 That the elements introducing restrictive relative clauses do not belong to the same category, i.e. they are relative pronouns or complementisers, is shown in (i) below.

(i) a the house in which he lives / *the house in that he lives (Pied Piping)
For further arguments in favour of their distinct categories, see Radford (1988).

3 Notice that with the postmodifying complement PP the meaning of the phrase is not ambiguous whereas with the premodifying NP it is not entirely clear whether it is a campaign ‘for’ or ‘against’ drugs.
premodifying NPs can function both as complements or adjuncts while premodifying APs are adjuncts. Radford’s claims have been revised since then especially those related to the structural position of adjuncts inside the NP. Later attempts to provide a uniform approach to adjuncts across categories have tried to establish a parallelism between adjuncts in verbal constructions and those in nominal constructions. Therefore similarly to VP-adjuncts, which initially were assumed to occur inside the VP (i.e. adjoined to V-bar) but later to be adjoined to VP (thereby forming a VP-extension), e.g. PP-adjuncts in nominal constructions have been seen as added to a minimal NP-projection. However, one type of clausal adjunct has retained its structural position inside the NP given the difference between restrictive and non-restrictive relative clauses which are both analysed as adjuncts but given the difference between the two, the point of adjunction is assumed to be different (adjoined to N-bar or to NP) (see Newson, 2006). This issue is not explored below in further detail. Another point that merits discussion is the approach to determiners, which are far less uniform a category than what Radford (1988) implicitly suggests. How the analysis of nominal constructions has been developed into the establishment of a further nominal projection is presented in the next section.

2 Further developments: The DP in Abney 1987

Drawing much on an analysis of constructions containing multiple determiners by Jackendoff (1977), and on data obtained from Hungarian and Turkish, Abney (1987) puts forward what is known as the DP-hypothesis, thereby introducing a nominal functional projection, the Determiner Phrase. His work has proved pivotal in any subsequent analysis of nominal constructions.

2.1 The poss-ing gerund in English

He observes that a construction such as that exemplified in (12) has curiously mixed properties: it displays nominal characteristics in that its distribution coincides with that of NPs. Further, another NP-like property it displays is the presence of what at the time was considered the ‘subject’ of the NP, a possessor, see (14).

(12) John’s building a spaceship

In (13) the distributional observations are shown.

(13) a *did [that John built a spaceship] upset you?
    did [John] upset you?
    did [John’s building a spaceship] upset you?

b *I wondered if [that John built a spaceship] had upset you
    I wondered if [John] had upset you
    I wondered if [John’s building a spaceship] had upset you

c *I told you about [that John built a spaceship]
    I told you about John
    I told you about John’s building a spaceship

(14) a John destroyed the spaceship
b John’s destruction of the spaceship  
c John’s destroying the spaceship  

(13 a) demonstrates that the subject clause cannot undergo subject-auxiliary inversion, (13 b) that the that-clause cannot function as and embedded subject, while (13 c) that the that-clause cannot appear as an object of a preposition.

On the other hand, the construction displays verbal (sentential) properties in that it is constructed via a verbal suffix –ing, which can productively attach to any verb, and it participates in certain processes and allows certain structures that appear in the VP. The processes and constructions include case assignment to the object, raising and Exceptional Case Marking to name but three, as shown in (15), (16) and (17).

(15)  
a *John’s destruction the spaceship
b John destroyed the spaceship
(c John’s destroying the spaceship

(16)  
a *John’s appearance to be dead
b John appears to be dead
c John’s appearing to be dead

(17)  
a *John’s belief Bill to be Caesar Augustus
b John believed Bill to be Caesar Augustus
c John’s believing Bill to be Caesar Augustus

In (15 a) the theme argument is caseless due to the lack of a case-assigning preposition, in (16 a) raising of the subject of the clausal argument of the deverbal noun is ungrammatical, and in (17 a) there is no case/assignment to the subject of the embedded clause by the deverbal noun, thus it remains caseless and the construction is ungrammatical.

In sum, the external distribution of the poss-ing gerunds suggests that it is dominated by a nominal projection (NP) but internally it seems to behave like a VP.

2.2 Evidence from Hungarian

As noted by Abney, many languages display agreement between possessor and possessed in person and number, one such language being Hungarian, see (18):

(18)  
a az  én könyv – em
the I – Nom book – possd 1sg
the my book
b a te könyv – ed
the you – Nom book – possd – 2sg
the your book

c (a) Mari könyv – e
(the) Mary – Nom book – possd – 3sg
(the) Mary’s book

In these constructions the possessor is in Nominative case (like the subject of a finite clause), and Abney assumes that it is assigned by the overtly represented AGR. In the structure of a
sentence AGR (in more current terms Inflection) is assumed to occupy a position outside the thematic projection of the VP. Similarly, it is proposed that there may appear a nominal AGR-projection on top of the thematic layer of NP.

2.3 Evidence from Turkish

Abney observes that in Turkish there is also overt AGR inside the NP:

(19) a el
     the/a hand

b sen - in el -in
     you-GEN hand-2sg
     your hand

c on - un el-i
     he –GEN hand-3sg
     his hand

Thus, there is overt agreement in the noun phrase both in Hungarian and in Turkish the difference between the two being that AGR seems to assign Nominative in Hungarian but Genitive in Turkish. Furthermore, in Turkish a construction identical to the English poss-ing gerund can be found, formed with the help of the suffix –dig, which is added to the verb root. As far as its distribution is concerned, the Turkish gerund also behaves like an NP but its internal structure displays verb-like properties e.g. in that the complement receives Accusative case, which is unavailable inside an NP (cf. 15 a).

On the basis of the data Abney proposes that (i) there is a functional element heading its own projection as an extension of the NP; (ii) the functional head inside finite clauses assigns Nominative to the subject, so, in a similar vein, the functional element inside the nominal projection may be assumed to assign Genitive case; in English the functional element (AGR) is non-overt but its presence is shown by the appearance of ’s on the possessor. The structure associated with nominals is what is depicted in (20).

(20) \[
\begin{array}{c}
\text{XP} \\
\text{GEN} \\
X' \ \\
X \ \\
\end{array}
\]

NP/VP

If the head marked X takes a nominal complement, the result is a nominal projection, if it takes a verbal complement, the result is the poss-ing gerund. The question arises as to what that X-head might be. Abney’s answer relies on the parallelism between the manifestations of agreement inside the clause (members of the category inflection, e.g modals) and instances of determiners. If X is D, the specifier of D can be filled with the possessor and the complement of D is a thematic category (NP or VP for gerunds).

The question of whether the nominal functional head Determiner can actually be filled by members of the class known as Determiner is addressed as follows. Abney points out that when determiners stand alone, i.e. they are not followed by an NP complement, they continue to behave like an NP, which is only expected if they are nominal projections. Further, determiners that cannot stand alone are likened to members of other categories like complementisers or prepositions in that they cannot stand alone either: if must obligatorily be
followed by a clause, *of* must obligatorily be followed by an NP. Thus, determiners such as *the* or *a(n)*, which strongly require that they be followed by an NP, do not exhibit any special behaviour that is not attested by other categories. In addition, those determiners that can stand alone, e.g. *this*, *that*, *which*, even if they are not followed by an NP-complement, retain the distribution of a nominal. Again, that supports the assumption that they are, indeed, nominal, members of a nominal functional category.

The status of pronouns is also discussed. Abney notes that it has been generally assumed that pronouns are nouns, however, if that were so, there would be no explanations as to why sequences of nominal modifiers and pronouns are excluded. In other words, pronouns cannot co-occur with noun specifiers, determiners, possessors, adjectives, quantifiers, etc…, consider (21).

\[
\begin{align*}
\text{(21)} & \quad \text{a} *\text{[the she that I talked to]} \text{ was nice} \\
& \quad \text{b} *\text{[my she]} \text{ has always been good to me} \\
& \quad \text{c} *\text{[dependable them]} \text{ are hard to find}^4 \\
& \quad \text{d} *\text{[many they]} \text{ make house-calls}
\end{align*}
\]

(p. 178)

The ungrammaticality of the examples in (21) suggests that pronouns do not belong to the category N, instead it is plausible to assume they are members of the category determiner. A property determiners and pronouns have in common is that both seem to be the site for carrying the basic grammatical features (called phi-features) such as person, number, gender of the NP. The difference between the interpretation of the expressions *the man* vs. *a man* is that the former is definite while the latter indefinite and that property is encoded not in the feature-set of the noun itself but rather in that of the determiner, thus, in this respect determiners can apparently be grouped with other type of functional heads that carry grammatical or syntactic information. In many languages it is determiners that exhibit the largest variation in the form of their declensions, not adjectives or nouns. Also, e.g. in present-day English or French, the pronouns are the only elements which still show a case distinction. All the above considerations point towards the direction of the assumptions that the nominal constituent is in fact headed by the determiner and that the category Determiner includes articles, demonstratives, personal pronouns, etc…

In sum, Abney (1987) takes a giant leap forward in the analysis of nominal constructions. Through the introduction of the Determiner Phrase, a functional nominal projection erected on top of the thematic nominal projection, not only does he set the course for future approaches to nominal structures, he also manages to maintain the then much desired parallelism between verbal and nominal structures. Further, the nominal functional projection introduced could replace Jackendoff’s three-level structure in such a way that the two specifier positions made available have been retained in line with the rest of the theory, and an additional position, the D-head position is also established, thereby allowing for space for as many as three determiner-like elements appearing prenominally in a nominal construction: the **Spec, DP-position** can be filled by full-DP possessors, the **D-head position** by lexical determiners and certain types of quantifiers (e.g. articles, all, both, each, etc…) while the **Spec, NP-position** by another group of quantifiers that usually follow both possessors and lexical determiners if co-occurrence is allowed (e.g. many, few, etc…), as in, e.g., *all his many friends*.

Also, he brings possessors into the discussion since they also play a part in establishing the argumentation for the DP-analysis. The nominal functional projection he

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4 It is interesting to note that in actual fact certain personal pronouns can, indeed, co-occur with adjectives, as in *silly me/us, despicable me, lucky you*. 
terms DP is headed by members of the category Determiner, which includes items that are obligatorily followed by an NP complement, e.g. the articles, items that are not obligatorily followed by an NP complement, e.g. demonstrative pronouns and certain quantifiers, and it is also established that personal pronouns, which generally obligatorily lack an NP complement, belong to the category D as well.

This cannot be the full story, however, as co-occurrence and general principles of the theory will call for further refinements.

Appendix

3 The Nominal-Clausal analogy full blown and additional aspects of the analysis

3.1 More evidence from Hungarian

Seminal work based on Hungarian by Anna Szabolcsi (cf. Szabolcsi, 1992, 1994) further elaborates on the analogy between a verbal projection and a nominal projection. Given that in Hungarian the sequence of a lexical determiner and one type of possessor is grammatical (see (18)), but there exists another type of possessive construction in which the possessor precedes the determiner, Mari – nak a könyv – e, (Mary-poss5 the book – possd 3sg meaning Mary's book), which is assumed to occupy Spec, DP, additional functional structure is necessary in order to be able to accommodate the other type of possessive construction. Thus, in Szabolcsi (1994)’s proposal, the nominal DP is not analogous to the verbal IP but rather to the verbal CP, the even further extended verbal functional projection: the D head position is filled by an element whose structural equivalent in the CP is the C-head. To illustrate the parallelism between the nominal and the verbal projections, see (22).

(22)

\[
\begin{array}{c}
\text{a} \\
\text{b}
\end{array}
\]

\[
\begin{array}{c}
\text{DP} \\
\text{CP}
\end{array}
\]

\[
\begin{array}{c}
\text{Spec} \\
\text{D'} \\
\text{D} \\
\text{FP} \\
\text{Spec} \\
\text{F'} \\
\text{F} \\
\text{NP} \\
\text{Spec} \\
\text{I'} \\
\text{I} \\
\text{VP}
\end{array}
\]

In (22a) there is an intervening functional projection labelled FP (Functional Phrase), which may stand for a number of nominal functional phrase-types, e.g. AGRP (Agreement Phrase), DetP (a phrase whose head is a lexical determiner but it is distinct from DP), etc… In actual fact, this step has marked the rise of extending the number of possible functional projections erected between the topmost DP-layer and the lowest NP-layer in a nominal as from this point onwards various additional functional-like projections have started to appear in the various approaches that have attempted to provide uniform yet language-specific accounts of nominal constructions across languages.

3.2 Evidence from Italian

5 The exact status and nature of this morpheme that appears on the possessor preceding the determiner in Hungarian is still under debate, some term it Dative, some Genitive, some argue it is neither.
Haegeman and Guerón (2001) use Italian examples to illustrate how the structure of the DP can be broken down into even more functional projections and provide further evidence for the nominal – verbal projections analogy. The starting point is the parallelism between a clause and a nominal construction containing a deverbal noun, and the Italian equivalent of the latter, consider (23).

23  a the Martians invade the city
    b the Martian invasion of the city
    c *marziana invasione della città

However, as shown in (24), in Italian the adjunct follows the noun head (cf. (23c)), unlike in English, furthermore, immediately follows it, thereby intervening between the noun head and its PP complement, which, as described in section 1.1, is ungrammatical in English. Thus, in order for the structure to be applicable to languages other than English an additional nominal functional projection must be introduced to accommodate the noun head which is assumed to move out of its base position into a head position to its left, compare (25).

24  la prima invasione marziana della città

Notice that the tree in (25) places the two AP-adjuncts in distinct positions: the AP *prima* is adjoined to NP. However, the AP *marziana* is generated in the specifier position of the NP. In languages where the adjective and the noun display agreement in number, gender, case, the latter option is preferred in order to be able to ensure the presence of the structural configuration relevant for this type of agreement, i.e. specifier-head agreement. In a language like English where no such agreement is displayed, at least not overtly, this issue does not arise, or rather, is not foregrounded. Haegeman and Guerón (2001) assume that prenominal adjectival modifiers occupy a specifier position even in English. The uniform treatment of prenominal and postnominal modifiers in nominal constructions across languages is still target to research, however, and is not relevant for the present purposes. What is relevant is that in order for the Italian example in (23c) to be grammatical the noun head must precede the AP *marziana* and occupy an intervening head position, as shown in (25). Thus, Haegeman and Guerón (2001) assume the existence of an intervening functional projection whose head position serves as a landing site for the head noun and whose specifier position is available for the AP-adjunct. That way both AP-adjuncts end up in a specifier position, see (26).
As shown in (26), in Italian the noun head moves into the Agr head position and leaves a trace behind. Both APs in both English and Italian occupy a specifier position and the complement PPs are sisters of the noun heads. The determiner head position is occupied by the definite determiners. The motivation behind the movement of the N head is explained in terms of a difference between the strength of the nominal agreement features of English and Italian. In Italian the nominal agreement features are strong, hence the noun moves to the Agr head position whereas in English they are weak, thus no movement occurs.

To sum up, the analysis presented in Haegeman and Guerón (2001) adds some new aspects to the analysis of nominal constructions that provide further insight into the nature of their structures. For one, based on Szabolcsi’s work, they also propose that the DP-IP analogy be replaced by a DP-CP parallelism. Evidence for the extended nominal functional projection comes partly from DP-internal wh-movement in English and partly from nominal structures in languages other than English where the nominal agreement features are strong. In the verbal domain the landing-site of wh-movement is the Spec, CP position. Similarly, in the nominal domain the landing site of wh-movement is Spec, DP.
References


