3 Principles of English Phrase Structure

INTRODUCTION

These lecture notes present the basic principles of phrase structure that apply in English. We start by presenting in some detail the most complex phrase type in English, the noun phrase. Having done that, we demonstrate that all the other main phrase types, the AP, the PP and the VP, are modelled on the same structural principles as noun phrases.

Abbreviations

A  Adjective
Adv Adverb
N  Noun
P  Preposition
V  Verb

AP  Adjective Phrase
AdvP  Adverb Phrase
NP  Noun Phrase
PP  Preposition Phrase
VP  Verb Phrase

All phrase categories on this list are equivalent to the label X₂ in the tree structures below. That is, Adjective Phrase = AP = A₂; Noun Phrase = NP = N₂; Verb Phrase = VP = V₂; etc.

All categories labelled X₁ are categories that have no overt specifier. Thus, by way of example, the category N₁ denotes a nominal without an overt specifier, for instance, company, red car, house with a chimney. All of these expressions are nominals without a specifier and thus belong to the category N₁.

Definitions

Construction =def A construction is a word or string of words that may serve as a constituent in a clause

Constituent =def is a word or string of words that may have a grammatical function (e.g. subject, object, predicate, adverbial etc.) in a clause

Phrase =def A phrase is a headed construction (e.g. an AP is a phrase whose head is an adjective, an NP is a phrase whose head is a noun, etc.)

THE NOUN PHRASE

We start by presenting and commenting on some examples of English NPs from professional texts, where nominal constructions abound.
The simplest NP in English consists of a single noun. Most nouns may serve as the head of an NP, whether they are proper nouns, pronouns, plural nouns or countable or uncountable nouns, cf. the selection of examples in (1),

(1)  
a. **Vestas** is still some distance away from the finishing line  
b. **We** started 2012 by implementing a new five-person management team  
c. **Focus** is often on the USA  
d. However, **demand** is growing in many other regions  
e. **Confidence** is steadily edging upwards

The structure of these NPs is very simple, cf. (2),

(2)
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NP  
   Head:N  
       demand
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Much more frequent than NPs with bare nouns as heads, however, are NPs with their head noun preceded by a definite or an indefinite article, cf. (3),

(3)  
a. **The market** will provide greater challenges than ever before  
b. I have … compared our situation to that of changing the course of a **supertanker**  
c. Vestas … is capable of fully completing **the changes**

In the same position as we find the articles in NPs, we also find genitive expressions and possessive pronouns, cf. (4),

(4)  
a. **Vestas’** standards … build on recognised conventions  
b. **The Group’s** risk profile reflects several types of risk  
c. **Our financial** performance was adversely affected by excessive costs

Articles and genitive expressions function as **specifiers** in NP structure. So, for the examples in (3) and (4), the structure is as depicted in (5),

(5)
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NP  
   Specifier:Article:Head:N  
       the  
       market
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Many nouns behave very much like transitive verbs in that they require or allow a complement. This, is of course trivially true for nouns which are directly derived from verbs. Compare the examples in (6) and (7),

(6) Vestas will also increase the use of outsourcing
(7) Vestas’ increase of the use of outsourcing

In (6) increase is the monotransitive verb and in (7) it is the noun derived from that verb. Since the verb takes a direct object, this property is transferred to the derived noun in a way which is very common, namely such that we get a noun which takes a PP-complement corresponding to the verb’s direct object. That is to say that the NP object of the verb the use of outsourcing is turned into the corresponding PP headed by the preposition of to yield the noun complement of the use of outsourcing. Note that it would be unacceptable to have the NP as the complement of the noun increase, cf. (8),

(8) *Vestas’ increase the use of outsourcing

Another very important thing to note about NPs headed by nouns derived from verbs ("deverbal nouns") is that if such NPs come with a specifier, it very often takes the form of a genitive expression as shown by the form Vestas’ in (7). When we compare (7) to (6), it is plain to see that the genitive Vestas’ in the NP is completely parallel to the subject Vestas in the clause. This shows that NP structure is very closely related to clause structure. One might even say that syntactically, NPs are the nominal counterparts of sentences.

It is not only deverbal nouns that may take complements, however. There are huge numbers of underived nouns which may take complements. Such nouns are called relational nouns because their meaning presupposes the existence of an extra individual besides the individual that the noun itself refers to. Think of a noun like member. In order to have the property of being a member, one has to be a member of something. One cannot just be a member! Therefore, member is a relational noun and takes a complement, cf. an example like (9),

(9) the members of the Executive Management

The complement of members here is the PP of the Executive Management. So, another general rule we may note here is that complements of nouns extremely frequently take the form of PPs.

As is the case with transitive verbs, complements are very closely connected to the noun since they are semantically presupposed, necessary elements. When we represent complements in phrase structure, we do this by making them immediate “neighbours” (or “sisters”, as they are generally called) of the head noun. Therefore, the structure of (9) looks like (10),

1 The asterisk ‘*’ signifies that the example is unacceptable in English.
This structure differs slightly from the simpler ones above in that we have introduced a new level in the structure designated by the symbol “N₁” (pronounced “N-one”). The reason we have done this is that we want to represent the fact that no other element in the NP structure is as closely related to the head noun as its complement. Therefore, they are represented as “sisters” in the tree structure, that is, they are on the same level in the structure, and when a specifier like *a* or *the* is added, it specifies both the head noun and its complement at the same time.

**Modifiers in NP structure**

Modifers differ from complements in that they are not required by the head of the construction. It should be easy to appreciate the difference between the PP-complement of the Executive Management and the AP-modifier *very competent* which I have inserted for illustration in (11),

(11) **the very competent** members of the Executive Management

Whereas the PP-complement is required by *members*, the additional information provided by the pre-modifying AP is not. Note that *very competent* modifies not only the head noun *members*, it modifies the head noun plus its complement, i.e., *members of the Executive Management*.

APs placed before the head noun (and its complement if there is one) are called “attributive APs”. And, in general, attributive APs are semantically equivalent to relative clauses (subordinate clauses which modify nominal expressions). Relative clauses, however, are placed after the head noun (and its complement if there is one). In other words, (12) expresses exactly the same message as (11), employing a different grammatical strategy,

(12) **the members of the Executive Management who are very competent**

Since attributive APs and relative clauses are equivalent in terms of their structural relation to the head noun (and its complement if there is one), the only difference being their position before or after, the two construction types appear on the same level in the NP structure, viz. at the N₁-level as shown in (13) and (14), respectively,
At this point we have covered the most important aspects of NP-structure. This means that we can present a general outline of all English NPs, which looks like (15) or (16), depending on whether the modifier is placed before or after the head noun,

To a very large extent, the relative complexity of NPs in professional texts springs from the fact that there is in principle no limit to the number of modifiers that may occur in
an NP. That is to say that, whereas there is very rarely more than one complement to a head noun, there may be indefinitely many modifiers.

Consider the following NP, which contains both an attributive AP and a relative clause,

(17) inside information which may be of importance to the transaction

In (17), the head noun information does not have a complement, which would increase complexity. Add to this the fact that modifiers may also be realised as PPs, for instance, and there may be several of them in the same NP. This should give you an impression of the incredible expressivity English NP structure offers (for a full example of such complexity, see (48) below).

It is worth noting, however, that the complexity of NPs in professional texts more often than not stems from the fact that several NPs occur at different levels within the same NP. This calls for an example. Consider this one²,

(18) the net present value of expected future net cash flows from the asset or the operating segment to which the asset has been allocated

Even though the NP appears to be extremely complex, the structure of the main NP is actually rather simple. The head noun is value, so this is what allows us to determine that we are in fact dealing with an NP. All of the rest of the construction, then, consists of a specifier, two premodifying APs and a complement PP, which comprises all of the rest of the construction. This gives us a rough structure like (19),

(19)

So, one thing that becomes plain from this NP structure is that the complexity is actually doubled manifold by the fact that the complement of value contains another very complex NP, viz. (20),

(20) expected future net cash flows from the asset or the operating segment to which the asset has been allocated

² Vestas Annual report 2012, page 70.
– which, in turn, contains the following further NPs at consecutive, lower levels,

(21) a. the asset or the operating segment to which the asset has been allocated
    b. the operating segment to which the asset has been allocated
    c. the asset

– and a further complication is that the complement contains a coordination as seen in (21.a).

This illustrates that NPs may indeed be indefinitely complex, because complex NPs may be embedded in already complex NPs. This is what makes the NP by far the most intricate construction in English.

In the following section, we shall take a closer look at relative clauses, since they play a crucial role in professional texts.

**Relative Clauses**

As briefly mentioned above, relative clauses are a particular kind of subordinate clauses which modify nominal expressions. Typically they are introduced by the relative pronouns *who* or *which*, the relative conjunction *that*, or the relative may be left out altogether, in which case we talk about a zero-relative, symbolised by $\emptyset$. These cases are illustrated in (22) below,

(22) a. Vestas will have relatively fewer employees *who* increasingly control and coordinate supplier relationships
    b. The person in question has inside information *which* may be of importance to the transaction
    c. A number of the assignments *that* would normally be undertaken by internal audit are handled by an in-house compliance department
    d. The shares $\emptyset$ the investors bought turned out to be worthless

**Restrictive vs. non-restrictive**

All of the relative clauses in (22) share the property of being restrictive. In order to understand what this means, consider the following example,

(23) In addition to the basic remuneration, annual committee remuneration is paid to board members *who* are also members of one of the board committees.

This example exhibits a restrictive relative clause as it tells us that not all board members receive the same types of remuneration. All board members are paid the basic

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3 In certain cases relative clauses modify whole clauses. In those cases, they are invariably introduced by *which*, and they are non-restrictive. Here is an example, *This leads to a better utilisation of resources and gives the employees an optimised understanding of how Vestas operates, which helps to align the Vestas Group*. I shall have no more to say about these in these notes.

4 A constructed example to illustrate the zero-relative.
remuneration, but only those board members who are also members of one of the board committees are paid annual committee remuneration.

Putting a comma in front of the relative pronoun who in (23) would completely change the meaning of the whole sentence, cf. (24),

(24) In addition to the basic remuneration, annual committee remuneration is paid to board members, who are also members of one of the board committees.

This comma indicates that the relative clause is to be understood as being non-restrictive, in which case the meaning would be equivalent to

(25) In addition to the basic remuneration, annual committee remuneration is paid to board members, AND board members are also members of one of the board committees.

It should be clear that this reinterpretation of the relative clause has dramatic consequences. It simply turns the true statement in (23) into the false statement in (24).

The difference between the semantics of restrictive and non-restrictive relative clauses can be explained in terms of sets. Assume that there are four members of the board, {Ann, Beth, Cecily, Dot}. Assume further that Beth and Dot are also members of one of the board committees. (23) states that out of the four only Beth and Dot receive annual committee remuneration, whereas (24) says that all four of them do, making that statement false. So, the difference between the two kinds of relative clauses is extremely important. In writing, the distinction is made by putting a comma in front of non-restrictive relative clauses, but never in front of a restrictive one.

In the following example, the comma has been placed correctly,

(26) Vestas has two revenue streams: Wind turbines and service. Service, which is more profitable, is expected to continue being the fastest growing segment.

The intended main message is that “Vestas has two revenue streams: Wind turbines and service. Service is expected to continue being the fastest growing segment”, and we add the additional information that “Service is the more profitable stream”.

The fact that the information expressed in non-restrictive relative clauses serves as additional information has the consequence that non-restrictive relative clauses may be turned into separate main clauses as I have indicated in the paraphrase of (24) in (25). Instead of using the conjunction and, I might simply have put a full stop in front of the added main clause, cf. (27),

(27) In addition to the basic remuneration, annual committee remuneration is paid to board members. Board members are also members of one of the board committees.
This is a useful strategy if one’s sentences tend to be too long.

The “defining” nature of restrictive relative clauses entails that terms expressing concepts which are assumed by the speaker to be fully known to the addressee cannot be further specified. Therefore, such terms cannot be modified by restrictive relative clauses. This is the reason why, as a rule, proper names like John, Vestas, etc. cannot be followed by restrictive relative clauses. The following example from the Vestas Annual report 2012 is therefore wrong – there should be a comma after Vestas,

(28) *This also applies to Vestas which has reduced its headcount at a number of factories.

There are cases, though, where a restrictive relative clause may follow a proper name or other usually fully-defined term. The following is a constructed example which illustrates a case where that is appropriate,

(29) The Vestas which we know today is quite different from the one of yesterday

The relative clause in (29) is restrictive in that it adds an extra defining feature to Vestas in the sense that we are not talking about Vestas at all times, only the Vestas that exists at the time of utterance.

Note that the relative conjunction that may only be used in restrictive relative clauses, whereas the relative pronoun which may be used both in restrictive and non-restrictive ones.

Reduced relative clauses
Consider the following sentence and, in particular, the very “heavy” NPs it contains,

(30) Revenue generated for the nine months ended September 30, 2011 were5 DKK 155 million, compared to DKK 219 million for the nine months ended September 30, 20106

This sentence may be reformulated into (31),

(31) The revenue which was generated for the nine months which ended September 30, 2011 was DKK 155 million, which should be compared to DKK 219 million for the nine months which ended September 30, 2010

This possibility indicates that very often relative clauses may be reduced by leaving out the relative pronoun and sometimes other material, like auxiliaries, cf.

(32) the revenue which was generated → the revenue generated

5 This error occurs in the authentic text.
6 Bavarian Nordic A/S – Interim Report for the period 1 January to 30 September 2011
the nine months which ended September 30, 2011 → the nine months ended September 30, 2011

Such constructions abound in professional texts, in which there seems to be an urge to present messages as tersely as possible, very often at the expense of readability and intelligibility.

As is evident from the examples in (30), passive constructions are often involved when we meet reduced relative clauses. Passive constructions are constructed by turning an active verb form into the corresponding passive one by combining a form of the auxiliary verb be with the past participle form of a transitive full verb, in (30) the transitive verbs generate and compare. What is left when we reduce the relative clause, then, is the past participle form of the verb, and the result is what is called a “bare passive”\(^7\) functioning as a modifier following the head noun in the NP structure, precisely as relative clauses do.

Reducing relative clauses and keeping only the predicate allows us to express very complex adjective-like information which, in English, cannot be placed before the head noun, cf. (33), which is ungrammatical,

\[(33) \ast \text{The [generated for the nine months ended September 30, 2011] revenue}^8\]

**Participles**

Participles are very strange creatures. Their origin is with the verbs, but they share many properties with adjectives and even nouns. That is the reason why we have not only the possibility of keeping the whole predicate together after the head noun as in (34),

\[(34) \text{revenue generated for the nine months ended September 30, 2011} \]

We can also pick out the participle and place it alone in the position of ordinary attributive adjectives, i.e., as a modifier preceding the head noun, cf. (35),

\[(35) \text{The generated revenue for the nine months ended September 30, 2011} \]

The adjectival nature of participles holds not only for past participles as in the preceding examples, but also for present participles (also called “gerund-participles” due to their nominal properties). Consider the following example, which shows the gerund-participles of the verbs change and challenge functioning as attributive adjectival modifiers of the head noun market,

\[(36) \text{This focus has been essential to ensure that Vestas in the future can act in a rapidly changing and challenging market} \]

\(^7\) Huddleston & Pullum (2005), p. 246.

\(^8\) In Danish we have the possibility of doing that, provided the participle is placed immediately before the head noun, thus, *Det i de ni måneder forud for den 30. Januar 2009 genererede overskud* (lit. “the in the nine months preceding January 30 2009 generated revenue”).
Participles used as adjectival modifiers may be either restrictive or non-restrictive as illustrated by (37),

(37) As a natural consequence of the reorganisation and to ensure that the new organisational structure has the necessary impact, the Board of Directors established four executive management areas, **reflecting** Vestas’ new operating business model: Finance, Sales, Manufacturing & Global Sourcing and Technology & Service Solutions. In addition, the Board of Directors reorganised the staff functions **reporting** to the Group President & CEO.

The first gerund-participle, **reflecting**, introduces non-restrictive, that is, added information, indicated by the comma which precedes it. This interpretation is borne out by the fact that we might reformulate that sentence as shown in (38), by turning the non-restrictive clause into a separate main clause.

(38) As a natural consequence of the reorganisation and to ensure that the new organisational structure has the necessary impact, the Board of Directors established four executive management areas. **This reflects Vestas’ new operating business model: Finance, Sales, Manufacturing & Global Sourcing and Technology & Service Solutions.**

Using this strategy might have been a good move in order to avoid the very long sentence in the authentic text.

The second gerund-participle in (37), **reporting**, introduces restrictive, that is, defining information, indicated by the absence of a preceding comma. This interpretation is borne out by several things. Consider what happens if we put a comma before **reporting**, (39) **In addition, the Board of Directors reorganised the staff functions, reporting to the Group President & CEO**

The comma completely changes the meaning of the whole sentence. In (39), the subject of **reporting** is no longer **the staff functions**, but **the Board of Directors**. So, what the comma does here is to sever the verb from its right subject and send the verb out looking for another! So, no comma here! The gerund-participle should be kept restrictive and modify **staff functions** in a way such that the meaning of the sentence remains equivalent to the paraphrase in (40),

(40) **In addition, the Board of Directors reorganised (exactly) those staff functions that report to the Group President & CEO (and not any other staff functions!)**

**PPs in NP structure**
Prepositional phrases (PPs) play an extremely important role in NP structure due to the fact that they may serve the functions of both complements of nouns and as modifiers of nouns and larger nominal expressions like noun + complement.
As a general rule, when a transitive verb is nominalised either by turning it into a gerund-participle (e.g., *reflect* → *reflecting*) or by other derivational suffixes such as –ion (cf. *reflect* → *reflection*), their usual NP object is turned into a PP. Here are some typical examples of deverbal nouns with PP complements,

(41) The **evaluation** of the guidelines and processes includes a **review** of the company’s business model

The example in (41) contains two deverbal nouns, *evaluation* and *review*. As ordinary transitive verbs they both take a direct object realised by an NP, cf.

(42) (we) **evaluated** [the guidelines]NP
(43) (we) **reviewed** [the company’s business model]NP

But as soon as the verbs are turned into their corresponding nouns, the form of their respective complements changes into PPs headed by the preposition *of*.

When PPs are used as modifiers, again the question of restrictive versus non-restrictive arises. As the following example shows, PP-modifiers may be used as restrictive modifiers (cf. the constructed example with a restrictive relative clause in (29) above),

(44) The Vestas **of today** is a lighter and more flexible organisation⁹

This concludes our treatment of different central aspects of NP structure and the factors that contribute to their internal structure.

**Sample analysis of an NP**

In this section, I shall give a concrete example of the structural complexity of NPs. I take my point of departure in a full sentence in order that the full context of the NP may be perspicuous to the reader. The sentence is this,

(45) Our enthusiasm for PROSTVAC® is supported by a continued interest in the pivotal Phase 3 trial, as well as promising data from a number of other studies of PROSTVAC® employed in earlier disease stages¹⁰

The sentence contains a “long” passive construction (indicated by the internalised complement introduced by the preposition *by*), and the NP we shall analyse in detail forms part of the internalised complement of that passive as is evident in the structure of the full sentence in (46),

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The complex NP we shall analyse in detail is the one in (47),

\[(47)\] promising data from a number of other studies of PROSTVAC® employed in earlier disease stages

As you will notice immediately, the complexity of the full NP arises from the fact that the full NP contains four other NPs\(^{11}\), each with its own complexity. The structure of the full NP is shown in (48) below,

\(^{11}\) The fourth NP is *earlier disease stages* at the very end of the structure. This NP is headed by the compound noun *disease stages* and premodified by the adjective *earlier*. I have chosen not to spell out this NP in detail since that would mean going into the intricacies of passive VP structures, which is not our focus here.
What you should note in particular is that, on closer inspection, the structure of each NP is not all that complicated but follows a fairly simple general pattern as already indicated in the structures (15) and (16) above. This is to say that the NP may contain at its fullest the following elements,

(49) Specifier {Pre-modifiers} **Head Noun** Complement {Post-modifiers}

organised into a structure like (50),
The braces in (49) and (50) indicate that there may in principle be any number of pre- and/or post-modifiers, whereas there may only be one word or phrase functioning as specifier and, likewise, only one word or phrase functioning as complement. Even though Nouns may take complements, these may always be left out in NP structure. Therefore, the only obligatory constituent of a NP is the Head Noun.

The options shown in (49) and (50) are clearly demonstrated in the NPs occurring in the structure in (48).

Starting from the top of the structure, the head noun of the topmost NP is *data*, which is pre-modified by the gerund-participle *promising* and post-modified by the PP *from a number of other studies of PROSTVAC® employed in earlier disease stages*.

The head noun of the second NP from the top is *number*, which is specified by the indefinite article *a*. The noun *number* takes a complement here realised by the PP *of other studies of PROSTVAC® employed in earlier disease stages*, indicating what the number is a number of.

The head noun of the third NP from the top is *studies*, which is pre-modified by the AP *other*. The noun *study* also takes a complement since one has to study something, and this complement is realised by the PP *of PROSTVAC® employed in earlier disease stages*.

The head noun of the fourth NP from the top is *PROSTVAC®*. This noun, which is a proper name, is preceded neither by a specifier nor by any pre-modifiers. It does not take a complement either but is post-modified by the VP *employed in earlier disease stages*. This post-modifier is realised by a bare passive *employed*, and, as indicated above in the section on reduced relative clauses, this kind post-modifier occurs extremely commonly in NPs in professional texts.

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12 The optionality of constituents in the structure is indicated by parentheses.
GENERALISING ENGLISH PHRASE STRUCTURE FROM NP STRUCTURE

It turns out that English phrase structure can be generalised from the structure of NPs to all other phrase types. This means that all English phrases can be represented as instances of the general structure in (51), where the category $X_0$, the head of the phrase, may be either N, A, V, or P. The head of a phrase determines what kind of phrase we get. If the head is an N, we get an NP, if the head is an A, we get an AP, etc.

(51)

Below, I shall illustrate by examples, some from professional texts and some constructed by me, a selection of the structural possibilities within the phrase types AP, PP and VP.

THE ADJECTIVE PHRASE

If in the general structure in (51) we replace $X_0$ by A, we get the following picture of an adjective phrase,

(52)

Specifiers in APs are regularly realised by degree adverbials like very, extremely, etc., for instance,
Pre-modifiers are realised by other types of adverbials like descriptive adverbs, e.g., *rapidly changing*, where we have a gerund-participle, *changing*, functioning adjectivally.

Complements and post-modifiers of APs typically appear in the form of PPs as illustrated by an example like

(54) It will be absolutely imperative for Vestas to retain its strong momentum

The adjective *imperative* means “impossible for someone to deter or evade”, and the one for whom it is imperative functions as the complement, so we get the following structure

THE PREPOSITIONAL PHRASE

Even though PPs follow the general structure in principle, in professional texts they appear almost exclusively in the form of head + complement, as for example, *Vestas will be in a better position to earn money*

(56)
THE VERB PHRASE

The role of specifiers in the verb phrase is debated. One suggestion has it that the negation *not* functions as a specifier of the VP, and since *not* in English requires an auxiliary, we will find VP structures like,

(57)

Complements are obligatory with all full verbs including linking verbs\(^{13}\) like *be, remain, seem*, etc., but excepting true intransitive verbs like *grow* in the sense of ‘become bigger’. In (57), we have an ordinary mono-transitive verb *experience* followed by its direct object.

Premodifiers of verbs are usually realised by manner or degree adverbs detailing how or to what extent a certain action or event was carried out, cf. an example like (58),

(58) At the same time, wind power plants owned by Vestas could [VP not fully compensate for the consumption of non-renewable electricity]

- where the VP structure is as shown in (59),

(59)

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\(^{13}\) In Huddleston & Pullum’s (2005) terminology, these verbs are called “Complex-intransitive”.
Manner adverbials may not only appear as pre- but also as post-modifiers in VP structure, as witnessed by the example in (60), with its corresponding structural representation in (61),

(60) Vestas has systematically worked with environmental standards

(61)

Alternatively, the manner adverbial may appear as a post-modifier, giving it extra focus, as is usual when elements are placed near the end of clauses, cf. (62),

(62)

REFERENCES