Dependencies within the German Noun Phrase:
Determiners and Adjectives

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Abstract

German adjectives in attributive position depend morphologically on two controllers: (I) they depend on their governing nouns for case, gender and number, and (II) their declension type (strong or weak) depends on the preceding determiner. For the dependency between the determiner and the adjective Mel’čuk (2006) proposes two solutions: government or agreement. The paper discusses these solutions and their implications on the correlations between morphological and syntactic dependency as proposed in Mel’čuk (2003). Additional material is shown, which demonstrates that the situation is more complex and calls for clear criteria for a part of speech ‘determiner’.

Keywords

German, noun phrase, NP, determiner, article, adjective; dependency, morphological dependency, syntactic dependency, agreement, government; Meaning-Text Theory, dependency grammar; syntax, morphology, linguistic terminology.

1 Inflection of adjectives and determiners within the German noun phrase

German adjectives as well as determiners agree with their governing nouns in grammatical case, gender and number. In addition, the adjectives come with different forms or ‘declension types’ depending on the type or form of the preceding determiner.

(1)  a. welch gutes Bier  ‘what a good beer’
    b. das gute Bier  ‘the good beer’

A parallel situation is found with nouns of adjectival declension, which also take different forms depending on the determiner: ein Beamter vs. der Beamte ‘civil servant’, ein Wolfsjunges vs. das Wolfsjunge ‘wolf cub’.

Traditionally, for German adjectives three adjectival declension types are postulated: ‘strong’, ‘weak’, and ‘mixed’ declension:
• ‘weak’ forms follow the definite article der, and some other determiners, e.g. dieser ‘this’, jeder ‘each; every’, jener ‘that’, mancher ‘many a’, solcher ‘such’
• ‘mixed’ forms are required if the indefinite article ein precedes, as well as after kein ‘no’ and all possessive determiners (mein ‘my’, unser ‘our’, ihr ‘her’, etc.)
• ‘strong’ forms are used if there is no preceding determiner, or after a large, but incoherent set of words and phrases, among them:
  – indeclinable determiners/quantifiers used almost exclusively in the plural number such as allerlei, allerart ‘all kinds of’, keinerlei ‘no . . . at all’, viel ‘a lot of’, etwas ‘a little’, kaum ‘hardly any’, lauter ‘nothing but’ and also (if they do exist) their declinable variants, e.g. viele ‘many’
  – indeclinable variants of otherwise declinable determiners: manch ‘many a’, solch ‘such’, welch ‘what a’, soundsoviel ‘so and so many’
  – numerals, indeclinable zwei, drei, and their declinable variants, if they exist (e.g. the genitive forms zweier, dreier)
  – genitive (possessive) forms of pronouns: dessen ‘of this’, wessen ‘whose’
  – and also nouns in genitive (possessive) case, e.g. Peters neues Auto ‘Peter’s new car’

There is no semantic criteria according to which the three types of determiners could be separated (cf. Zwicky, 1986, 959–60). In particular, there is no constraint imposed by the pragmatic category of definiteness (as described in Lyons, 1999). In all three groups there are determiners expressing or implying definiteness (dieser ‘this’, mein ‘my’, and, though not a determiner, Peters ‘Peter’s’) and indefiniteness (mancher ‘some’, ein ‘a’, etwas ‘a little’). Thus, it is impossible to describe the choice between strong and weak forms of the adjective only in terms of definiteness.

The three declension classes combined with the four grammatical cases (nominative, genitive, dative, accusative), the two numbers (singular and plural), and three genders (masculine, feminine, neuter; no different gender forms in the plural) will lead to a paradigm consisting of 48 cells as shown in table 1.

The most striking features in table 1 are: (I) Strong suffixes of adjectives are with two exceptions identical to the suffixes of (declinable) determiners. (II) In the ‘mixed’ declension the inflection of the determiners conditioning weak adjectival declension (ein, kein, etc.) is identical to that of dieser except for three forms (nom. masc., and nom./acc. neut.). In these three positions the forms of the adjective are taken from the strong paradigm. The remaining forms are identical to that of the weak paradigm.

Since the mixed paradigm on both the determiner’s and the adjective’s side can be easily described in terms of the strong and weak paradigm, some grammarians reject the three-way partition of the adjectival paradigms, and propose to distinguish only strong and weak forms. Of course, this necessarily requires that conditioning strong or weak forms on the adjective must be a feature of each individual word form of the determiner and not of the lexeme (i.e. the whole paradigm).

But leaving this decision aside for the time being because there are more facts which should be taken into consideration, let’s turn to the description of the phenomenon in dependency grammars and Meaning-Text Theory.
Table 1: Inflection of determiner, adjective and noun in the German noun phrase: in **gray** = ‘strong’ suffixes, **bold faced** = ‘weak’ suffixes, **encircled** = positions where a ‘strong’ ending of the adjective differs from that of a determiner. Note: the definite article differs from the determiner *dieser* in nom./acc. fem./neut./pl. (*das*, resp. *die*).
2 Description of German noun phrase dependencies in dependency grammars and MTT

The case of the German attributive adjective is best described as dependency with two controllers on the morphological level (see ex. 2). For nouns of adjectival declension a symmetrical dependency relation is observed (ex. 3). It should be emphasized that this description, forming a graph, holds true exclusively for morphological dependency, but not for syntactic dependency. It is important to distinguish the three levels of dependency (semantic, syntactic, and morphological) introduced by Mel'čuk (2003). Otherwise a strange syntactic dependency tree with adjectives as dependents of the determiner will be the consequence (see fig. [1]).

(2) der kleine Prinz

‘the little prince’

(3) der Beamte

‘the civil servant’

About the relation between noun and adjective and/or noun and determiner there is no doubt (cf. the definition of agreement in Mel’čuk, 2006, 58): the adjective resp. determiner agrees with its syntactic governor (the noun) in gender, number and case. For the dependency relation between determiner and adjective, on the other hand, Mel’čuk (2006) proposes two possible solutions: (I) the determiner governs the adjective “with respect to the syntactic inflectional category ‘declension type’ (with three grammemes: ‘strong’ ∼ ‘mixed’ ∼ ‘weak’)” (p. 94), or (II) the adjective agrees “with DET in, say, ‘definiteness,’ which is an agreement class of the determiner. Then DER and DIESER belong to one definiteness class, EIN and MEIN belong to the second one, and the zero determiner to the third one.” (p. 105).

Both solutions are in contradiction to principles formulated elsewhere in MTT. Solution I contradicts Mel’čuk (2003, 215): “if w2 is morphologically governed by w1, then w1 and w2 are always linked by a direct Synt-D”. This constraint on the relation between morphological and syntactic dependency would either require to establish a link between determiner and adjective, or must be wrong otherwise. Both possible consequences seem unacceptable to me. The first one because the only possible syntactic dependency tree with the adjective as dependent of the determiner (see fig. [1]), would force us to handle the cases of adjectives and adjectival substantives (Beamter) in a different way: once the morphological form is conditioned by the controlling, once by the controlled determiner. The second possible consequence, i.e. skipping this constraint, is bad, too. It is the virtue of MTT being empirical when anchoring syntactic

N

Det

Prinz

Adj

der

tiny

Figure 1: Left: Dependency tree of the German NP der kleine Prinz ‘the little prince’ in Engel (2004, 337). As a result of the confusion between morphological and syntactic dependency, Engel interprets the adjective as dependent of the determiner.

Right: Representation of the same phrase at the surface syntactic level in MTT.
structure in the more observable morphological structure by such constraints. So they should be kept whenever possible. Solution II is consistent in this point, but requires a modification in the number of the grammemes involved: instead of the proposed three grammemes of the inflectional category ‘declension type’, only two are possible, because the ‘minimality of an agreement class’ would have been violated otherwise. This principle requires that an agreement class cannot “be specified by reference to other agreement classes” (Mel’čuk, 2006, 53). That’s the case for the mixed declension which can be easily described with reference to strong and weak declension.\

A third solution proposing an inflectional category of the determiner, whose grammemes trigger the declension of the adjective, is possible at first glance for the standard situation shown by the examples in table 1. This would mean that all strong suffixes on the determiner express (among case, gender, and number) that the following adjective has a weak suffix. In contrary, the zero suffix on the determiner conditions strong forms of the adjective. Such, this solution seems to be consistent with the definition of an inflectional category in Mel’čuk (2006, 22): every form of a determiner expresses one of the two grammemes, and some determiners (ein etc.) express both grammemes. But for some determiners (mancher, ‘many a’, solcher ‘such’, mehrere ‘several’, sämtliche ‘all; complete’, solcher ‘such’, wenige ‘few’) the problem arises that some determiners having strong suffixes are used with strong adjectives (cf. ex. 10b). Consequently, it is impossible to say that the strong suffix “expresses” the intended grammatical meaning. Instead, it should be explained as variance in agreement class.\

I think there is no other solution possible in any dependency framework or grammar. In detail, this applies to a further solution without any dependency relation between determiner and adjective. It is based on a principle “mark once”, i.e. (1) append a strong suffix to the first word in the NP that would allow it; (2) if done, use only weak suffixes for the remaining adjectives. This principle is based on a correct observation (e.g. it is true for all examples in table 1). But it is not sufficient for a description of the linguistic phenomenon because anyway it has to be made explicit for all forms of all determiners if it allows a strong suffix, and if yes, if it conditions weak or strong declension on the adjective. Thus, there is no difference in the complexity of description. And, finally, there are many exceptions to this principle (see following section, exx. 4a, 5a and 10b).

### 3 More data and problems

The situation in table 1 describes only one, even if substantial, part of the phenomenon. There exist numerous exceptions which are in four cases systematic in a way giving rise to the formulation of additional rules.

I. If there is no determiner at all, but a sequence of two or more (loosely) conjoined attributive adjectives, as a general rule all adjectives have strong suffixes. But in dative sg. masc./neut. as a variant only the first one may have a strong suffix, the remaining adjectives having weak forms:

(4) a. mit großem finanziellem Aufwand ‘at high financial cost’

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1 Cf. the discussion in Mel’čuk (2006, 341–3) about the number of cases in Romanian.

2 First formulated by Fourquet (1970, 123); for an exhaustive list of proponents see Eroms (2000, 278–9).
b. mit großem finanziellen Aufwand

(5) a. nach gewonnenem erstem Satz  lit. “after the won first set”, ‘after winning the first set’
   b. nach gewonnenem erstem Satz

(6) Bahn muss deutscher Reisenden Schadenersatz zahlen  ‘German rail has to pay compensation to German female passenger’

Although (a) is frequently described as preferable in standard German, there is a clear preference for the form (b) in journalistic texts. If instead of the second adjective there is a noun of adjectival declension, even a standard grammar (Duden, 2005, §1528–9) gives the preference to form (b). In addition, the phenomenon is not limited to dat. sg. masc./neut., but extends to other case-gender-number combinations, e.g. dat. sg. fem. as in (6).

II. Two forms of the genitive sg. (masc. and neut.) of determiners of the second group in table I are different from those of the strong adjective forms. But forms parallel to the adjective forms do exist for many determiners as variants. As mentioned first by Durrell (1979, 71) the choice between the two variants is conditioned by the form of the governing noun. Namely, if the noun declines strong, which implies that it has a gen. sg. form not syncretistic to other singular forms of the paradigm, the determiner may have also the suffix -en. Otherwise the suffix -es is obligatory:

(7) jedes Schülers  jeden Schülers  ‘of every pupil’
    jedes Studenten  *jeden Studenten  ‘of every student’

Although Duden (2005, §355) accepts as “standardsprachlich” variant forms ending in -en for many determiners, this form is rejected for der, dieser, jener, and the determiners of the third group ein, mein etc.

The data given in I and II provides good arguments for the “mark once” principle mentioned above. But again: it may be suitable as an explanation for the data, but not sufficient for a complete description.

III. In cases of so-called split topicalizations or elliptical constructions determiners of the third group in table I(ein, kein etc.) have strong suffixes if they are isolated from other parts of the NP (as in 8d):

(8) a. Es ist kein brauner Zucker da.  ‘There is no brown sugar’ neutral

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3 Interestingly, grammarians differ in how they classify this phenomenon: “old-fashioned” (Engel, 2004, 339) or as a new “tendency” (Duden, 2005, §492).

4 This is the result of a corpus study performed by the author on 600 million word forms of the newspaper “Süddeutsche Zeitung”. Sequences of preposition followed by two or more adjectives and a noun have been extracted where government and agreement in case, gender, and number is fulfilled. The ratio is 1:2 in favour of the second variant “first adj. strong, following weak”.

5 The terms strong/weak declension are here used in the sense of an ‘inflectional class’; in the context of adjectives ‘declension’ is an inflectional category resp. its values (grammemes) ‘strong’ and ‘weak’.

6 This may change, since many people use the second form ending in -en, e.g. im Herbst dieses/in Jahres ‘this year in autumn’.
b. *Brauner Zucker ist keiner da.* ditto, but *keiner* is rhematic

c. *Zucker ist kein brauner da.* ditto, but *brauner* is rhematic

(9) *Das ist nicht dein Buch, sondern meines.* ‘This not your book, but my one.’

Here the communicative (rhematic) structure influences word order and (as a consequence) the form of the determiner.

IV. A not too small group of determiners behaves indifferently by conditioning weak forms of the adjective in some positions, but strong forms in other positions, or allowing even both (cf. Wiese, 2004, Duden, 2005, §1526):

(10) a. *manches umfangreiche* *(weak)* *wissenschaftliche Werk* ‘many a voluminous scientific work’ (nom. sg.)

b. *mancher umfangreicher* *(strong)* *wissenschaftlicher Werke* (gen. pl.)

This does not mean that it is hopeless to try to describe the syntactics of these determiners. It is an uncomfortable, but possible work, cf. the table in Duden (2005, §1526). But it raises the question of whether the term ‘agreement class’ is appropriate for the phenomenon. In contrast to e.g. gender variants among nouns, the variation is not bound to the whole lexeme, but may be limited to a subset of the paradigm, i.e. several word forms.

V. Finally, at least some determiners can also be used positionally as adjectives or numerals and are then controlled in declension by another determiner.

(11) a. *beide neuen Bücher* ‘both new books’

b. *die beiden neuen Bücher* lit. “the both new books”

c. *die neuen beiden Bücher* lit. “the new both books”

This will lead to the question about clear criteria which would allow to identify determiners (next section) and what happens if two or more determiners are used together in one NP (section 3.2).

Of course, these problematic cases shown above require additional rules for the correct synthesis of the NP with reference to word order (I, III, and V), inflectional class of the head noun (II), or involved grammemes and lexemes (IV). But all five complications will not force the introduction of additional dependencies between the members of the NP (cf. the selection of the correct form of the word *Maria* in *Marias Heimat* ‘Mary’s home country’ vs. *die Heimat meiner geliebten Maria*, discussed in Mel’čuk, 2006, 129).

### 3.1 Criteria for determiners as a part of speech

The examples provided in section 3 have shown that sometimes it is difficult to distinguish between determiners and adjectives. Consequently, clear criteria for a part of speech ‘determiner’ should be formulated. First, there are two sufficient conditions, cf. Zifonun et al. (1997, 1930–51) who apply both of them to a series of determiners:
1a. the determiner conditions weak forms of the adjective (at least in some positions)
1b. blocking or being blocked by other determiners or the possessive “Saxon” genitive (*das Annas Buch *‘the Ann’s book’, *allerlei die Bücher lit. ‘the all kinds of books’)

Second, there are three necessary, but not sufficient conditions:

2. the ability and necessity to fill the leftmost position of a noun phrase before all adjectives subordinated by the head noun, but still right to a preposition governing the head noun
3. agreeing with the head noun in case, gender, and number or if indeclinable at least not governing the head noun in case
4. appropriate semantics, e.g. expressing definiteness (grammatical), quantification, deictical or anaphoric relations

Some examples and consequences:

- Condition 1b will rule out numerals, because they are compatible with e.g. the definite article (die zwei Bücher ‘the two books’) or the “Saxon” genitive (Peters zwei Bücher ‘Peter’s two books’).
- Condition 3 excludes a lot of phrasal constructions among them elective constructions (einer der drei Jungen ‘one of the three boys’), and all kinds of measure phrases (Max trinkt von Peters zwei Litern Wein ‘Max is drinking some of Peters two liters wine’)

These criteria provide not a suitable definition of the part of speech ‘determiner’. Especially because 1a and 1b lead to different results as for e.g. beide (cf. ex. [1]).

### 3.2 Combinations of determiners

Although condition 1b above would exclude it, some combinations of determiners are possible:

(12) nom. der eine 
    gen. des einen 
    dat. dem einen 
    acc. den einen 
    ‘this one; the only one’

(13) nom. ein jeder 
    gen. eines jeden 
    dat. einem jeden 
    acc. einen jeden 
    ‘each one; we all’

(14) nom./acc. alle diese neuen Bücher 
    gen. aller dieser neuen Bücher 
    dat. allen diesen neuen Büchern 
    ‘all these new books’

(15) in diesem unserem Lande lit. ‘in this our country’

The combination of two determiners may lead to a change of the syntactics of the second one. The comparison of (12) and (13) with table [1] would suggest that the second determiner (ein, jeder) behaves exactly like an adjective. But this cannot be taken as a general rule, since in (14) and (15) the second determiner remains strong (cf. Plank, 1992, 458–60, Duden, 2005, §348, §422). Thus, combinations of determiners require further studies.

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7 This includes the question which combinations have to be treated as lexical units. E.g., der eine oder andere (‘some; some … or another’, lit. ‘the one or other’) is a phrasem in a way similar to the English expression one or two which can be also used as reference to three or more objects. Besides der eine oder andere is a synonym of mancher ‘many a; some’.
4 Conclusion

The morphological dependency relation between determiner and adjective in a German noun phrase should be described as ‘agreement’. The determiners have to be classified in two ‘agreement classes’ selecting at the adjective one of the two grammemes (‘strong’ and ‘weak’) of an inflectional category ‘declension’. Special description is necessary for (I) determiners of the type *ein* which fall into different classes in different positions in the paradigm, and (II) similarly, but with much more variation, for determiners such as *mancher, mehrere, sämtliche.*

Motivation

When writing a finite-state grammar for the recognition of noun phrases focusing the determiner part, there has been need for a correct description of a great number of determiners. Existing grammars (except for Zifonun et al. [1997] and [Duden, 2005]) had been of little help because of their limited range or their prescriptive orientation. Formal descriptions of German NPs do exist in the frameworks of HPSG (Pollard & Sag, 1994; Kathol, 1994, 1999; Netter, 1994; Müller, 1999), Government and Binding (Bhatt, 1990), minimalism (Roehrs, 2006), and Optimality Theory (Gallmann, 1998; Hughes, 2003). Either they concentrate on the standard situation of table 1 or they are trapped in the theoretical framework they use. Often the target seems not to be an empirical description, but a proof for the power of the theory. No wonder, because the phenomenon provides “good” arguments for DP-hypothesis and OT.

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Bibliography


