Articles and Adjectives in the German Noun Phrase

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要　　旨

　冠詞・修飾形容詞・名詞から成り立っているドイツ語の名詞句を統語論的に分析する学説は，伝統的説・冠詞句説・二重頭説・埋め込み冠詞句説がある。夫々の説を紹介してから，ドイツ語の名詞句内の形態統語論的なメカニズムを述べる。それを踏まえ，紹介した説の適切さを論じる。

Keywords:　German, adjective, article, noun, determiner phrase, noun phrase, morphology, syntax

1. Introduction

The German noun phrase (henceforth: gNP) constitutes one of the bulwarks for German language learners. The difficulties arise due to the intricate system of articles and to the adjectival inflection. Remnants of adjectival inflection can be encountered in other Germanic languages such as Danish, Icelandic, Norwegian, and Swedish, but besides German no other Germanic language has retained such an intricate system interconnecting nouns, articles and adjectives. Contemporary English has neither inflection of articles nor of adjectives.

This complex system of article and adjectival inflection has led to major difficulties in establishing the proper syntactic structure of the German noun

phrase.　At least four different proposals have been provided: 1. the Traditional proposal, 2. the Determiner Phrase proposal (henceforth: DP) by Bhatt (1990) and Olson (1991ab), 3. the Dual-head proposal by Eroms (1988, 2000), and 4. the Nested DP proposal by Gross (1993).

The traditional proposal utilizes a "common sense appeal". In a gNP such in (1)

(1)　　der alte Mann

the traditional proposal assumes that both the article *der* and the adjective *alte* are inside the NP headed by the noun *Mann*.　Its structure would be one as shown in (2):

(2)　　[[der] [alte] Mann]　　Traditional proposal

The DP proposal favored by late stage Government & Binding (Chomsky: 1981; henceforth: GB) and Minimalist Program (Chomsky 1995; henceforth: MP) linguists assumes that the article must be heading the entire structure.　According to GB/MP, (1) should be structured like (3):

(3)　　[der [[alte] Mann]]　　DP proposal

The dual-head proposal has been put forward by Eroms (1988, 2000).　There, one assumes that the gNP contains two heads: the article and the noun.　Eroms would structure (1) as follows:

(4)　　[der [alte] Mann]　　　Dual-head proposal

The nested DP proposal by Gross (1993) assumes that the entire structure is a NP which contains a DP in which the adjective is also contained.　Thus, under this view, adjectives are not headed by nouns.　Gross structures expression (1) as follows:

(5)　　[[der [alte]] Mann]　　　Nested DP proposal

The pros and cons of these four proposals need to be discussed briefly. The Traditional proposal utilizes a major intuitive insight: expressions such as (1) are about things—in this case a man. The article and the adjective only serve to constrict the area in which to look for a man: he must be someone already known to the listener (the topical function expressed by the article), and he must be old (as expressed by the adjective). Since (1) is about a man, one expects the corresponding German element, namely *Mann*, to be the head of the entire structure. Semantically, the article and the adjective serve in an equal fashion to closer determine which man is meant. Thus, both elements should appear in a syntactic structure in an equal manner.

On closer consideration, however, things become complicated. Nouns are without much doubt capable of heading adjectives, since semantic features of adjectives must be in concord with those of nouns. *Purple ideas* is a syntactically well-formed expression, but semantically nonsensical because *ideas* cannot contract the semantic feature [color]. On the other hand, no such implicit connection can be assumed to hold between articles and nouns. Further evidence comes from studies of non-European languages: there are many languages that lack a category for articles altogether. One famous example is Japanese.

What is conventionally done in this case, is to point out that German articles have to correspond with co-occurring nouns in the categories case, genus, and possibly number. Thus, the form of the article in (1), *der*, is prescribed by internal features of the noun *Mann*. Assuming that *der* is morphologically complex and consists of a stem *d* and a flexeme *+er*, one can argue that the flexeme is assigned by the noun. Concludingly, the noun must also head the article.

The DP proposal was developed within the framework of Generative Grammar. Since this theory is the leading paradigm in world linguistics today, it requires a lengthier discussion.

Generative Grammar's main purpose is to establish the principles and parameters of a Universal Grammar (henceforth: UG) assumed to be the cognitive mechanism that generates upon specified input the syntaxes of all natural languages. As of 1995 there are two major theories in the field: GB and MP. The DP proposal was first made within GB. In UG, the *head directionality parameter* is of major importance. Languages such as English count as *head-first* languages, languages

such as Japanese as *head-last* languages. Thus, the head directionality parameter instructs the phrase structure to have its head in either the first or the last position, in any way at the phrasal periphery. The workings of this parameter had first been established for verb phrases (henceforth: VP). Accordingly, English, German, French and others were to be regarded as languages that positioned their heads at the left periphery of phrases.

The problem was that NPs did not correspond neatly to this parameter. Since nouns were located at the right periphery of phrases, NPs of many Indo-European languages seem to violate the head directionality parameter. The proposals by Bhatt (1990) and Olson (1991ab) that NPs were in fact headed by the articles and not by the nouns brought the structure of NPs in line with those of VPs.

The major theoretical obstacle to this proposal was that nouns in languages with an explicit article system such as German possesses, configure the form of articles via assignment of article flexemes. In response, proponents of the DP proposal argued that the required features involved in the assignment process percolate upwards to the determiner head. It is indeed known that there are languages in which percolation processes can produce different structures. In French, verb stems move to combine with their flexemes, while in English flexemes move to combine with their verbs. This is the reason why an adverb is positioned after the verb in French but before a verb in English:

(6.1)　　Jean embrasse *souvent* Marie.

(6.2)　　John *often* kisses Mary.

Since one of the more prominent motives for the DP proposal was to align NPs with VPs, one should assume that other features pertaining to VPs would also be mirrored by NPs. Thus, article flexemes should move to combine with articles in French, but articles should move to combine with article flexemes in English. Since Contemporary English lacks article flexemes, this hypothesis is hard to prove, but historical English might offer some evidence one way or the other. It should be mentioned, though, that the head directionality parameter is still violated inside the NP because adjectives precede their nouns.

Whether nominal expressions are DPs or NPs is still being discussed. The major

problem seems to be that there are many languages without articles, for which the point of a DP cannot be convincingly made. However, even for those languages that possess articles, one shortcoming of the DP proposal is a counter-intuitive assumption: an expression such as (1) is about a man, not a determiner.

The Dual-head proposal by Eroms (1988, 2000) applies solely to German. Due to the difficulties of determining the internal structure of the gNP, Eroms considers both articles and nouns as heads. The evident drawback is that unlike other German phrase structures gNPs have two heads. Eroms poses a *concomitance* relation holding between the dual heads, but clarification is also required how articles and nouns interact to form this kind of structure. However, the Dual-head proposal acknowledges the problem that nouns cannot semantically head articles the way they head adjectives. On the other hand, it does not explain how article flexemes are assigned.

The Nested DP proposal by Gross (1993) also applies solely to German. More than any of the proposals above this proposal works from the morpho-syntactic processes that are evidently involved in constructing a gNP. Rather than regarding semantic relationships between the elements of a gNP as primary, Gross gives morphological properties priority. Thus, nouns head articles because internal nominal features such as genus and number instantiate the assignment of a respective article flexeme regardless of the truism that nouns cannot semantically head articles. While nouns may not positively incur such a semantic relationship as a head, some nouns do prohibit the occurrence of articles. These nouns belong to the nominal subclass of *uncountable* nouns.

Since semantic considerations are given less weight than morphological ones, Gross also assumes that the article—not the noun—must head the adjective. Adjectival flexemes depend in form on whether the article co-occurring is definite or not. Thus, Gross assumes a DP nested within the overall NP. This DP contains both the article and the adjective.

In summary, the Traditional proposal works from intuitive assumptions but fails to be consistent in its arguments for giving article and adjective equal status below the noun. The DP proposal may intend to streamline phrase structuring in UG, but nevertheless has serious problems to contend with. The most prominent two problems are flexeme assignment to articles and adjectives. The Dual-head

proposal is insufficient to explicate how the gNP should look like. The Nested DP proposal lacks a clear semantic base since morphological properties take priority. Figures 1.1–4 show simplified graphic representations of the structuring proposed for the gNP (D=article, A=adjective, N=noun):

| Traditional | DP | Dual-head | Nested DP |
| Figure 1.1 | Figure 1.2 | Figure 1.3 | Figure 1.4 |
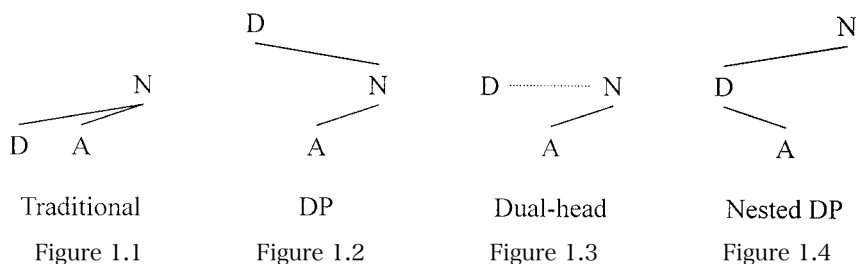
Closer examination of the virtual structures in figures 1.1–4 shows that all but the Nested DP proposal have a serious problem with noun ellipsis. Expressions such as

(7)　　the quick and the dead (movie title)

not only leave gaping holes in the structures proposed by the Traditional, the DP, and the Dual-head proposals, but also have this hole at the most crucial position in the structure: articles and adjectives are unconnected, and it is not clear how these two elements interact to produce their respective and required forms. This must count as a major pro in favor of the Nested DP proposal.

2. The system of German article and adjective flexemes

In the previous section four proposals concerning the gNP were introduced and briefly discussed. Every proposal had points in favor and against it. Before returning to this topic, the system of German articles and adjectives, in particular their flexemes shall be explicated in this section.

2.1. Definite articles

There is one German article that plays a prominent role in the gNP. This article

is called *bestimmter Artikel* in German, i.e. definite article. I shall conform to the notation of distinguishing between article *stems* and their flexemes. The definite article's stem is *d*. There are six flexemes assignable to *d*: +*er*, +*es*, +*em*, +*en*, +*as*, and +*ie*. Combinations of the articles and these articles perform to define *genus* in German where—in a non-traditional manner—I shall regard *plural* as a German genus, and thus shall dispense with the notion of *number*.

A noun is of *masculine* genus if it can occur with the articles *d.er*, *d.es*, *d.em*, and *d.en*.

A noun is of *neuter* genus if it can occur with the articles *d.as*, *d.es*, and *d.em*.

A noun is of *plural* genus if it can occur with the articles *d.ie*, *d.er*, and *d.en*.

A noun is of *feminine* genus if it can occur with the articles *d.ie* and *d.er*.

A first look at the number of combinations per genus reveals that different genus require a different number of cases. Masculine genus requires four cases, neuter and plural genus requires three cases, and feminine genus requires only two cases. If these articles co-occur with adjectives and nouns, a look at the adjective flexemes will provide an argument for a sharp distinction between German cases. See table 1.

Table 1: Definite articles and adjectival flexemes

d	Masculine	Neuter	Feminine	Plural
NOM	d.er alt.e Mann	d.as jung.e Kind	d.ie klug.e Frau	d.ie neu.*en* Autos
GEN	d.es alt.*en* Mann.es	d.es jung.*en* Kind.es	d.er klug.*en* Frau	d.er neu.*en* Autos
DAT	d.em alt.*en* Mann	d.em jung.*en* Kind	d.er klug.*en* Frau	d.en neu.*en* Autos
ACC	d.en alt.*en* Mann	d.as jung.e Kind	d.ie klug.e Frau	d.ie neu.*en* Autos

Disregarding the adjectival flexemes in the plural gNP for the moment, it is evident that nominative and accusative collapse into one single case in the neuter, the feminine, and the plural genus. This means that without further evidence— for instance from a sentential context—one cannot distinguish German nominative from accusative in the above-mentioned genus. This, however, is again different from the masculine nominative. What masculine nominative, and feminine and neuter nominative and accusative share is that the adjectival flexeme is +*e*, not +*en*. The adjectival flexeme +*en* in the plural genus is caused by a different

process that I shall return to later.

I shall proceed to assume a case feature [±STR(ONG)] applying to this phenomenon. Thus, masculine nominative, feminine and neuter nominative and accusative are considered as [−STR]. Conversely, the remaining masculine cases, and feminine and neuter genitive and dative are considered as [+STR]. The [−STR]/[+STR]-distinction in German cases is expressed through differing adjectival flexemes, and furthermore is a strong indication that the more features are expressed at the article's position the less are expressed at the adjective's position. Thus, there is a continuum of feature expression to which I shall return later and discuss it more thoroughly.

Other German articles belonging to a sub-paradigm of the *d*-article are *dies*, *jen*, erotetic *welch*, and quantifying *manch* and *jed*. The only differences are that the ending for neuter nominative and accusative is +*es*, not +*as*, and the ending for feminine and plural nominative and accusative is +*e*, not +*ie*. The quantifier *jed* cannot generate the plural genus which is supplemented by the quantifying adjective *all*. Compare table 1 and table 2.

Table 2: *dies*, *jen*, *welch*, *manch*, *jed* and adjectival flexemes

Masculine	Neuter	Feminine	Plural
dies.er alt.e Mann	jed.**es** jung.e Kind	manch.**e** klug.e Frau	welch.**e** neu.*en* Autos
jen.es alt.*en* Mann.es	dies.es jung.*en* Kind.es	jed.er klug.*en* Frau	dies.er neu.*en* Autos
welch.em alt.*en* Mann	jen.em jung.*en* Kind	dies.er klug.*en* Frau	jen.en neu.*en* Autos
manch.en alt.*en* Mann	welch.**es** jung.e Kind	jen.**e** klug.e Frau	manch.**e** neu.*en* Autos

The [−STR]/[+STR]-distinction for adjectival flexemes is still valid, and articles receive different flexemes only in [−STR] cases.

In the definite article's paradigm and its sub-paradigm the following flexemes are necessary to form full articles:

1. +*er*: a) masculine nominative

  b) feminine [+STR]-cases

  c) plural genitive

2. +*es*: a) masculine genitive

                 b) neuter genitive

3. +*em*: a) masculine dative

                 b) neuter dative

4. +*en*: a) masculine accusative

                 b) plural dative

5. +*E*:   a) feminine [−STR] cases as +*ie* after *d*

                 b) feminine [−STR] cases as +*e* after other articles

                 c) plural [−STR] cases as +*ie* after *d*

                 d) plural [−STR] cases as +*e* after other articles

6. +*As*: a) neuter [−STR] cases as +*as* after *d*

                 b) neuter [−STR] cases as +*es* after other articles

All definite articles share the same distribution of flexemes with co-occurring adjectives which are +*e* in [−STR] cases, +*en* in [+STR] cases and the entire plural genus. The last issue—+*en* with adjectives in plural genus—has to be elaborated as promised above. Plural genus occurs in two instances: a noun occurs together with plural morphemes, or a noun with inherent plural features occurs. The plural noun in table 2 was *Autos*. Its singular form is *Auto*, and +*s* serves as the plural marker. Plural markers obligatorily shift any genus to plural. This is such a strong feature that it may be expected to be transmitted all the way through to the co-occurring adjectives. In this respect, plural has indeed a prominent stature among the all genus.

Some masculine and neuter nouns have an inherent double genus-feature: examples are all masculine nouns ending in *er* such as *Kellner* etc. and neuter nouns ending in *en* such as *Becken*. Whereas *Auto* contains the genus feature [N(euter)], *Kellner* contains [M(asculine)/P(lural)] and *Becken* contains [N/P]. Once the feature [P] is activated, the flexemes of co-occurring adjectives must change to +*en* regardless of case—given that a definite article also co-occurs.

2.2. The numeral article

The numeral article *ein* which is also called *unbestimmter Artikel*, i.e. indefinite article, instantiates a somewhat different paradigm. I shall—in defiance of tradition—proceed to call *ein* the *numeral* article and not the *indefinite article*

for two reasons: First, there is a noticeable division among German nouns which can and cannot co-occur with *ein*. Uncountable nouns (in particular for fluids and powdery substances) cannot usually do so, and if they occur with *ein*, the nouns are not understood as substances but as a certain quantity of a respective substance. For example, *ein Kaffee* must always mean *a cup of coffee*. It cannot mean coffee in general, and thereof one unit.

Second, the distinction definiteness-indefiniteness does not strike me as particularly illuminating. The article *manch* is by no logical means an expression that declares a definite object. Still it conforms to the paradigm established by the definite article *d*. It is true, though, that *d* and *ein* involve different positions in a *topic-focus*-continuum. Expressions with definite articles are certainly higher marked in terms of topic than those with *ein*.

The property that *ein* always marks an object as being of one unit, furthermore serves to contrast the paradigm of *ein* with those of plural numerals such as *zwei* (2), *drei* (3) etc.

Table 3: Numeral articles and adjectival flexemes

ein	Masculine	Neuter	Feminine	Plural
N	ein alt.*er* Mann	ein jung.*es* Kind	ein.e klug.e Frau	zwei neu.e Autos
G	ein.es alt.*en* Mann.es	ein.es jung.*en* Kind.es	ein.er klug.*en* Frau	zwei neu.*er* Autos
D	ein.em alt.*en* Mann	ein.em jung.*en* Kind	ein.er klug.*en* Frau	zwei neu.*en* Autos
A	ein.en alt.*en* Mann	ein jung.*es* Kind	ein.e klug.e Frau	zwei neu.e Autos

What can be observed from table 3 is that not only the article flexemes but also the adjectival flexemes are retained in all [+STR] cases—disregarding plural. In feminine and plural [−STR] cases, article flexemes correspond to 5.b) and 5.d) respectively.

Differing instances are masculine and neuter [−STR] cases, and plural [+STR] cases. Since in masculine and neuter [−STR] cases, the article does not receive a flexeme the required features must be expressed at the adjective's position. In masculine nominative we find flexeme expression 1.a), and in neuter [−STR] cases we find expression 6.b). The equivalent is true for the plural [+STR] cases. Plural genitive

expresses as 1.c) and plural dative as 4.b).

The corollary from these observations is that in the numeral article's paradigm there are only two adjectival flexemes, +*e* and +*en*. Whenever article flexemes are not expressed they wander to the adjective and are expressed there. This explains why the adjectival flexemes in masculine and neuter [–STR] cases are not +*en*, and it also explains why the plural adjectival flexemes correspond to those of the definite article paradigm.

Further members of this paradigm are negating *kein* and the possessive articles *mein*, *dein*, *sein*, *ihr*, *unser*, and *euer*. In masculine, neuter, and feminine genus forms produced by these further articles are indistinguishable from *ein*. However, plural forms differ because other than *ein*—which for logical reasons has no plural, since there is no plural of 1—the above-mentioned articles can produce plural forms. Compare table 4 to table 3.

Table 4: Negative and possessive articles and adjectival flexemes

Masculine	Neuter	Feminine	Plural
kein alt.**er** Mann	ihr jung.**es** Kind	mein.e klug.e Frau	unser.e neu.*en* Autos
mein.es alt.*en* Mann.es	unser.es jung.*en* Kind.es	dein.er klug.*en* Frau	eur.**er** neu.*en* Autos
dein.em alt.*en* Mann	eur.em jung.*en* Kind	sein.er klug.*en* Frau	kein.**en** neu.*en* Autos
sein.en alt.*en* Mann	kein jung.**es** Kind	ihr.e klug.e Frau	mein.**e** neu.*en* Autos

Observing table 4 and comparing it to table 3 reveals no difference in the masculine, neuter, and feminine genus. Plural genus, however, has reverted to the paradigm presented in table 2. Since the negating and possessive article can receive flexemes, article flexemes stop in the article's position and do not wander to the adjective's position.

Further notice should be taken that *ein* and other numerals can also occur in the adjective's position. It is possible to say:

(8.1)   d.er ein.e Mann   (masculine nominative)

(8.2)   d.en zwei Kinder.n   (plural dative)

The negator cannot occur in adjective position, and only the singular possessive articles *mein*, *dein*, *sein*, and *ihr* can occur in rather fixed expressions such as:

(9.1)　　d.ie mein.e　　　　　　*my wife/girlfriend*

(9.2)　　d.er ihr.e　　　　　　　*her husband/boyfriend*

The paradigm of the numeral article, thus, conforms to flexeme assignments as explicated in the previous section, unless articles do not receive flexemes. Then the article flexemes attach to the adjectives.

2.3. Expressions without articles

A further paradigm is instantiated by expressions without articles but with adjectives. This happens in the case of uncountable nouns denoting substances and other expressions. As can be surmised from the observations and explanations made in the previous two sections, adjectives receive article flexemes since these flexemes find no article to attach to. Observe table 5.

Table 5: Adjectives without articles

Ø	Masculine	Neuter	Feminine	Plural
N	süß.**er** Saft	kalt.**es** Bier	warm.**e** Milch	neu.**e** Autos
G	süß.**en** Saft.**s**	kalt.*en* Bier.**s**	warm.**er** Milch	neu.**er** Autos
D	süß.**em** Saft	kalt.**em** Bier	warm.**er** Milch	neu.**en** Autos
A	süß.**en** Saft	kalt.**es** Bier	warm.**e** Milch	neu.**e** Autos

Table 5 shows that plural forms conform to those in table 3. Besides masculine and neuter genitive, all other adjectives receive article flexemes. Masculine nominative is expressed at the adjective's position as 1.a), masculine dative as 3.a), masculine accusative as 4.a). Neuter [−STR] cases are expressed as 6.b), and neuter dative as 3.b). Feminine [−STR] cases are expressed as 5.b), and feminine [+STR] cases as 1.b). Plural [−STR] cases are expressed as 5.d), plural genitive as 1.c), and plural dative as 4.b).

Masculine and neuter genitive differ, however. Adjectives receive their usual

[+STR] flexeme +*en*. The reason for this is that the nouns *Saft.s* and *Bier.s* already express genitive. Only masculine and neuter nouns have preserved genitive case markings. Since genitive is already expressed at the noun's position, this feature stops there and does not travel to the adjective's position. The reason why genitive is still expressed in the definite article paradigm (cf. tables 1 and 2) and in the negative/possessive paradigm (cf. table 4) is that all definite articles *must* always receive a flexeme, and negative and possessive articles must receive a flexeme lest they not be mistaken for masculine and neuter [−STR] cases.

What could well observed in the sections 2.1−3 is that there is indeed an expression hierarchy in which articles, adjectives and nouns partake. The less expression one finds at the top of the structure, the more expression can be found at the bottom. Nouns can only express plural and genitive—the latter in case of masculine and neuter nouns. In the remaining instances expression takes place at the article's position, and if that is—for reasons specified—impossible then expression takes place at the adjective's position.

Thus, we find that there is an expression hierarchy running from the noun as the top via the article to the adjective as the bottom. This corresponds exactly to the Nested DP proposal. In the next section, I shall first readdress the syntactic structuring, and in the fourth section I shall try to throw some light on other interesting phenomena concerning the gNP.

3. The interconnections within the gNP

Section 2 has put some flesh on the bone of contention. While section 1 detailed the four proposals for structuring the gNP, section 2 detailed how many and which flexemes are necessary to form an acceptable gNP.

What is clear from section 1 seems almost trivial: articles introduce the gNP at the left periphery, and nouns close the gNP at the right periphery. I shall not consider relative clauses and prepositional phrases determining the noun which are positioned to the noun's right side because this issue does not bear on the subject at hand. Finally, adjectives are positioned between articles and nouns. Thus, serialization is trivial. Under discussion, however, is how articles, adjectives, and nouns are to be ranked in terms of hierarchy.

Concerning the discussion in section 2 it can be considered as a given that genus features originate within the noun. The opposite assumption would have to claim that genus features originate directly—for instance—at the article's position and then force nouns to obey to the generated feature. I doubt that the latter assumption is tenable.

Section 2 also showed that there is a difference between [−STR] and [+STR] cases. As long as an article is present and the noun is not overtly case-marked, [+STR] cases cause adjectives to take flexeme +*en*. In [−STR] cases, the selection of the adjective's flexemes depend on whether the article takes flexemes or not. If the article takes a flexeme, then the adjective receives +*e*. If the article takes no flexeme, then this flexeme must attach to the adjective. In the plural genus, instead of +*e* flexeme +*en* is triggered, because plural nouns are either marked with a plural suffix or contain inherent plural features, which cause the same process as overtly case-marked nouns.

I shall now propose to think of a preliminary structure of the gNP in terms of three *slots*: an article slot dubbed *D*, and adjective slot dubbed *A*, and a noun slot dubbed *N*. Serially, the slots must be aligned as [D-A-N].

I take it also as settled that genus features originate in N. Nouns have inherent genus and thus cause certain flexemes to attach to certain articles. Thus the position where the required features originated can be different from the position where the features are expressed. For instance, case is a feature that is expressed in the position different from where it has originated. Verbs in general demand special cases to occur with NPs. In this respect, cases originate in verb slots, but are expressed in the respective slots of the NPs. Parallel to this insight, I propose that the flexemes originate in N, but are generated in D. If an article is present in D, and if the article attaches to the flexeme, then the flexeme +*en* is generated in A if the NP's case is [+STR]. If case is [−STR] then flexeme +*e* is generated in A if no plural features override to generate +*en*. This claim covers all scenarios but those where articles take no flexemes and where no articles are present.

In the first scenario where articles are present but do not attach to the flexeme, two options may apply: first, the flexeme moves to A and attaches to the adjective, or second, the adjective moves to D and attaches to the flexeme. Since German is a language where verbs conform to the second option, i.e. they move to combine

with their flexemes, it might seem feasible to posit that adjective behave in a similar fashion. However, a simple test using an adjective that commands a complement shows that adjectives do not move:

(10)   ein [sich seiner Sache] gewiss.*er* Mensch

In (10) the numeral article is present in D. According to the first scenario the flexeme +*er* moves from D where it finds no attachable unit to A where it attaches to *gewiss*. The second scenario would move the adjective from A to D. As a result the adjective *gewiss.er* should be located in front of its complement *sich seiner Sache*. Since this is not the case, adjectives stay *in situ*.

The above-made assumption also covers the scenario where no articles are present in D. Then flexemes move from D to A and combine with the adjective in A. Thus, the scenario in which articles do not attach to flexemes is essentially similar to the scenario where none are present, because in both scenarios the flexeme generated in D has to move to A in order to attach to the adjective there.

The above-said means that nouns always cause the generation of article flexemes in D. Since flexemes may not float around without attaching to a lexeme, they must move to A in order to find an attachable unit whenever there is no element in D that properly attaches to the generated flexeme.

These assumptions suffice to establish a hierarchy for the slots in the gNP: since article flexemes are generated in D by order of nouns located in N, the D-slot must be lower in the hierarchy than the N-slot Thus, D is located beneath N. Furthermore, because pure adjectival flexemes are generated in A by expression of respective features in D, A must be located beneath D. Thus, the slot hierarchy should be [N-D-A]. This hierarchy still leaves room for other processes not addressed here, in particular the assignment of +*en* flexemes when plural features occur in N, or the semantic selection of adjectives by nouns. Nouns in N still have—albeit indirect—access to A. The serial alignment [D-A-N] and the slot hierarchy [N-D-A] lead to a configuration that is equivalent to structuring as posited by the Nested DP proposal. A constituency grammatical tree structure would, thus, look like figure 2.
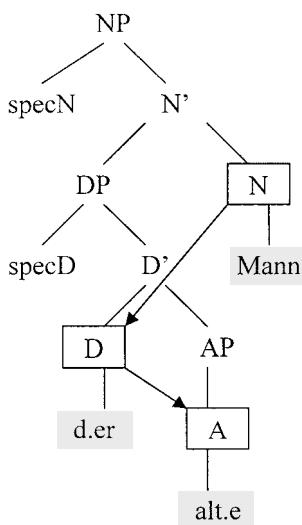
Fig.2: Nested DP-structure

The slots in figure 2 are rendered as boxes, *DP*, *AP*, and *NP* mean *article phrase*, *adjective phrase*, and *noun phrase* respectively, and the arrows depict generation caused by origination. The *spec-* and *X'*-nodes are X-bar-syntactic nodes. In X-bar-syntax the slots would also double as X^0. The resulting units are highlighted with a slightly gray background for better recognition. In order to generate a virtual dependency tree, all *XP-*, *spec-*, and *X'*-nodes must be pruned, and the slots must be connected along the arrows. From now on, I shall only include the top node *NP* and *specN* if they are needed in order to conserve space.

Notice has to be taken that article flexemes move from D (=D^0) to A (=A^0). Since both types of category are X^0-categories, I shall assume the movement as possible, although it occurs not upwards in the tree but downwards.

4. Various phenomena inside the gNP

It is still to early to dismiss the other three proposals concerning the structure of the gNP. Some claims, though, can be made at this stage. If for instance the generation process of flexemes is considered as taking an upward path, the DP proposal would still be valid. However, the DP proposal must also account for

scenarios where an article does not attach to a flexeme or where no article is present. Then the flexeme would have been generated in D, but had to move from there down to N and from there to A. That is a rather long way. The same problems plague the Traditional proposal and the Dual-head proposal since there A is connected to D via N. In order to shed more light on the gNP, I shall discuss some structures involving the gNP in this section.

4.1 Empty D-slots

The scenario that no articles occur only poses a problem when a case feature is expressed in N. Otherwise there are no empty D-slots, if adjectives are around because D-flexemes move to A if no article is present in D, or if an article is present in D but does not attach to the article flexeme. Thus, employing the structure shown in figure 2 the next expression

(11)   süß.er Saft

can be rendered as shown in figure 3.
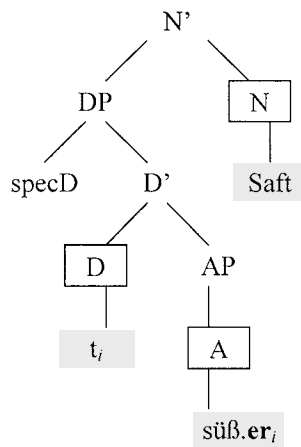
Fig.3: Structure of (11)

(11) depicts an expression where no article is present. However, if an article is present but does not attach to the flexeme, then flexeme must move to A. One

example is (12).

(12)　　ein alt.er Mann

In (12) *ein* does not attach to the flexeme *+er*. Therefore, the flexeme moves to A and attaches to the adjective. The structure is shown in figure 4
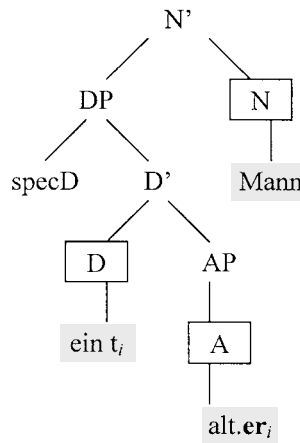

Fig.4: Structure of (12)

However, empty D-slots occur whenever a case feature is expressed in N. An example is (13).

(13)　　süß.en Saft.s

In (13) the noun is marked with overt genitive case. This means that a flexeme (expression 2.a) is generated in D but this flexeme does not move to A, because this movement is blocked by the occurrence of genitive case in N. The structure is depicted in figure 5.
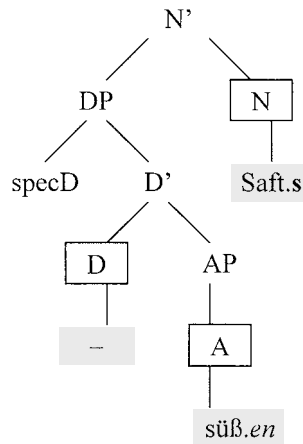
Fig.5: Structure of (13)

For the Nested DP proposal, (13) and its structure in figure 5 constitute the most salient counter-argument. On the other hand, the Traditional proposal, the DP proposal and the Dual-head proposal handle (13) well. Since there, D and A are not connected no problems arise. The Nested DP proposal can only offer that nouns in N must have access to adjectives in A anyway, due to semantic selection. Furthermore such structures are rare compared with those in which articles are present in D.

4.2 Empty N-slots

The situation is reversed, however, if N is empty. At least in contemporary German, expressions with empty N-slots are much more frequent that those with empty D-slots. There are two scenarios where N-slots can be empty: first, the flexeme stays in D, and second, it has moved to A. An example for the first scenario is (14).

(14)   d.er ein.e   e.g. from: d.er ein.e Mann
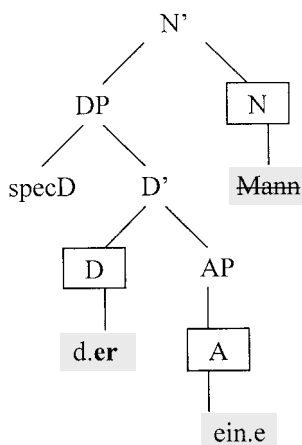
Fig.6: Structure of (14)

An example for the second scenario is (15).

(15)　　mein ein.er　　e.g. from: mein ein.er Fuß

In (15) the possessive article *mein* cannot attach to the flexeme; therefore the flexeme moves to A in order to attach to the article-adjective *ein*. Figure 7 shows the structure of (15).
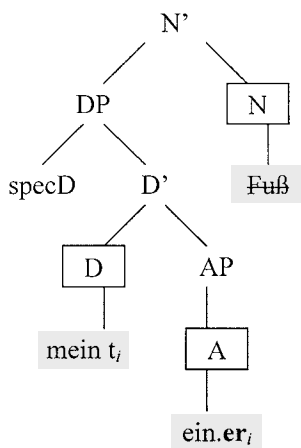
Fig.7: Structure of (15)

It is evident that the Traditional proposal, the DP proposal, and the Dual-head proposal face eminent problems as soon as nouns are elided. As in all these proposals formal features must move from N to A, it is unclear how N-ellipsis is handled there. Worst fare the Traditional and the Dual-head proposal because D-slots and A-slots are not connected there. The DP proposal is better off, since D-slots connect indirectly to A-slots via the N-slot. Thus the DP proposal's problems are similar to the Nested DP-proposal's problems with empty D-slots.

4.3. Empty N-slots and empty A-slots

In German, it can happen that not only the N-slot is empty but also the A-slot. Since all articles can perform pronominal functions in German, this is indeed a quite frequent scenario in German. Consider the next sentence:

(16)   Petra fehlt ihr Buch, und mir fehlt mein Buch/mein.**es**.

Instead of repeating *Buch* in the second conjunct, the latter form *mein.es* is much more common. In the pronominal version of (16) where *mein.es* is used, no adjective is present to attach to the flexeme. Thus, the flexeme attaches to the possessive article. Contrast (16) with (17) where an adjective is present:

(17)   Petra fehlt ihr neu.**es** Buch, und mir fehlt mein alt.**es**.

Since the adjective *alt* is present in the A-slot in (17), the flexemes to the adjective rather than to the possessive article.

4.4 Stranding

In some languages, parts of a phrase can move during topicalization or focalization while leaving other parts behind. This phenomenon is known as *stranding*. In German, certain parts of the NP can move to the topic position at the beginning of the utterance, thus causing heavy focus on the stranded parts. An example for this phenomenon is sentence (18).

(18)   ***Schlange.n*** habe ich *d.ie grün.en* gesehen.

The italicized words form one semantic unit *d.ie grün.en Schlange.n* where the word marked in bold script has been topicalized. Structurally, the stranded elements are equivalent to (15) and its structure shown in figure 7. It thus deals an equivalently lethal blow to the Traditional proposal and the Dual-head proposal like N-ellipsis did. The DP proposal deals with problems similar to N-ellipsis, but is better off because GB/MP can utilize Trace Theory. The Nested DP proposal does best because it can posit a simple head-extraction.

But instead of having only *Schlange.n* in topical position like in (18), a noun can be topicalized with its adjective and still have an article in its original position. It is a problem whether this still constitutes stranding. An example would be sentence (19).

(19)　　**Grün.e Schlange.n** habe ich *d.ie* gesehen.

There are two possibilities concerning (19). Either one faces a stranding of the article, or two phrases with the same theta-marking co-occur. If the former were true, then the Nested DP proposal would face a severe counter-argument since two elements not forming a phrase have been moved. For the DP proposal this would constitute no problem at all, while for the Traditional proposal, and the Dual-head proposal problems would arise because there the D-slot is part of the NP.

It seems, however, that the second possibility is what one is actually faced with in (19). A possible indicator for this assumption is that the adjectival flexemes are different in (18) and (19). In (18) the adjective is inflected according the definite article paradigm (cf. table 1 and 2), while in (19) the flexeme expresses 5.d) (cf. table 5).

Thus, the flexeme has already moved to the A-slot in order to attach to the adjective. This could only happen if no article is present, or if no article attaches to the flexeme. However, definite articles always attach to flexemes which is why there is no need for the flexeme to move to the A-slot. Thus, it is highly unlikely that (19) is a form of stranding of the article. The topicalized NP in (19) would then have the same structure as the expression (11), cf. figure 3.

4.5 Co-occurring pronouns

In colloquial German, the pronouns *ich*, *du*, and *Sie* can introduce NPs. Third person and plural pronouns cannot be used in this way. In this scenario, articles do not occur, which is why it is thought that the pronouns are located within the NP they introduce.

(20) Ich arm.er Kerl!

(21) Du dumm.es Huhn!

(22) Sie blöd.e Kuh!

The DP-proposal deals with the pronouns in (20–22) as determiners and thus positions them on the D-slot. This analysis is acceptable since the DP proposal nests the NP within the DP. The Traditional proposal and the Dual-head proposal are very likely to treat this phenomenon as a nominal apposition to a pronominal node. The Nested DP proposal does likewise, because the positioning of the pronoun in a *spec-slot* cannot cause the necessary agreement with a verb flexeme. Figure 8 shows the structure of (20).
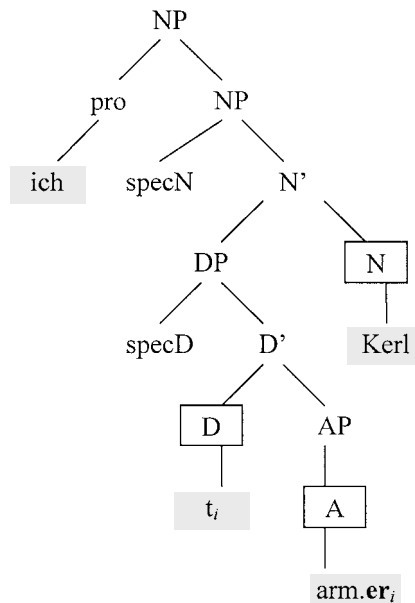
Fig.8: Structure of (20)

4.6 Initial possessives

The DP proposal's propensity of treating pronouns like articles stems from the treatment of possessives. Possessives such as *Peters* as in (23) cannot co-occur with articles:

(23)　　Peters rot.em Wagen　　(masculine dative)

Again a look at the adjectival ending reveals that it is an article flexeme to which no article has attached. The article expresses 3.b). Therefore, the flexeme has moved to the A-slot. It is however, unproblematic to position *Peters* on the D-slot. With this option neither the Traditional proposal, nor the Dual-head proposal or the Nested DP proposal have any problems. The DP proposal, however, which puts *Peters* at the head position must explain why (23) is not about Peter but about his red car.

4.7 Phrases with initial *so* and *solch*

In German, NPs can be initialized by the adverb *so* and the adjective *solch*. In English this corresponds to NPs initialized with *such*. The adverb can co-occur with the numeral article *ein* and the definite article *manch*, the adjective only with *ein*. Examples are expressions (24–26).

(24)　　so ein teur.es Buch
(25)　　so manch.er jung.e Mann
(26)　　solch ein klug.es Kind

A look at the adjectives again is revealing: in (24) and (26), the flexeme has moved to the A-slot because *ein* does not attach to the flexeme. In (25) the article attaches properly to the flexeme which is why the adjective in A receives flexeme +*e*. The question is of course where *so* and *solch* are located. I am unsure how the Traditional proposal, the DP proposal, and the Dual-head proposal would treat these cases, but the Nested DP proposal could well treat these cases as adverb movements into the *specD*-slot. This would be justified because (24–26) can be

rearranged to have the adverb inside the AP.

(24')   ein so teur.es Buch

(25')   manch.er so jung.e Mann

(26')   ein solch klug.es Kind

Expressions (24) and (25) should then be structured as is shown in figures 9 and 10.
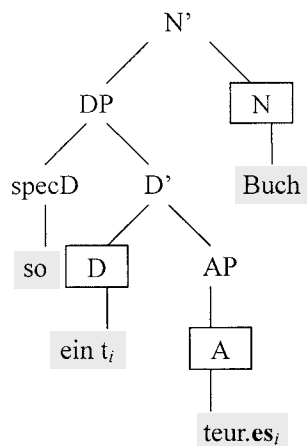

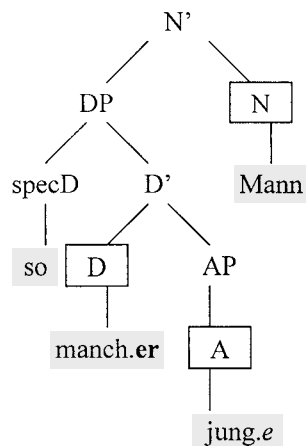Fig.9: Structure of (24)   Fig.10: Structure of (25)

Notice that the flexeme has moved to A in figure 9, but stayed in D in figure 10.

4.8 Fused articles

In German, some prepositions can form compounds with article flexemes. These prepositions are *an*, *bei*, *in*, *von*, and *zu*. The first four prepositions combine with masculine and neuter article flexemes, while *zu* can take all genus besides plural.

(27)   am Markt   a[n+d.e]m Markt   (masculine dative)

(28)   am Auto   a[n+d.e]m Auto   (neuter dative)

(29)   ans Auto   a[n+d.a]s Auto   (neuter accusative)

(30)   beim Baum   bei[+d.e]m Baum   (masculine dative)

(31)	beim Auto	bei[+d.e]m Auto	(neuter dative)
(32)	im Schrank	i[n+d.e]m Schrank	(masculine dative)
(33)	im Auto	i[n+d.e]m Auto	(neuter dative)
(34)	vom Markt	vo[n+d.e]m Markt	(masculine dative)
(35)	vom Auto	vo[n+d.e]m Auto	(neuter dative)
(36)	zum Markt	zu[+d.e]m Markt	(masculine dative)
(37)	zum Auto	zu[+d.e]m Auto	(neuter dative)
(38)	zur Bank	zu[+d.e]r Bank	(feminine dative)

Since all instances but (29) are [+STR] cases, adjectives always receive +*en*. (29) is an instance of [−STR] case, and thus the adjectives receives +*e*.

(39)	am neu.en Markt	(masculine dative [+STR])
(40)	am groß.en Haus	(neuter dative [+STR])
(41)	zur alt.en Bank	(feminine dative [+STR])
(42)	ans rot.e Auto	(neuter accusative [−STR])

In (27–42) the NPs are nested within a prepositional phrase. The article flexemes fuse with the prepositions which makes the assumption tenable that article flexemes move to the P^0-position where the preposition is located. Thus, expressions (41) and (42) should look like figure 11 and 12 respectively.
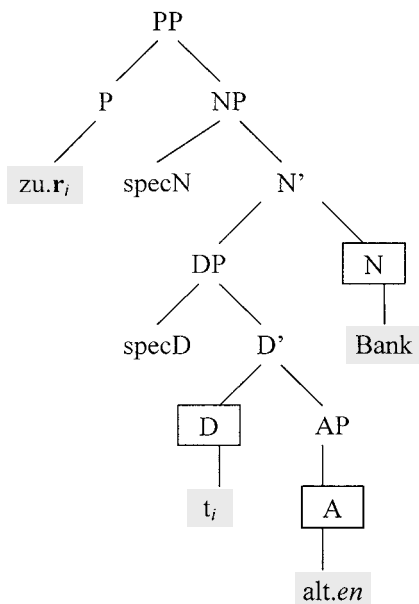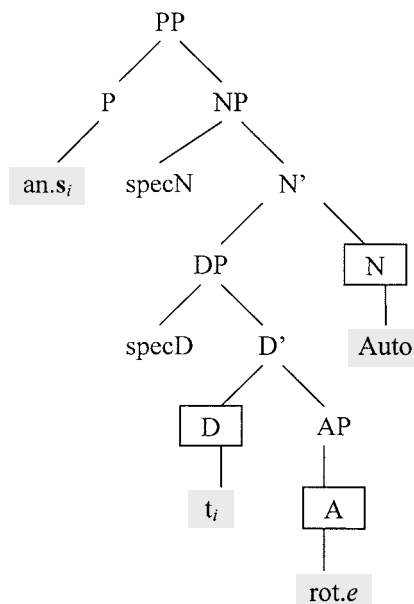
Fig.11: Structure of (41)   Fig.12: Structure of (42)

In both figure 11 and 12, the structure of the NP resembles structures with empty D-slots (cf. figure 3). The difference, however, is that in the structure in figure 3 no article was present. In the structures above, however, a definite article was present in the D-slot which has moved to the P^0-position. If it were otherwise, the adjective in (42) would have attached to an article flexeme which had to move there from the D-slot. In this respect, the structures in figure 11 and 12 are not identical to the one shown in figure 3.

Of minor import—but still of import—is the question whether only the flexeme has moved from the D-slot to the P^0-position, or whether the definite article has moved there after attaching to the flexeme. In the latter scenario, a morpho-phonological analysis could explain the fusion process at the P^0-position. In the former scenario, however, further explanation is required. One possible explanation could be that due to the movement of the flexeme to the P^0-position, a definite article is left stranded before successful attachment to the flexeme. Unattached definite articles are not viable and are deleted. Since attachment to the flexeme is not always unsuccessful, again further explanations are required when

attachment takes place and when it does not. For instance, if the PP introduces a relative clause the flexeme must not move to the P^0-position. If a relative clause links to a NP in the main clause that itself is nested within a PP headed by a preposition which can incur fusion, then fusion may not take place. Sentence (43) shows that fusion may not take place in relative clauses.

(43)   Die <u>Bank</u>, *zu der/*zu.r ich früher immer ging*, wurde geschlossen.

In (43) the italicized part is the relative clause linking to the noun *Bank*. Here only the non-fused version is correct. Sentence (44) is an example for non-fusion in a main clause PP to which a relative clause links.

(44)   Ich gehe <u>zu der/*zur Bank</u>, *zu der auch du* gehst.

The italicized relative clause links to *Bank*. Since Bank is nested within a PP headed by a preposition that can fuse with article flexemes, fusion could occur but is disallowed because a relative clause links to it.

5. Summary

Section 2 outlined the morpho-syntactic workings inside a gNP. Based on the distinction between [−STR] and [+STR] cases, it was shown that as long as an article is present and the noun is not overtly case-marked, [+STR] cases cause adjectives to take flexeme +*en*. In [−STR] cases, the selection of the adjective's flexemes depend on whether the article takes flexemes or not. If the article takes a flexeme, then the adjective receives +*e*. If the article takes no flexeme, then this flexeme must attach to the adjective. In the plural genus, instead of +*e* flexeme +*en* is triggered, because plural nouns are either marked with a plural suffix or contain inherent plural features. Figure 13 simplifies these insights into two principles.
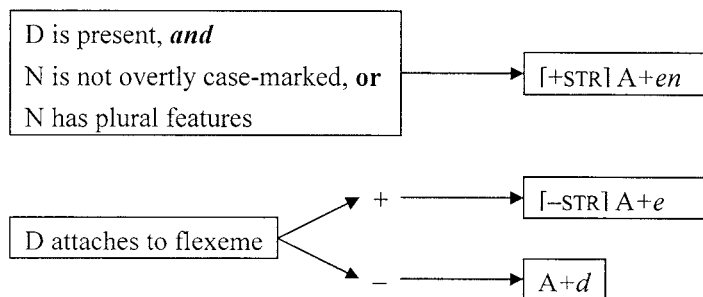
Fig.13: Morpho-syntactic principles for the gNP

Section 3 found that based on the principles shown in figure 13, it could be assumed that the hierarchy of D-, A- and N-slots should be thus, that the N-slot dominates the D-slot which in turn dominates the A-slot. Figure 2 expressed this hierarchy in terms of a constituency grammatical phrase marker of a type currently used in modern linguistics.

Section 4 discussed eight issues incurring problems to differing degrees for the four proposals concerning the structure of the gNP. These were empty D-slots, empty N-slots, empty D-slots and N-slots, stranding, co-occurring pronouns, initial possessives, phrases with initial *so* and *solch*, and fused articles. The discussion found that most issues involve significant problems for the Traditional and the Dual-head proposal. In particular empty N-slots pose problems for these proposals and for the DP-proposal. Stranding, initial possessives and fused articles also pose problems for the Traditional and the Dual-head proposal. However, they do not undermine the DP-proposal nor the Nested DP-proposal. The Nested DP-proposal's foremost problem is the handling of empty D-slots, in particular in scenarios without articles and overtly case-marked nouns such as masculine genitive *süß.en Saft.s* (cf. figure 5). However, the Nested DP-proposal did well in all other problem areas, and also accounts to the most insightful degree of the morpho-syntactic processes involved in structuring a gNP. The Nested DP-proposal can do so by assuming that the flexeme originating in the N-slot is generated in the D-slot, and that flexemes can move to other X^0-slots. In this respect, it is even more theoretically consistent than the DP-proposal which has to involve *spec-categories*.

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