

Compounding in German

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A considerable part of German compounds, i.e. words that contain more than one stem, are not formed according to a rule. Besides lexicalized residues, affixoids, blends etc., the class of "improper compounds" has to be excluded from synchronic morphology (section 1). Section 2 treats the endocentric standard types of German compounds with special regard to the so-called "linking-elements", i.e. allomorphy rules for first constituents. The formal and semantic peculiarities of German compounds cast doubt on the premise that all compounds AB are formed on the basis of A and B. Section 3 treats the non-standard types such as possessive, copulative and left-headed compounds and offers a new proposal for the interpretation of the so-called "Righthand Head Rule".^{1, 2}

1. *Proper vs. improper compounds.*

There is an important difference between the German $[N + N]_N$ compounds in (1) and the $[P + N]_P$ compounds in (2):

- | | | | |
|-----|----------------------|--------------------|------------------|
| (1) | <i>Haus + tür</i> | "house + door" | 'front door' |
| | <i>Auto + schloß</i> | "car + lock" | 'car lock' |
| (2) | <i>in + folge</i> | "in + consequence" | 'as a result of' |
| | <i>auf + grund</i> | "on + ground" | 'on account of' |

For (1) there is a rule that two nouns can form a compound, but for (2) there is no such rule. This is not a matter of "productivity" because there are many new words with the structure $[P + N]_P$ in German:

- | | | | |
|-----|------------------|---------------|---------------------|
| (3) | <i>anstelle</i> | "at + place" | 'instead of' |
| | <i>mithilfe</i> | "with + help" | 'with the help of' |
| | <i>vonseiten</i> | "from + side" | 'on the part of' |
| | <i>aufkosten</i> | "on + cost" | 'at the expense of' |

¹ Theo Vennemann gave me most valuable comments on a preliminary version of this paper, for which I should like to thank him.

² A full documentation of German compounding cannot be achieved in this article. Comprehensive works are Wilmanns (1899), Paul (1920), Henzen (1947), Fleischer (1969), Fanselow (1981), Duden Gr., Gersbach & Graf (1984), Ortner & Ortner (1984); Olsen (1986) is a generative, word-syntactic analysis, Muthmann (1988) a reverse dictionary. Unfortunately I have not yet had access to Pümpel-Mader *et al.* (1991) and Ortner *et al.* (1990).

The development of these words can be outlined with a corresponding English example:

[_{NP} *in* [_N *stead* [_{NP} of the president]]] > [_{PP} [_P *instead*] [_{NP} of the president]]

The preposition (*in*) and its dependent noun without article (*stead*) are interpreted as being one word, the modifier of the dependent noun (*of the president*) being reanalyzed as a complement of the new preposition. Some of these words develop into adverbs without any complement: *beseite* "by + side" 'apart'. Engl. *instead* is both. These complex prepositions or adverbs are not morphologically possible words, i.e. words formed according to a morphological rule, that have become actual words, but neologisms formed through the diachronic process of univerbation. New prepositions of this type only arise when their parts frequently appear adjacent in texts.

The preposition *anstelle* may be called a compound because it contains more than one word stem, but it is an improper compound (or "conglutinate", G: *Zusammennückung*) because it is not the product of a synchronically productive³ morphological compounding rule. The question if a word is formed according to a morphological rule or not is important for synchronic morphology and therefore also the distinction of proper and improper compounds.

Proper compound rules normally develop from improper compounds. Speakers abstract rules from sets of improper compounds by induction and form new words in analogy to these models (Paul 1920:5). As soon as neologisms are formed by analogy and not only by univerbation, a new morphological rule has come into existence. This can be taken as a criterion of distinction between proper and improper compounds. Due to the diachronic shift between the two types, however, it is impossible to draw a sharp line between them.

The notion of "improper composition" can be taken as a translation of Grimm's (1878:386) "uneigentliche composition". The extension of Grimm's notion, however, is entirely different. Typical examples of "uneigentlicher composition" are N + N compounds with linking elements (*Tages + licht* "day's + light", see 2.2 below), which are proper compounds in the most narrow sense. Grimm's "eigentliche" ('proper') compound structures are those structures inherited from Indo-European which only contain a compositional vowel⁴ that cannot be analyzed as inflectional. Grimm admits that the linking element -s "in certain cases" develops into an "analogue of compositional consonant" (1878:387). In present-day German, however, all inflectional endings of this compound type have developed into linking elements. The difference Grimm could see between

³ In the sense of Zimmer (1964:19). Synchronically, an improper compound and a compound whose rule has become unproductive cannot be distinguished.

⁴ Grimm (1878:387): "compositions-vocal". It is preserved only in OHG and Gothic.

compounds with linking elements ("closer, more definite, special") and those without ("more general, loose", Grimm 1819:8) cannot be seen any longer. If you put linking elements into the pigeon-hole of Grimm's "compositional vowels", the notion "improper composition" and Grimm's "uneigentliche composition" coincide.⁵ So Grimm's notion and the one presented here differ in extension, but not in intension.

The notion of "improper compound" has one big advantage: It allows the morphologist to keep his system clean from odd structures containing, e.g.,

- definite articles "before + the + hand" 'for the present; in the meantime'
- *vorderhand*
- case inflection "in + consequence + this_{gen}" 'consequently'
- infolgedessen* "no_{gen} way_{gen}" 'by no means'
- keineswegs* "except + this_{neut, dat}" 'moreover'
- außerdem* (**außerder* "except + het_{tem, dat}")
- or internal inflection "the long_{nom} + while" 'the boredom'
- die Langeweile* "the long_{gen} + while" 'of the boredom'
- der Langeweile*

German compound morphology would have to deal with internal articles or inflection if and only if these structures occurred in productive morphological rules — but they have never done so. Synchronic morphology has to consider only proper compounds.

2. The standard type: right-headed determinative compounds.

The prototypical German compound consists of a noun or adjective and a preposed noun, adjective, or verb. The left constituent is subordinate and modifies the right constituent. The first constituent is stressed, but there are unsystematic (e.g. *Bürger + méister*) and systematic exceptions (see below).⁶

2.1. N + N compounds.

Among determinative compounds, type N + N is most productive. The compounding process is recursive⁷ and compounds made of four or five

⁵ Our crucial criterion (synchronic productivity) is mentioned by Grimm (1878:689): "It is a characteristic of proper composition that an indeterminable amount of words ... is eligible for it".

⁶ The intensifying formations such as *wildfremd* "wild + strange" 'very strange' (cf. Engl. *dirty cheap*) are rather derivational because there are unsystematic restrictions on the first constituents which do not have the same meaning as their free equivalents. For a collection of data cf. Tobler (1868:59ff., 104ff.).

⁷ Compounds with the structure A(BC) are sometimes, but not always, stressed on the second constituent (*Oberregierungsrat*, but *Bahnfabrikante*).

stems are not rare. The famous *Donaudampfschiffahrtsgesellschaft* "Danube + steam + ship + voyage + society" is not a joke compound, but the official name of that shipping company. The relative productivity of the compounding process compared to alternative syntactic constructions (*bird picture* vs. *picture of a bird*) is higher in German than in English (Stöhr 1987:33).⁸ The acceptability of a new German compound like *Ozonloch* 'ozone hole' is beyond doubt, whereas many English speakers prefer hole in the ozone layer (cf. Duden Oxford).

Semantics. As in English, a lexicalized⁹ compound can have a wide range of semantic interpretations and most handbooks contain lists of semantic types (Ortner & Ortner 1984:204-274). But apparently there are restrictions on the possible readings of a compound (*window house* cannot mean 'house without windows') and various linguists have attempted to generate the set of those readings.¹⁰ The premise of these analyses, that there are grammatically impossible readings at all, seems to be questionable though. The most prominent candidate for such a restriction is the exclusion of privative (Motsch 1971:49) or negative (Fanselow 1981:131f.) readings, as for the example above. Imagine the following situation: There is a card game of the "memory"-type such that there is a picture on every card, but the pictures differ in that each **lacks** a different object. At least in German, it would be the most natural way to refer to the card which lacks the tree with the equivalent of the compound *tree-card* and not with *no-tree-card*, *card without the tree* or the like. Certainly, this situation is extremely artificial, but in this "privative context" provided by the strange card game, the use of a privative compound is absolutely natural. There are restrictions on the set of natural situations, but apparently not on the possible meanings of German compounds.

There is a very general semantic relation of attribution between the constituents of N + N compounds in German which is different from any other attributional relation (genitive, relative clause) and which cannot be defined by any set of other overt relations.¹¹ This relation is as abstract and vague as Bauer's (1979:46) proposal "there is a connection between" or Bradley's (1904:113), an AB is "a B which has some sort of relation to an A or to A's in general".¹²

⁸ In writing this paper I have to make a considerable effort to avoid mother tongue interference compounds.

⁹ The range of meanings of *ad-hoc* compounds is even less restricted, see below. They are actually the proper object of synchronic linguistic study (Brekke 1978:70, Günther 1981:258) and the process of lexicalization has to be separated from morphological rules. On the other hand, idiosyncrasies of lexicalized compounds can enter into new formations and thus be relevant for morphological rules, see below.

¹⁰ E.g. Motsch (1970), cf. also Downing (1977) for a discussion. Zimmer (1971) proposes to define this set negatively by listing those relations which cannot underly compounds. For a criticism of this approach, cf. Bartsch & Vennemann (1982:97).

¹¹ This has been pointed out by Wilmanns (1899:536).

¹² In order to cover words like *non-intervention* the relation must be even more general.

The "general rule" for German N + N compounds is the following two-place Word Formation Rule:

(1) General Compounding Rule:

$\langle \langle A_N, 'A' \rangle, \langle B_N, 'B' \rangle \rightarrow \langle AB_N, 'B' \rangle$, which has some connection to A's >

There are "no constraints on the N + N compounding process itself" (Downing 1977:841). Any utterance of a compound, however, has a more specific interpretation provided by the hearer and intended by the speaker on the basis of the context, of their common knowledge of the world (Bauer 1979:46), of the word meanings of the constituents, especially the head noun (Downing 1977:828ff.), and of analogic models. The last point shall be illustrated in the following paragraph.

Analogy. At times a new compound is formed on the basis of a single and identifiable compound, that is, in analogy to that model; or as Zimmer (1971:243) puts it, "any existing compound can presumably serve as a model for the production of others". Such formations are called analogical formations only if one single model can be identified (cf. Höfler 1970:545) — in contrast with the usage of this term in inflectional morphology where it is usually an inflectional class that causes analogical leveling or extension. There is no reason at all to assume that a word can serve as a model for new formations only if it is alone; it is rather reasonable to assume that any morphological formation is carried out on the basis of pre-existing lexical material, i.e. it is an analogical formation.¹³ The proportional formula of analogy can be identified with a generative morphological rule (cf. Becker 1990). The proportion *death*: *deathmask* represents the Word Formation Rule that maps *death* on *deathmask* and *life* on *lifemask*. Note that this is not a diachronic analysis: *lifemask* (with the intended meaning) is a morphologically possible word under this analysis. If there is a large set of models, the single representative stands back behind the rule, and if there is only one model for an interpretation, it must be given in the context or be reconstructable otherwise, e.g. through a close relation between the substituted constituents as in *death mask/life mask*.¹⁴

Subrules. The compound *carrot cake* can be interpreted in analogy to, e.g., *apple cake*, according to the following rule:

(2) "Material" Rule:

$\langle \langle A_N, 'A' \rangle, \langle B_N, 'B' \rangle \rightarrow \langle AB_N, 'B' \rangle$, which is made of A's >

¹³ This concept of morphology is traditional and dates back to the ancient grammarians (Best 1973), cf. also Paul (1886:106ff.), Motsch (1977:193).

¹⁴ The importance of "replacive compounds" of the type AB → AC or AB → CB for theoretical morphology and for the description of German compounding will be elaborated in a paper on "non-concatenative compounds".

How is this rule related to the "General Compounding Rule" above? It is more specific and the set of (triples of) words it relates are also related by the general rule: It might be called a "subrule" to the general rule. Subrules of this kind have been described for a long time without being christened. Paul (1896:27) notes that although the suffix *-ung* (etymologically related and semantically similar to Engl. *-ing*) can generally be attached to any German verb, it is especially productive under certain conditions, e.g., if the verb is transitive, in which case the genitive complement takes the role of the object. A Word Formation rule, which apparently is inhomogeneous with respect to its productivity,¹⁵ can be described as a system with a general rule and subrules. The "positive conditions" of the "inhomogeneous Word Formation Rule" define the domains¹⁶ of the subrules which are homogeneous with respect to their productivity, the general rule being less productive: Compounds without a model are acceptable only under very special pragmatic conditions. Thus, subrules such as (2) have their equivalents in derivational morphology and are not as far-fetched as they seem to be at first sight. Rules like (2) are not mere guidelines for the interpretation of compounds, but can be seen as rules of their own and their adoption does not exclude a general rule like (1).¹⁷

Independent from the semantic classification of German compounds, there is also a formal classification based on the set of linking elements, that is, the allomorphy rules for the left constituents.

2.2. Linking Elements.

German N + X compounds can be divided into two classes: those which consist of merely two stems (this type dates back to Indo-European) and a more recent type which contains a "linking element" between the constituents. In most cases this is a former inflectional ending of a preposed genitive (singular or plural).¹⁸ The term "linking element" (G: *Fugenelement*) is misleading because it can also be replacive or subtractive.¹⁹

(1) s:	<i>Wirt + Haus</i>	<i>Wirtshaus</i>
(2) es:	<i>Jahr + Zeit</i>	<i>Jahreszeit</i>
(3) (e)n:	<i>Affe + Haus</i>	<i>Affenhaus</i>

¹⁵ This seems to be the normal case, cf. Aronoff (1976:62), Mayerthaler (1981:184 fn. 131), Rainer (1980:85 and chap. 3) for Italian examples, Eichinger (1982:205ff. (-isch)) and Vögeding (1981 (-frei)).

¹⁶ In a set theoretical sense: The domain of R: = {x: for some y xRy}.

¹⁷ Subrules themselves can have subrules. For such a hierarchy of German compound relations, cf. Ortner & Ortner (1984:133ff.).

¹⁸ Linking elements also appear in derivatives with suffixes that developed from compound members: *ausnahmslos*. Moreover, there are allomorphs of verbs and adjectives and substitutions of suffixes in left constituents, (cf. Augst 1975:135ff., Ortner & Ortner 1984:119).

(4) e:	<i>Tag + Buch</i>	<i>Tagebuch</i>
(5) umlaut:	<i>Mutter + Heim</i>	<i>Mütterbeim</i>
(6) umlaut + er:	<i>Haus + Bau</i>	<i>Häuserbau</i>
(7) subtraction of e:	<i>Auge + Apfel</i>	<i>Augapfel</i>
(8) subtraction of e + s:	<i>Geschichte + Buch</i>	<i>Geschichtsbuch</i>

The subtractive rules developed from stem compounds of words with a nominative suffix which was later reanalyzed as part of the stem (OHG *aug-a* > G *Auge-ø*). Most of the stems only have one allomorph (Augst 1975:134: 90%), many have two (9,3%), the record holder is *Mann* 'man' with five allomorphs: *Mannloch*, *Mannsbild*, *Manneswort*, *Männerwürde*, *Mannentreue*. There are some pairs of compounds formed by the same constituents which are lexicalized with different meanings:

"land + man":	<i>Landmann</i>	'farmer'
	<i>Landsmann</i>	'compatriot'
"water + trouble"	<i>Wassermot</i>	'water shortage'
	<i>Wassersnot</i>	'flood disaster'

The choice of linking element cannot be predicted, but there are tendencies.²⁰ It is determined by two factors:

— The inflectional class of the word. In many cases the allomorph is homonymous with its nominative singular, its genitive singular or its nominative plural. The dative forms are never used as linking elements²¹ and the other inflectional forms are homonymous to one of the three mentioned above. Indirectly, by the inflectional class, gender can also determine the linking element.

— The morphological category of the word, i.e. its derivational suffix. The nouns with the suffixes *-ung*, *-heit*, *-keit*, *-schaft* always take *s*, although it is not a possible inflectional suffix of these feminine nouns.

In exceptional cases the second constituent determines the choice of the linking element. Combined with *-frau*, *-gattin* 'wife' in their relational reading 'wife of', the first element takes *s* even if it normally takes no linking element, for example descriptions of occupation ending in *-er* (*Minister* 'minister', *Schreiner* 'joiner').

¹⁹ The following list is not complete, cf. Jean Paul (1818:20) or, less amusing, but more stringent, Augst (1975:73f.), Grube (1976:192f.), Duden Gr (§§ 811ff.).

²⁰ Augst (1975:127ff.). All the investigations of linking elements quoted in this paper discuss lexicalized compounds taken from dictionaries (Augst) or corpora of texts (Grube), an investigation of nonce-compounds might give different results. The use of linking elements is slowly increasing as a comparison with older dictionaries shows (e.g. Adelung 1793:180r).

²¹ The allomorph *Greiser* of *Greis* 'aged man' is only accidentally identical with the dative plural, it actually shows a suffix of the weak declension to which it used to belong.

The relation between linking elements and the corresponding inflexional suffixes is kind of delicate. In some cases linking elements seem to be interpreted as inflexional suffixes and "guide" the interpretation of the compound: A *Partei*gruppe "party_{sg} + group" is a group within a party, a *Partei*engruppe "parties_{pl} + group" is rather a group of parties. A *Gärtner*srau "gardener_{sg} + woman/wife" is the wife of a gardener, a *Gärtner*frau "gardener- \emptyset_{nom} + woman" is rather both a woman and a gardener. This means, if there is no linking element or a zero- (nominative) linking element, the compound is often interpreted as appositional.²² August (1975:145ff.) notes that there is a significant, but not strict (76-94%) correlation of number in form and number in semantics of compounds. Furthermore, irregular inflexional forms can be first members of compounds, for example the genitive *Herzens* and the plural *Mastodonten* in *Herzenswunsch* "heart's + wish" and *Mastodontenzahn* "mastodons_{pl} + tooth", the latter in contradiction to its semantics. Irregular genitives are rare, but irregular plurals are fairly numerous (cf. Mugdan 1977:66f.) and most of them can be first members of compounds. Consequently, linking elements cannot be described without reference to the inflexional forms of the nouns.

However, for a number of reasons they cannot be identified with inflexional suffixes either:

- (1) There are linking elements which are not inflexional suffixes at all, namely the subtractive ones.
- (2) Linking elements often do not correspond with the semantics of inflexional forms.

There are false plurals:²³

<i>Gänsebraten</i>	"geese + roast"	'roast goose'
<i>Sonnenschein</i>	"suns _{pl} + shine"	'sunshine'
<i>Anwaltskammer</i>	"lawyer's + chamber"	'bar association'
<i>Freundeskreis</i>	"friend's + circle"	'circle of friends'

and false genitives:²⁴

<i>staatsgefährdend</i>	"state's + endangering"	'dangerous to the state'
<i>standesgemäß</i>	"station's + suited"	'in accordance with one's rank'

- (3) Some first constituents are not identical with any case form of the noun:

²² See 3-3. below. On the other hand, the appositional compound *Frau-en-s-person* "woman + person" 'woman' is one of the few compounds with two linking elements.

²³ These are former genitive singular forms that have become identical with plurals and have been reanalyzed.

²⁴ *Gefährdend* governs the accusative and *gemäß* the dative.

Liebesbrief 'love letter'
Hahnenschrei 'cockcrow'
Mauseloch 'mousehole'

Liebesbrief is a case of analogical extension of the most "productive" (i.e. over-generalized) *s*; *Hahnen* is a former genitive that has survived only in compounds; *Mauseloch* is either an extension of the linking element *e* or a formation according to reanalyzed V + N compounds (*Mausefalle* 'trap for mice' < 'trap for mousing').

(4) Under certain phonological conditions there is free variation of the genitive suffixes *-s* and *-es*, but not of the corresponding linking elements. For example, *Jahr* has the genitive forms *Jahrs* and *Jahres*, but only allows *Jahres-* in compounds.

(5) The two most productive plural suffixes *-s* and *-e* are rarely used as linking elements (August 1975:106, 128). The nouns with the plural *-s* hardly ever have *s* as linking element although it is also their genitive suffix (cf. the tables in Grube 1976). The pluralia tantum *Bahamas* and *Bermudas* even subtract the *s* (maybe under English influence): *Bahama-Tourist*, *Bermuda-Sports*.

Considering all these intricacies with linking elements — what does a compound rule of German look like after all? The two most straightforward solutions are these:

"Inflexed base" solution:

<A_{gen}B> → concat (<A_{gen}B>),

i.e. the rule concatenates an inflected form (nominative, genitive or plural) of A with B. This rule nicely captures the fact that any irregular form can be the first constituent of a compound. The semantics would not cause a problem since a Word Formation Rule, as a transformation with complex input, can "strip" the genitive or plural form of its semantics, the semantic rule being:

<pl('A'), 'B'> → 'B with some relation to A'.

On the other hand, this rule would be insufficient because it cannot capture the idiosyncratic choice between the three possible inflexional forms and it would have too many exceptions. The other option is not much better:

"Allomorphy" solution:

<A,B> → concat (<link(A),B>),

i.e. the rule concatenates a "linking" allomorph of A with B. The set of linking allomorphs of a stem must be listed. All you can say is that it overlaps in many cases with the set of inflexional forms.

Both proposals rely on the premise that a compound AB is always formed on the basis of A and B. At first sight, this is the most basic truism in

compositional morphology — but it seems to be mistaken. The apparently arbitrary choice of linking elements and the clear preferences of the speakers among the alternatives can most easily be described if compound rules derive compounds not from their constituents, but from other pre-existing compounds of the lexicon, e.g. AB from B, C, and AC by the equation: C:AC = B:x (= AB). A is treated like a prefix under this analysis.²⁵ This point has to be worked out with further data.

The “false” genitives, singulars and plurals can be the result of so-called “false analogies”: *Büro*: *Anwaltsbüro* = *Kammer*: *Anwaltskammer* (“office”: “lawyer’s office” = “chamber”: lawyer’s_{sg} chamber”). Others may be back formations: *Schalen*: *Schale* = *Eierschalen*: *Eierschale* (“shells”: “eggs_{pl} + shells_{pl}”: “eggs_{pl} + shell_{sg}”).

The only linking allomorph for *Gans* ‘goose’ is *Gänse*, but there are some words like *Gansbraten* ‘roast goose’ which are clearly marked as “Bavarian dialect”. A nonce compound *Gansknie* ‘goose + knee’ would be marked “Bavarian” as would its models.²⁶ The adoption of a bound morphem ‘goose + Bavarian’ would be a stopgap in this case because the distribution has no exception.²⁷

In another case it is just the majority of models that has its way, as is normal with analogous formations. The most common allomorph of *Kind* ‘child’ in compounds is *Kinder*. Duden GWb lists 20 compounds with *Kindes*, most of which are legal terms, and 15 compounds with *Kind’s*, most of which are medical terms, and also *Kindskopf* ‘child’s + head’ which means ‘fetal head (med.)’ or ‘silly fool’ and is very common with the second reading. When coining new terms in the medical or legal language, the speakers would stick to their models: If the deterioration of our environment makes the term ‘fetal cough’ necessary, it would most certainly be called *Kindsbusten*. A new compound *Kindcomputer* would not immediately be interpreted as ‘children’s computer’, rather as a curse on a computer ‘silly computer’ according to *Kindskopf* or as ‘computer as part of a fetus’ by an imaginative gynaecologist, for whom a different set of models is salient. The meaning ‘children’s computer’ would be expressed as *Kindercomputer*.

How is this interaction of linking elements with semantic interpretation to be described? The “allomorphy” solution would simply neglect the semantic facts. A morpheme-based description would run into difficulties: In the word *Kind-s-lage* ‘child + s + position’ ‘fetal presentation (head or breech)’, none of the three constituents, only the word as a whole or the complex constituent *Kind-s*, has the feature ‘fetal, medical’. To list the bound form *Kindes* in the lexicon would be a rather awkward solution since

²⁵ Bound roots like Engl. *euro-* are only treated this way.

²⁶ For further examples of Swiss and Austrian variants, cf. Wellmann et al. (1974:375f.).

²⁷ An example for stylistic variation: *Mond* ‘moon’ takes *Monden-* only in poetic texts and slushy love songs and *Mond-* otherwise. A semantic example: *Zwerg* ‘pertaining to dwarves’ only takes *Zwergen-* ‘dwarf, stunted in growth’ only *Zwerg-*.

not all occurrences of *Kindes-* have this feature, only the majority.²⁸ This solution would be even more awkward for lexemes where the semantic interpretation of the “allomorphs” is less clear. Moreover, the bound form *Kindes-* would be a prefix by definition as it is semantically different from the free form. The neatest solution of the problem, in my opinion, is this Word Formation Rule:

X → *KindesX*²⁹
‘fetal X’, *med.*

This rule maps *Husten* on *Kindsbusten* with the appropriate semantics. The semantic feature of ‘fetal’, *med.* is attributed to the entire compound, that is, to those compounds that are related to nouns according to this rule. Rules of this type can deal with both semantic and formal “idiosyncrasies” of lexicalized compounds, if they are regular, as in this example. This case shows that idiosyncratic properties of lexicalized words can be transferred to new lexical items. This transfer is regular and cannot be excluded from the description of the language system as a performance phenomenon.

Synthetic compounds largely have the same linking elements as nominal compounds: *Sonnenambeter* ‘sun_{pl} + worship + er’, *Herzensbrecher* ‘heart’s_{gen} + breaker’ ‘heartbreaker’ (*brechen* governs the accusative). On the other hand, there are tendencies to use the same forms as in syntactic constructions (Augst 1975: 120ff.): The use of the “plural suffix” *-e* is rare in nominal compounds, but quite normal in synthetic compounds: *Plänemacher* ‘plans + make + er’. This suggests a “dual” description as follows: Words like *watchband* and *watchseller* originally were related to *watch*, *band* and *seller* only, but the speakers recognized a secondary relation to the verb to *sell*, so that *sell* and *watchseller* became morphologically related. This rule maps *make* directly on *watchmaker*. In this way a genitive of “watch’s band” can be transferred to a synthetic compound. Additionally, *watch*, *make* and *watchmaker* are related by a two-place compounding rule like this: <A, B> → *ABer* ‘person who Bs As’. The A-constituents of these compounds have allomorphs that correspond to the syntactic constructions of A and B. Both dual derivations and secondary relations are quite normal in morphology: Nobody knows if the adjective *lieb-lich* ‘lovely’ is derived from the noun *Liebe* ‘love’ or from the adjective *lieb* ‘dear’. Also, the denominal participles *gebört* ‘horn + ed’ and *gestittet* ‘(well-)manner + ed’ can only be derived from nouns (cf. Van Marle & Koefoed 1981, Becker 1990: 39ff.).

To sum up, the intricate system of the choice of linking elements and preferred readings is best described if one allows a “possible compound”

²⁸ That is, for speakers with some medical knowledge, for others no occurrence has this feature.

²⁹ More precisely: *concat* <*s(Kind)*.X>.

to be a compound formed on the analogy of pre-existing model compounds. Previous investigations on linking elements³⁰ have been confined to a syntagmatic approach to compositional morphology, regarding compounds exclusively as being formed on the basis of their constituents. So they only considered the choice of linking elements as a function of first constituents, but, as our examples have shown, it is also dependent on pre-existing lexicalized compounds. A paradigmatic approach to this problem can be expected to reveal new insights into this field.

2.3. Other types of compound nouns and adjectives.

A + N. As opposed to the corresponding phrases, adjectives in compounds are stressed and not inflected³¹ and the compound has the stylistic character of a "name" rather than a description. The adjective can be a superlative, a comparative (with deverbal nouns, rare otherwise), a past or present (rare) participle, a cardinal or ordinal number. Derived adjectives are avoided, except for opaque or foreign ones (-al, -iv).

<i>Rotlicht</i>	"red + light"	'red light'
<i>Höchstpreis</i>	"highest + price"	'top price'
<i>Höherentwicklung</i>	"higher-development"	'evolutionary progress'
<i>Mebrzahl</i>	"more + number"	'plural, majority'
<i>Gebrauchswagen</i>	"used + car"	'used car'
<i>Lebendgewicht</i>	"living + weight"	'live weight'
<i>Füßkampf</i>	"five + contest"	'pentathlon'
<i>Zweitwagen</i>	"second + car"	'second car'
<i>Fertiggericht</i>	"ready + meal"	'ready-to-serve meal'
<i>Nominalkomposition</i>	"nominal + compounding"	'nominal compounding'

Adv + N. This rule is fairly productive, but the products are often rejected by conservative speakers (*Jetztzeit*, cf. Kann 1974:378), others (*Außenwand*) are perfectly regular lexicalized words:

<i>Jetztzeit</i>	"now + time"	'present time'
<i>Nur-Hausfrau</i>	"only + housewife"	'full-time housewife'
<i>Außenwand</i>	"out + wall"	'outer wall'

V + N. This type was not existent in Germanic and came into being through the reanalysis of N + N compounds (*Schlaf* is both a nominal and a verbal stem). Meanwhile this type is fully established and verb and noun can stand in a wide range of relations (agent, instrument, etc., cf. Duden Gr §809). The verb can be compound or derivate.

<i>Schlafzimmer</i>	"sleep + room"	'bedroom'
<i>Tiefkühlschub</i>	"deep + freeze + chamber"	'deep-freeze chamber'
<i>Registrierkasse</i>	"register + till"	'cash register'

³⁰ E.g., Augst (1975), Wellmann *et al.* (1974), Wurzel (1970:91-104).

³¹ There are some place names like *Alt-Heidelberg* "Old Heidelberg" or *Britisch-Kolumbien* 'British Columbia' with stress on the right constituent and an uninflected adjective.

P + N. This class has developed from constructions of adverbial particles and deverbal action nouns, cf. Paul (1920:22ff.). Now it is quite a productive and general pattern. Some examples show an exocentric character.

<i>Nachsommer</i>	"after + summer"	'Indian summer'
<i>Zwischeneiszeit</i>	"between + ice + age"	'interglacial period, period between ice ages'

*N + A.*³² There is a wide range of semantic relations between the nouns and the adjectives or participles, cf. Duden Gr §893.

<i>hilfsbedürftig</i>	"help + needy"	'in need of help'
<i>wasserlebend</i>	"water + living"	'living in the water'
<i>sturmzerfetzt</i>	"storm + torn"	'storm-tossed'

V + A. The adjectives in this construction have a tendency to turn into suffixoids, Duden Gr §892.

<i>treffsicher</i>	"hit + sure"	'sure (fire)'
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A + A. This type often has an appositional reading.³³

<i>hellblau</i>	"light + blue"	'light-blue'
<i>naßkalt</i>	"wet + cold"	'wet and cold'

P + A. This type is rather derivational than compositional. The particles differ semantically from their free equivalents and are often synonymous to clear prefixes, cf. Duden Gr §§895-908.

<i>übergroß</i>	"over + large"	'oversized'
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2.4. Other left constituents.

The range of expressions that can be used as modifiers in compounds, especially X + N compounds, is virtually unlimited. There are abbreviations that do not appear as free forms:

<i>US-Präsident</i>	"US president"	
<i>US-amerikanisch</i>	"US american"	
<i>U(ntersee)-Boot</i>	"u(ndersea) + boat"	'submarine'

Some co-ordinative pairs and word rows only appear as modifiers:

<i>Boden-Luft-Rakete</i>	"surface + air + missile"	'surface-to-air missile'
<i>Rhein-Main-Donau-Kanal</i>	"Rhine + Main + Danube + canal"	'canal connecting these three rivers'

³² Adjectives can modify verbs and other adjectives in German, that is, they can be "used as adverbs". In this article I use the term *adverb* for those words that can only be used as adverbs.

³³ There is also a copulative type with stress on the second constituent, cf. 3.3.

Predicates or other phrases can modify nouns:

- Nach-Karnevals-Stimmung* "after + carnival + mood"
Nicht-Mensch-nicht-Fisch-nicht-Pflanze-Lebensform
"not + man + not + fish + not + plant + (form of life)"

For the construction (A + N) + N there are two basic types: (1) inflected adjectives + nouns with phrasal stress and (2) uninflected ones, with stress on the first constituents. There is also a mixed type: uninflected adjective with phrasal stress:

- Drei-Wäge-Katalysator* "three + ways + (catalytic converter)"
Dreiweg-Katalysator "three + way + (catalytic converter)"
Heiliggeistkirche "Holy(+ inflection) + Spirit + church"
Heiliggeistkirche "Holy(no inflection) + Spirit + church"

In the genitive or dative case the adjective often agrees with the head noun (cf. Duden Gr §444): *der Heiligen-Geist-Kirche* "Holy_{gen} + Spirit + church_{gen}". I clearly prefer this "ungrammatical" expression to the "correct" *der Heilige-Geist-Kirche* which sounds like the ungrammatical *der heilige (Geist-Kirche)*. But to both I prefer the omission of the inflection: *der Heilig-Geist-Kirche*. This dilemma might be the origin of the mixed type.

Citations of all kinds can be used as modifiers:³⁴ *das Heute-bütte-ich-im-Bett-bleiben-sollen-Gefühl* "the today-I-should-have-stayed-in-bed + feeling", moreover cited morphemes, letters, letters as names for shapes, etc.: *s-Suffix, X-Beine* "X + legs" 'knock-knees'. Interjections used as modifiers should be interpreted as citations: *Aha-Erlebnis* 'aha experience'. One citation word with an unfilled argument in used as a very productive "prefix": *Möchte-germ-Philosoph* "would-(like-to-)be + philosopher".

Articles, conjunctions, and pronouns do not occur. In *ich-bewußt* "I + aware" 'self-aware' the pronoun is nominalized and does not have the personal deixis of pronouns. In *Ich-Laut* "I + sound" 'voiceless palatal fricative that occurs in the word *ich*' the pronoun is quoted or mentioned. Auxiliaries do occur as first constituents. The third person singular indicative present of certain modal auxiliaries can occur as first member:

- Kann-Bestimmung* "can + provision" 'permissive provision'
Soll-Betrag "should + amount" 'nominal amount'
Ist-Betrag "is + amount" 'total actual amount'
Muß-Heirat "must + marriage" 'shotgun marriage'

It is doubtful, however, if these forms are actually inflected. The forms are irregular and do not contain an affix. The "stems", i.e. the infinitive minus suffix, are not suited to represent the lexeme in the case of *muß* and *kann* since they are back-formations from the 3rd person plural and are not the unmarked form of the paradigm. *Soll* is homonymous to the "stem", the infinitive *sein* has the unsuitable lexicalized meaning 'existence'.

³⁴ Some citations occur as free forms, cf. 3.2.

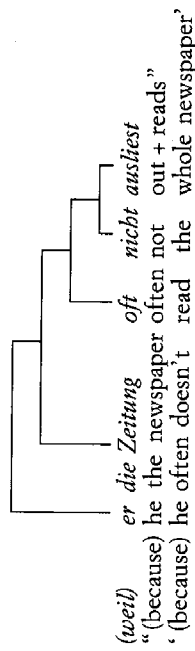
Soll, Ist and *Muß* can be nominalized and *Kann* could be a citation (*Kann-Bestimmung*: 'provision that contains the word *kann* 'can' at the crucial point'). So these words do not prove that inflected forms can undergo compounding. Moreover, they do not even prove that auxiliaries undergo compounding since it is only the modal part of their meaning that passes into the meaning of the compound and not the verbal part, as in Engl. *be-dog*, where *be* only means 'male'.

2.5. Verbal compounds.

Verbal compounding in German differs considerably from nominal compounding: The compound types X + V (X = N, A, V) are scarcely exploited to extend the verbal vocabulary (Duden Gr §720) and the peculiar word order in German sentences results in a type of compound called "distance compounds",³⁵ i.e. compounds whose constituents are not adjacent.

Distance compounds. In dependent clauses with a subordinating conjunction the verb takes the final position and each verb-dependent constituent modifies the constituent on its right side. In main clauses the verb takes the second position, but its modifiers maintain the word order of the subordinate clause so that the most narrow modifier stands most distant from the verb in final position.

subordinate clause ("contact construction"):



main clause ("brace construction"):

- (er die Zeitung oft nicht ausliest)
er₁ liest₂ t₁ die Zeitung oft nicht aus t₂
"he₁ reads₂ t₁ the newspaper often not out + t₂"
'he often doesn't read the whole newspaper'

Speakers have a clear intuition that the equivalent of "out + reads" in subordinate clauses is one word because words of this type are phonological and semantic units. The morphologist can save himself much trouble ignoring this intuition and treating these expressions as idiomatic syntagms. The particles are hard to characterize: If there were only subordinate clauses

³⁵ Brugmann (1900:159): "Distanzkomposition".

one would treat most of them as prefixes because they have a common meaning in verbs that differs from the meaning of their free equivalents (cf. Duden Gr §730) — but one doesn't want to have "free prefixes" in main clauses.

P + V. There are two types of particle compounds: Those with stress on the particle are separable, those with stress on the verb inseparable:

<i>durchschneiden</i>	"through + cut"	'intersect'
<i>der Kanal durchschneidet das Land</i>	"the canal intersects the country"	(not separated in main clauses)
"the canal through + cuts the land"		
<i>dürschneiden</i>	"through + cut"	'cut through'
<i>er schneidet das Seil durch</i>	"he cuts through the rope"	(separated in main clauses)
"he cuts the rope through +"		

Exocentric compounds. As the Engl. prefix *en-* in *enlarge*, many verbal prefixes can derive verbs from nouns and adjectives, but also some particles combine with nouns to form verbs ([P + N]_v):

<i>überkalken</i> ³⁶	"over + lime"	'to limewash over'
<i>überdachen</i>	"over + roof"	'to roof over'
<i>unterkellern</i>	"under + cellar"	'to make a cellar under'

A + V, N + V. The adverbial adjective or the noun are related in the same way to the verb as in syntagms, including e.g. the instrumental relation which is expressed by a prepositional phrase in syntagms. These compounds are separable.³⁷

<i>stillsitzen</i>	"still + sit"	'to be idle'
<i>trockenlegen</i>	"dry + lay"	'to drain'
<i>maschineschreiben</i>	"machine + write"	'to typewrite'

Pseudo-compounds. Many *A + V* and *N + V* compounds and all *V + V*³⁸ compounds are not formed on the basis of their constituents, but formed by conversion or back-derivation from nominal compounds. The basis of these formations is synchronically relevant: The verb *to typewrite*, e.g., is not motivated by or semantically derived from its constituents *type* and *write*, but from the noun *typewriter* (Marchand 1963:223). The relations "x consists of y and z" and "x is formed on the basis of y and z" cannot be identified, as is usual in modern word-syntactic theories. Moreover, the denominial origin of German verbal pseudo-compounds explains the defectiveness of their inflectional paradigms. The major sources of verbal

³⁶ The suffix *-en* of the verbs is the inflectional ending of the infinitive. These words came into existence through the reanalysis of the second constituent: *kalk* is both verbal ('limewash') and nominal ('lime'). The speakers abstracted the new rule from ambiguous cases.

³⁷ Exceptions like *hobeln*, *lobpreisen* are rare.

³⁸ Compounds of an infinitive form + *V* (*kennnenlernen*, *spazierengehen* etc.) are improper compounds.

compounds are *N + N* compounds with a nominal infinitive or a deverbal noun (including synthetic compounds) as second constituent or *N + A* compounds with an adjectival participle. Examples:

<i>Bausparen</i>	"building + saving"	'saving for building purposes through a loan association'
<i>Brustschwimmen</i>	"breast + swimming"	'breaststroke swimming'
<i>generalüberholt</i>	"general + overhauled"	'completely overhauled'
<i>Notschlachtung</i>	"emergency + slaughtering"	'emergency slaughter'
<i>Staubsauger</i>	"dust + sucker"	'vacuum cleaner'

The forms of the verbal paradigms are of differential acceptability. The finite forms of *brustschwimmen* are more acceptable than those of *bausparen*. If the verb is derived from an adjectival participle (*generalüberholt*), the verbal participle is more acceptable than the infinitive. If it is derived from a nominal infinitive (*brustschwimmen*), the verbal infinitive is more acceptable than the participle. The finite forms are less acceptable than the non-finite ones. The brace construction is accepted least of all.³⁹

The finite forms are avoided as they cause a problem for the speakers: In main clauses the speaker has to decide if the compound is to be separable or not:⁴⁰

<i>er saugt heute Staub</i>	<i>er staubsaugt heute</i>
"he sucks today dust" (brace c.)	"he dust + sucks today" (contact)

In subordinate clauses the two constructions coincide. Therefore, many verbs are more acceptable in subordinate clauses than in main clauses (Åsdahl Holmberg 1976:42 *et passim*).

From a diachronic point of view, the formation of a verbal pseudo-compound is a complex process. The verbal paradigms are built up form by form beginning from the non-finite ones and ending with the brace forms for the use in main clauses. From a synchronic point of view, a "morphologically possible word" is the next step on this path.

2.6. Particle compounds.

There is a large number of words in German that consist of two particles, i.e. prepositions or adverbs. Most of them are clear cases of improper compounds, but the borderline between proper and improper compounds is especially difficult to draw with particles since they are not inflected

³⁹ This hierarchy seems to be the only generalization that can be made from the fairly chaotic results of Åsdahl Holmberg (1976), who investigated the acceptability of single inflectional forms of pseudo-compound verbs.

⁴⁰ The property of separability is not dependent on stress as it is with particle compounds, see above.

by definition and often do not form clear and homogeneous classes. A class of particles is always a closed set and it is not clear what the application of a rule on a new case would be.

A proper particle compound would be formed according to a rule, i.e. it would be a member of a class of compounds whose first and second members were elements of word classes that could be defined independently. Furthermore, the meaning of the compound must be a function of the meanings of its constituents as free forms, apart from a minority of lexicalized cases. There are some candidates though:

Local adverbial and directional adverbial: *da*, *nirgend*, *hier*, *überall*, *oben*, *unten*, *irgendwo*, *anderswo*, *sonstwo*, *hier*, *nirgend*, *links*, *rechts*, *wanders*, *weit*, *dort* can be combined with both *-hin* 'hither/from' and *-ber* 'thither/to' (Fleischer 1969:297f):

<i>nirgendwohin</i>	"nowhere + to"	'to nowhere'
<i>nirgendwoher</i>	"nowhere + from"	'from nowhere'

New formations according to this presumed rule are perfectly transparent, but hardly acceptable: ?*abseits**hin*, ?*draußen**hin*. Some of them are acceptable as two words — so they seem to be improper compounds.

The local adverbs *da* 'there', *hier* 'here', *wo* 'where' almost freely combine with the prepositions *an* 'at', *auf* 'on', *aus* 'out', *bei* 'at, with', *durch* 'through', *für* 'for', *gegen* 'against', *hinter* 'behind' and others, forming adverbs (cf. Duden Gr §940). *Wo* is used as an interrogative and relative pronoun and its presumed compounds are as well; *hier* and *da* are deictic, as are their compounds; *da* can be used as an archaic relative pronoun, as can its compounds. This means, if the complex forms really are compounds, the left constituent is the head.⁴¹

<i>daran</i>	"there + at"	'at this'
<i>darauf</i>	"there + on"	'on this'
<i>woran</i>	"where + at"	'at which'
<i>worauf</i>	"where + on"	'on which'

The status of these forms as proper compound is rather doubtful though since their "rule" cannot be applied to the new preposition *entlang* (**da-r-entlang*), for example.

Some nouns, i.e. words of an open category, can be combined with prepositions to form adverbs: *Berg*, *Land*, *Fluß*, *Straße* and others combine with *-auf*, *-ab* and others (cf. Fleischer 1969:300):

<i>Flußauf</i>	"river + up"	'upstream'
<i>Flußab</i>	"river + down"	'downstream'
<i>bergauf</i>	"mountain + up"	'uphill'
<i>bergab</i>	"mountain + down"	'downhill'

⁴¹ Cf. Engl. *whereupon*, *thereupon*. The glosses of these examples cannot be taken very seriously since particles are especially hard to translate. The *r* between the constituents has been lost in word final position (cf. the Engl. cognates).

If these complex words were formed according to a rule it would be a (hardly productive) derivational one (cf. Grimm 1890:159) since only a few prepositions can be used this way and the second constituent is used differently if it is a free form (**ab den Fluß*).

So the question if there are proper compounds among the host of particle compounds in German is still open.⁴²

3. Non-standard types.

3.1. Possessive compounds (*bahuvrīhi* compounds).⁴³

There is a fairly large group of compounds in German which are called "possessive compounds" because their meaning can be paraphrased with the use of the possessive verb *to have*. The "head" of the paraphrase is not expressed in the compound:

<i>Kahlkopf</i>	"bald _A + head"	'entity that has a bald head'
<i>Lästertau</i>	"slandery + mouth"	'entity that has a slandering m.'
<i>Milchgesicht</i>	"milk _N + face"	'entity that has a milky face, (= baby face)'

This type of compound developed later and independently of the inherited bahuvrīhi⁴⁴ and there is strong evidence that bahuvrīhi are nothing but endocentric compounds in synecdochic⁴⁵ use.

There is no formal distinction between bahuvrīhi and endocentric determinative compounds, such as stress in Sanskrit. Both are accented on the first constituent and the "rules" for linking elements are the same. The right constituent has all head properties:

— It determines the major category of the whole compound.

— The gender of the compound is determined by the right constituent (without exceptions like Fr. *la gorge / le rouge-gorge*), overriding sex:

<i>Rotschopf</i>	"[red + hair _{masculine}]"	'red-headed person'
<i>Rotbaut</i>	"[red + skin _{feminine}]"	'red-skin'
<i>Spatzenhirn</i>	"[sparrow + brain _{neuter}]"	'bird-brained person'

⁴² The suffixes *-dings*, *-wärts*, *-(er)weise*, *-(er)maßen*, used in forming adverbs, resemble word stems, but are clearly derivational.

⁴³ Cf. Fabian (1931) for a respectable collection of exocentric compounds in various languages (not only German, the title is misleading).

⁴⁴ Paul (1920:30): There is "no casual connection with formations of former times". Adjectival bahuvrīhi, which used to be the standard type (Krahe & Meid 1967:32) have become extinct except in two cases: (*barfuß* 'barefoot', *barhaupt* 'bareheaded') and some opaque words (*ein/acb*).

⁴⁵ Almost any rhetorical figure has been used for the description of bahuvrīhi: "metaphor, *pars pro toto* (Jacobi 1897:84), antonomasia (Coseriu 1977:50). "Synecdoche" (Bauer 1983:30) is rather general, but the most adequate term. The question if bahuvrīhi are endocentric compounds in synecdochic use or formally endocentric compounds with a bahuvrīhi semantics is, in my opinion, rather "academic".

— Pronouns referring to bahuvrīhis correspond in gender, overriding sex (unlike Engl.: *skin - it*, *redskin - he/she*, Žepić 1970: 122f.). This point is entailed by the previous one because the gender of the pronoun is determined grammatically in German.

— The number of the right constituent corresponds to the one of the referent and not to the equivalent in the exocentric paraphrase, *Langbein*_s 'person_s with long legs_p' (without exceptions like Engl. *a lazy-bones*, *a butter-fingers*, Jespersen 1942:150).

— The inflectional form of the compound is identical to the one of the right constituent:

<i>Gesichts/Milchgeschichts</i> (-s)	'face _{gen} /'baby-face _{gen}
<i>Haut/Rothaut</i> (-ø)	'skin _{gen} /'redskin _{gen}
<i>Häute/Rothäute</i> (umlaut + -e)	'skins _{pl} /'redskins
<i>Gesichter/Milchgesichter</i> (-er)	'faces/'baby-faces'
<i>Kehlehen/Rotkehlchen</i> (-ø)	'throats (diminutive)'/ 'robins'

The crucial question in this discussion, if the synecdochic use of a noun is connected to its compound structure or independent thereof, is explicitly answered in the negative by Fleischer 1969:106: The "pars pro toto [use] ... is not dependent on a particular word formation type".

In many cases the compound construction is more acceptable than other competing constructions, but most of them can easily be explained. Simplex forms (*neck*, *foot*) often are less acceptable than compounds because they do not carry enough information to be used in a synecdochic way. Phrasal adjective + noun expressions often are less acceptable because the synecdochic use is a way of "naming" the referent and for names the univocal expression is preferred. The compound structure is the preferred structure for *ad-hoc* names.

There are, however, some compounds which do not have a determinative reading. Some of these cases can be disposed of as lexicalized words: *Geizhals* "parsimony + neck" 'skinflint' used to have a determinative reading when it meant "greed + throat". Only one particular type of numeral + noun-compounds, the one with the semantic structure "object with n Ns", never allows a determinative reading (at least for n > 1):

<i>Dreirad</i>	"three + wheel"	'tricycle'
<i>Dreiborn</i>	"three + horn"	'tricorn'
<i>Dreikant</i>	"three + edge"	'trihedron'

Fleischer (1969: 107) excludes these words from the class of bahuvrīhis, unfortunately without further explanation. An exocentric analysis in the manner of Marchand 1969:13f. ((n + N) + ø)⁴⁶ would be supported by the

⁴⁶ The analysis of exocentric structures does not require ø-morphs. If you allow semantic structures to be non-isomorphic to formal structures, you need not answer the absurd question if the ø is a stem or an affix (cf. Marchand 1969:14).

fact that often the n + N part can only be used as non-head of a compound: *Zweibettzimmer* (**Zweibett*) "two + bed + room" 'double room'. These non-heads share some formal properties with n + N-compounds: accent on n, no plural on N and occasional subtraction of -e and -en (*Kante/Dreikant*, a "subtractive linking element" which should only occur on non-heads). There is also a synthetic compound type with the suffix -er for ø: *Dreimaster* "three + mast + er". Some bahuvrīhis are back-formations from those non-ø compounds: *Dreieck* < *dreieckig*.

If this type of n + N compounds cannot be explained away, there remains at least one marginal type of genuine bahuvrīhi compounds.

3.2. Citation words.

There is another type of "compounds" which often is put into the same category as our improper compounds.⁴⁷ Citations — sentences or phrases — can be used as nouns, e.g.:⁴⁸

- (1) *Vaterunser* "Father + our" 'Our Father, Lord's Prayer'
Ob-du-fröhliche (Name of a Christmas carol)

These words contain more than one word stem and therefore may be called compounds. They are, however, not formed according to a rule ("N + possessive pronoun = N"), can contain any sort of article or inflection and moreover, unlike genuine "improper compounds", they are not used within the same context as before univerbation. These expressions are cited expressions of an arbitrary syntactic category or none at all (the expressions need not be a constituent in their original context), which are used as a noun. Since they are quotations it is accidental that they are comprised of German words: The German words *Paternoster*, *Tedeum* are formed according to the same lexicological (not morphological) rule: "Take the beginning of a prayer or song as its name". Laws and novels are not named in this way and the rule for the Pope's encyclicals is different: "Encyclica + Quote". It also is accidental that most of these nouns contain more than one stem and thus are compounds in a wider sense, but longer quotations make it easier to identify the text they are names of.⁴⁹

"Sentence words" like (2-10) can be taken as citations,⁵⁰ but they are

⁴⁷ Fleischer (1969:62) restricts his notion of improper compound ("Zusammenrückung") to this type.

⁴⁸ Koziol (1972:71) calls this type "incipit-compounds" because here the "beginning" of the text serves as its name.

⁴⁹ Exceptions are, e.g., *laudate gloria*, *affidavit*, *misèrere*.

⁵⁰ Grimm (1878:938): "spring from exclamations". Like Olsen (1990:144), I subsume the so-called "imperative compounds" under the type of citation words. The question if there is a subrule for them with a higher productivity can only be decided after an empirical investigation.

a special type as they are stressed on the first constituent (but not on a vocative address as *Gott* in (2)):

- | | | |
|----------------------------|---------------------------|---------------------------|
| (2) <i>Gottseibeins</i> | "God + be + with + us" | 'devil' |
| (3) <i>Vergißmeinnicht</i> | "forget + me + not" | 'forget-me-not' |
| <i>Kenndichaus</i> | "know + your + way" | 'expert' |
| (4) <i>Habenichts</i> | "have + nothing" | 'have-not, pauper' |
| (5) <i>Störenfried</i> | "disturb + [h]le + peace" | 'troublemaker' |
| (6) <i>Weißnichts</i> | "know(s) + nothing" | 'ignoramus' ⁵¹ |
| (7) <i>Trautschnichts</i> | "(he) dares + nothing" | 'coward' |
| (8) <i>Traumtchnicht</i> | "(I) dare + nothing" | 'coward' |
| <i>Binnichts</i> | "am + nothing" | 'unimportant person' |
| (9) <i>Immergrün</i> | "ever + green" | 'evergreen' |
| (10) <i>Ohnesorg(e)</i> | "without + trouble" | (personal name) |

The verb can have the imperative form (3), the first (8) and the third person (7), it can also be missing (9, 10). Many forms are ambiguous with respect to the interpretation of the verbal form. The only marginally productive type (4), is ambiguous and can be read as imperative or first person. The analogous formations *Gebenichts* "give nothing" (only first person⁵²) and *Gibnichts* (only imperative) are both acceptable.⁵³ The recent formations *Verleibnix* "lend + nothing" and *Versteibnix* "understand + nothing", both figures of the comics "Asterix", are ambiguous, but I prefer the first-person reading.

In most cases the verb precedes its modifiers, but Grimm DWb also lists words like *Nichstaug* in addition to *Taugenichts* 'good-for-nothing'. Words of this structure are rare in German (*Nichtsnutz*, *Fingerzeig*, *Zeitvertreib*) and there is no productive rule for them.

The majority of these nouns originally are proper names of persons now used as common nouns, therefore most of them have masculine gender, even those denoting things (*Kebraus* "sweep + out" 'last dance' or female persons (*Sie ist ein* [*-ei_{em}] *Störenfried* 'she is a troublemaker'); but there are exceptions: Plants are neuters (*Vergißmeinnicht*, *Immergrün*) and so are citations directly referring to the utterances⁵⁴ (*Lebewohl* 'live + well' 'farewell'), or to words, larger or smaller expressions or characters (*das kommt, das x, das -e* 'the comes, the x, the -ed').

⁵¹ *Mind* the first person plural *-amus* of this Latin form. The form also is a "good" noun as it ends in *-us*.

⁵² It could also be an incorrect imperative form which is used by some speakers, cf. Fabian (1931:324f.).

⁵³ I prefer *Gebenichts*, but this can be explained by the closer phonological similarity to *Habenichts*.

⁵⁴ This type is distinguished by phrasal stress from the one under consideration.

Citation nouns are inflected as wholes: *des Störenfried* + *s_{GEN}*, *die Störenfried* + *e_{PL}* (as opposed to *des Friedens_{GEN}*); in some cases the inflectional suffixes can be omitted: *die Vergißmeinnicht* (-*e_{PL}*).

Since the internal structure of citation nouns is arbitrary, they are derived from sentences or phrases imaginatively uttered by the referent (first person reading),⁵⁵ towards the referent (imperative), about the referent (3rd person or verbless predicate) or in his presence (type *Gottseibeins*). The utterance character of these words is underlined by a vocative address in some words such as *Gottseibeins*, *Mensch-ärgere-dich-nicht* "man, take it easy", a game of dice like "ludo", or *Bäumchen-wechsle-dich* "tree, change places", a game like "puss in the corner".

Being derived from sentences or other expressions (through a non-morphological word forming process) citation words do not have immediate constituents. This means they are not compounds at all.

3.3. Copulative compounds.

There are several types of compounds in German which might be called copulative compounds (coordinative compounds, *dvandvas*) because the relation of their constituents is coordinative and not subordinative as in determinative compounds:

- | | | |
|-------------------------------|---------------------------------------|--------------------------|
| (1) <i>dreizehn</i> | "three + ten" | 'thirteen' |
| (2) <i>Österreich-Ungarn</i> | "Austria + Hungary" | |
| <i>Elsaß-Lothringen</i> | "Alsace + Lorraine" | |
| <i>Nordost</i> | "north + east" | |
| <i>Nordnordost</i> | "north + north + east" | |
| <i>englisch-deutsch</i> | "English + German" | |
| <i>schwarz-weiß</i> | "black + white" | 'black-and-white' |
| <i>cremig-zart</i> | "creamy-delicate (dessert)" | |
| (3) <i>Fürstbischof</i> | "prince + bishop" | 'semicolon' |
| <i>Strichpunkt</i> | "stroke + point" | 'wet and cold (weather)' |
| <i>naßkalt</i> | "wet + cold" | |
| (4) <i>Maier & Müller</i> | 'the authors of the paper M./M. 19XY' | |

Type (4) has not been described yet although it is the only Sanskrit-like *dvandva* in German. *Maier & Müller* refers to two individuals and agrees with a plural verb:⁵⁶ *Maier & Müller behaupten, daß ...* 'Maier & Müller state that ...'. It does not have a plural suffix itself, but it can be suffixed: *die Maier & Müllersche Behauptung* "the Maier + Müller + ish statement" 'the statement of M & M'. Moreover, it has a specialized

⁵⁵ Typical sayings of a person can be used as his name and need not contain a verb, e.g.: *Jaher* "Yes + Sir", *Bigott* "by + god" (personal name), cf. Fabian (1931:350f.).

⁵⁶ If there were a dual in German, two names would agree with a dual verb and three with a plural as *Maier & Müller* refers to two individuals.

meaning: You cannot say "I met M & M last night", if you did, you would treat them as if they had only one property, that is to be the authors of a certain paper. The use of this compound type is very restricted though. It is used only by those scientists who quote a work by the authors' names and the year of publication and leave out the 'and' between the names.

Type (1) is the only one inherited from Indo-European, and it did not serve as a model for the development of the other types. It comprises the numbers from 13 to 19 and some scattered remainders (Paul 1920: 7). It is not productive and synchronically it is not a morphological compound type of German.

The compounds of type (2) comprise proper names, cardinal points of the compass and adjectives. Substantives are very rare.⁵⁷ The proper names refer to single entities, Austria-Hungary being an entity different from both Austria and Hungary. They are stressed on the right constituent,⁵⁸ only the right constituent is inflected, and they enter derivational processes as wholes (*elsaß-lohringisch*⁵⁹). They need not be binary (*schwarz-rot-gold* 'black-red-and-gold'). Adjectives like *cremig-zart* are not easy to distinguish from syntagms of adverb + adjective since it is often not clear if both words are parallel modifiers or if the first word modifies the second (Wilmanns 1899: 540).

Compounds of type (3) are regarded as prototypical copulative compounds by some authors (e.g. Fleischer 1969). Others (Wilmanns 1899: 536⁶⁰) distinguish type (3) as appositional compounds from copulative compounds. Appositional compounds have all the formal and semantic properties of determinative compounds:

- They are binary and stressed on the first constituent. They may contain linking elements (*Kinderpilot* 'child pilot')
- The general semantic rule for determinative compounds also covers appositional compounds.

The symmetry or equivalence of the two constituents is one of two features that distinguish appositional from determinative compounds. Fleischer (1969: 81) stipulates that the relation between the constituents of determinative compounds is subordinative and not coordinative and thus excludes appositional compounds by definition. But even this commonplace assumption on appositional compounds is mistaken: In an empirical

⁵⁷ *Marxismus-Leninismus* is an isolated lexicalized case, and there are some *ad-hoc* formations which could be analyzed as syndetic syntactic constructions as well. The examples cited in Ortner & Ortner (1984:14) and Breindl & Thurmair (1991) are, unlike the others, inflected on all constituents.

⁵⁸ Ortner & Ortner (1984:14). But it could also be even stress with a secondary reduction of the left constituent(s).

⁵⁹ The adjective *österreichisch-ungarisch* is a lexicalized exception which can be analyzed as a compound of the adjectives.

⁶⁰ Jespersen (1942:142) for the Engl. equivalents.

investigation Breindl & Thurmair (1991) showed that German appositional compounds are not symmetric and that the second constituent is semantically dominant.

The other distinguishing feature of appositional compounds is their aversion against linking elements. The omission of a linking element can be a strong indicator of a copulative reading. Appositional compounds are, e.g., one of two systematic exceptions⁶¹ to an otherwise rigid rule for linking elements: Nouns with the genitive *-en* take *-en* as linking element: *Fürstbischof*, but *Fürstseviz* ('prince bishop', 'prince's residence' respectively, cf. Wellmann *et al.* 1974: 367). This formal property would be strong evidence in favour of a separate class of appositional compounds, but the choice of linking elements correlates with semantic interpretation also in other respects, cf. 2.2). Consequently, type (3) compounds are merely a semantic subclass of determinative compounds.

Apart from the very marginal type (4), there is only one type of copulative compounds in German (type 2) which is clearly distinguished from (right-headed⁶²) determinative compounds by its stress on the right constituent.⁶³

3.4. Left-headed compounds.

If morphological structures develop from syntactic structures by univerbation, one should expect that languages with a predominant left-headed syntax such as English and German should develop left-headed morphological structures as well. The serialization of head and modifier is not consistent in English and German syntax though: Adjectives precede nouns and adverbs precede the adjectives they modify, to name but two candidates for new compound structures.⁶⁴ However, there are a few types of complex names (that might have developed from appositional constructions) which are generally numbered among compounds:⁶⁵

(1) Geographical names: *Sachsen-Weimar, Mecklenburg-Schwerin, Lippe-Detmold* (Paul 1920: 29). Saxony was divided into several (grand) duchies

⁶¹ The other set of exceptions are synthetic compounds with an auxiliary verb that takes a nominative: *Mensch-werd-ung* 'man + become + ing' 'incarnation, anthropogenesis'.

⁶² Left-headed endocentric compounds are also stressed on the right constituent, see below.

⁶³ The relevance of the stress pattern for this compound type was pointed out by Pitner (1990).

⁶⁴ This means, the heads of the prototypical compounds (nouns and adjectives) are preceded by their prototypical modifiers (adjectives and adverbs, respectively) also in syntactic structures. Maybe it was compound morphology that impeded the drift (Venemann 1975) from right-headed to left-headed syntactic structures in these constructions.

⁶⁵ By Paul (1920:29), Fleischer (1969:117), Ortner & Ortner (1984:61f.), for example. Words like *Muttergottes, Hörensagen* are isolated improper compounds and can be disregarded. All examples below are stressed on the second constituent. The speakers avoid inflecting these words because they do not know where to put the suffix, so they prefer the prepositional periphrasis to the genitive.

which were identified by the names of their capitals. After the union of two duchies the names of both capitals were added: *Sachsen-Weimar-Eisenach*, *Sachsen-Coburg-Gotha*, *Sachsen-Meiningen*, *Sachsen-Altenburg* etc.). *Hessen-Kassel* and *Hessen-Darmstadt* (Ortner & Ortner 1984: 61) are two landgraviates that resulted from a division of Hessa. The two cities "Frankfort on the Main" and "Frankfort on the Oder" can be distinguished shortly as *Frankfurt-Main* and *Frankfurt-Oder* (Fleischer 1969: 118). "Köln-Deutz" is the part of Köln 'Cologne' that used to be the town "Deutz".⁶⁶ Also cardinal points can be used to distinguish parts of cities: *München-Nord* "Munich + north".⁶⁷ This compound structure is about to spread into the class of common nouns: *Autobahnauffahrt-Nord* "highway + entrance + north", *Basel-Stadt* "Basel + city" vs. *Basel-Land* "Basel + country", the two demicantons of Basel.

(2) Personal names: "Homonymous" Members of Parliament are identified by their electoral area: *Müller-Meiningen*, *Müller-Freising*. (Paul 1920:29, Wilmanns 1899: 537, Fleischer 1969: 117).

(3) In certain areas like the language of advertisement, restaurants, or media the pattern develops some productivity: *Radio Luxemburg*, *TV-aktuell* "tv + up-to-date", *Whiskysoda*, *Whisky pur* "whisky + straight", *Pizza Margherita*.

Olsen (1990:141) correctly notes that this pattern has an "exceptional status at the margins of productive word formation in German", but this is how new patterns come into being. However, the reluctance of speakers (and linguists) to accept these structures has to be explained. The notion "inversion-compound"⁶⁸, which was adopted by Ortner & Ortner (1984: 61) for left-headed German compounds, correctly grasps their property of being "the wrong way round". They do not contradict a universal "right-hand head rule", which cannot be set up, but they contradict a system-dependent rule of morphological naturalness,⁶⁹ which says: German compounds are right-headed. This rule is supported by a principle of natural serialization saying that languages tend to serialize heads and modifiers

⁶⁶ The fact that Köln-Deutz is identical with Deutz and not with Köln (as pointed out by Olsen 1990:141) does not mean that these words are right-headed: As modifiers of common nouns restrict their extension to a subset, modifiers of proper nouns can only restrict their extension to a part. The stress pattern, too, supports our analysis.

⁶⁷ Originally this was a marker for distinguishing highway exits, but now it means 'northern Munich', at least in the language of real-estate agents.

⁶⁸ It was coined by Ekwall (1918) for left-headed English and Scandinavian place names formed under Celtic influence, e.g. *Briggethorfin* 'Thorfin's bridge' (1929:217). The Celtic languages have developed new left-headed compounds from syntactic constructions (Ekwall 1928:lii).

⁶⁹ Wurzel (1987:65): "System-defining structural properties have a system-stabilizing effect. Non-uniformly structured inflectional systems always show the trend towards uniformity and systematization in the decomposition of non-system-congruous morphological phenomena." Wurzel has developed the concept of system-dependent morphological naturalness for inflectional morphology, but it can easily be generalized to any typological parameter.

consistently (Vennemann 1975: 288). Celtic and Polynesian compounds are left-headed, but not inversion-compounds because their morpheme order is natural with respect to the system they are part of; in Wurzel's terms they are "system-congruous". English and German have a predominantly, but not consistently left-headed (VO-) syntax, but a fairly consistent right-headed morphology, i.e. they are "split" with respect to their serialization type. The tendency to keep the morphological type consistent offers resistance to the tendency to develop left-headed compounds from syntactic constructions. In Romance languages the resistance of the morphological type was weaker because Latin had only an underdeveloped compound morphology. In the Celtic languages the pressure exerted by syntax was stronger since their syntax is consistently left-headed.

To sum up, both the existence of left-headed compounds and their exceptional status can only be described if the "Right-hand Head Rule" is taken as a system-dependent rule of morphological naturalness.

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