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Why word-formation is the short route to the lexicon – A pragmatic approach to adjective-noun compounds in German*

Abstract
This paper offers new evidence confirming the lexicalist view that, in contrast to phrasal expressions, products of the word-formation component of languages such as German are predisposed to accomplish the naming function of the mental lexicon. For this purpose, we will investigate newly formed adjective-noun compounds, e.g., *Hochlampe* ('high_lamp'), *Rotdach* ('red_roof'), and their potential to function as lexical labels as well as their capacity to represent names for kinds. The affinity of compounds to be lexicalized and their tendency to undergo semantic specialization will be traced back to the markedness of novel compound expressions, which will lead to a pragmatic analysis along the lines of Levinson's M-principle. A parallel design for word-formation and syntax as two distinct domains of grammar will be implemented, in which recursive structure building capacities are shared, but with specific configurational restrictions holding in each domain as well as distinct functional profiles.

1 Introduction

The question as to where word-formation is located in the language system has been under debate for decades. The classical answer from the generative camp holds a lexicalist view in this respect and relates to Chomsky's seminal work on nominalization, in which syntactic structure building and word-formation are implemented as two separate generative components of grammar, cf. Chomsky (1970). Since then, numerous counter proposals have been put forward in the literature that aim at a removal of the boundary between the two domains. But while many of these proposals may have favorable theoretical implications in their own right, all approaches will be measured against their competence to account for the characteristic differences between the products of the two components, i.e. the differences between words and phrases.

The divide between phrasal syntax and word-formation is usually investigated w.r.t. to structural contrasts between the categories of the two domains.

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Furthermore, a consensus exists in the literature that products of word-formation are somehow better suited to fulfil a function as lexicalized names. Strikingly, however, there is little consensus about the exact formal nature of this functional quality of word-formation and only few studies have defined it in a systematic fashion. Thus, in the setting of the opening question, an exploration of the functional characteristics of the two domains may add to a progress in designing the divide between syntax and word-formation.

Against this background, the present paper seeks to reveal and systematically define functional differences between phrasal structure building and word-formation. In the investigation, we will focus on compounding and, in particular, (newly formed) adjective-noun compounds in German such as *Hochlampe* ('high_lamp') or *Rotdach* ('red_roof'). Specifically, the question will be addressed if compound expressions, in contrast to their phrasal counterparts, are better suited to realize the naming function of the lexicon and, if so, why this is so. Here, a careful distinction between the notion of naming in its sense as labelling something, on the one hand, and naming in the sense of referring to a specific kind of object, on the other, is in order. In this respect, we will investigate several linguistic environments that give us an insight to the specific properties of the two categories – from which we will conclude a positive answer to the above question. Crucially, a pragmatic reasoning will be followed as to why adjective-noun compounds, in comparison to adjective-noun phrases, are better inclined to be stored in the lexicon as a concept's name. The analysis is based on a manner-based principle. It essentially holds that by forming a compound the speaker deviates from the canonical expression of a complex unit, i.e. the phrasal expression, which implicates deviation from the compositional meaning of the complex. This, in turn, leads to a reinterpretation of the expression as a kind name. Our observations can best be explained by assuming a modular architecture, with a lexicalist connotation. A parallel design will be pursued here, in which syntax and morphology share a common generative structure building apparatus, but with specialized grammatical restrictions holding in each domain as well as distinct functional profiles.

The structure of the paper is as follows. Chapter 2 discusses prominent theories of the interface between word-formation and syntax. Chapter 3 will be devoted to characteristic semantic and conceptual differences between compound expression and phrases, where the notions of naming and kind representation will be in focus. In chapter 4, a pragmatic rationale to explain for the functional differences between the two categories will be put forward and in chapter 5, architectural implications of the proposed analysis will be discussed. The summary in chapter 6 concludes our investigation.

2 Theories of the interface between word-formation and syntax

Theoretical models of the word-formation component of language can be differentiated based on their view as to how independent from syntax word-formation operations are considered. *Lexicalist* approaches maintain a modular view here and regard products of word-formation, as well as of morphology in general, as formed by specific lexical rules, which are non-syntactic in nature, cf. Chomsky (1970), Di Sciullo & Williams (1987), Lieber (2004), among others, and Scalise & Guervara (2005) for an overview. In strict lexicalism, morphology constitutes a sub-system of the lexicon, which generates all types of morphological operations. An important implication in lexicalist models is that morphologically complex expressions figure as atoms in syntax. In this context, often (some version of) a principle on lexical integrity is consulted, see Anderson (1992), Lapointe (1980). It holds that syntactic operations do not have access to word-internal structure, cf. also Selkirk (1982). The principle can be used to explain, for example, why binding of a pronoun to a sub-lexical antecedent is illicit, cf. **Some house*$_i$ *owners intend to sell it*$_i$, cf. Postal (1969), Wunderlich (1986).

Contrary to lexicalist approaches, in *integrative* models, morphology and syntax share a common structure building inventory and are, in principle, subject to identical structural restrictions. A radical version of this view is expressed in Distributed Morphology, cf. Halle & Marantz (1993), in which also the notion of the lexicon as a repository of memorized and idiosyncratic information is abandoned. Note, however, that a denial of a divide between lexicon and syntax it is not a necessary prerequisite for an integrative model, see, for instance, Giegerich (2005) for such an approach, in which the divide between lexicon and syntax is preserved.

To provide evidence for the view that morphological products are subject to the same structural regularities as phrasal ones, for example, cases of sub-lexical binding in *one*-coordinations – a supposedly syntactic operation – as in *Max's argument was point*$_i$*less but Pete's did have one*$_i$ (see Lieber 1992: 130) have been used. With a similar reasoning, phenomena of deletion targeting sub-lexical constituents under coordination as in *pre- and post-conference publication* (see Bell 2011: 318) have been employed as an exemplification of syntax accessing word structure, cf. also Haspelmath (2011), Höhle (1982), Selkirk (1982). In the integrative camp, we also find Construction Grammar approaches, in which a divide between syntax, or grammar in general, on the one hand, and the lexicon involving morphology and word-formation, on the other, is rejected as well. In line with its principal concept, in which the lexicon is viewed as a hierarchically ordered structure that contains schematic pairings of form and meaning (see, for example, Goldberg 2006), in constructionist

models a categorial and qualitative difference between phrasal and morphological products is denied, cf., e.g., Booij (2010), Hüning (2010). In this context, mechanisms of analogy are often seen as the driving force behind the formation of new complex expressions, cf., e.g., Schlücker & Plag (2011).

In certain versions of constructionist models, however, syntactic and morphological structure building indeed represent separate domains of the language faculty, cf. Booij (2009), (2014). Approaches of this type mediate between the two extreme poles of lexicalist and integrative approaches. A mediating stance is also formulated in Jackendoff (2002), who recognizes principled differences between the internal structures of words and phrases and, thus, relates phrasal syntax and morphological structure building to distinct grammatical tiers – which, however, generate structures in a parallel and systematically interfaced fashion (ibid.: 128f). In a comparable way, syntax and morphology are assumed to represent separate components of grammar in Ackema & Neeleman (2004), (2010). In their model, the main focus lies on the notion of competition between phrasal and morphological structure building, where, for example, the formation of expressions like **to truck-drive* is blocked due to the existence of the canonical phrasal expression *to drive a truck*, cf. Williams (2007) for a related approach. An advantage of *parallel* models[1] of this type is that they provide an elegant solution for the integration of pragmatic conditions into the generation process.

An important criterion in the architectural implementation of morphological and phrasal structure building is whether or not one assumes a certain affinity of the morphological stratum to feed into the mental lexicon. Typically, in parallel models no such lexicon affinity of morphological products is assumed. Along this line, for example, Ackema & Neeleman (2007) maintain that the relationship between complex words (i.e. morphological products) and lexicon is not any different from the relationship between phrasal products and the lexicon (ibid.: 325f.). In a related fashion, Schlücker (2014) rejects the view that compounds have privileged rights to realize a concept name and, as such, be somehow more prone to be stored in the mental lexicon (ibid.: 197f). The opposite view – often coming with a lexicalist flavor – holds that morphological products indeed have privileged access to the mental lexicon, cf. Bauer (1988), Jesperson (1942). According to the latter view, the main task of word-formation is to create names for stable and unitary lexical concepts, cf. Dahl

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[1] A note on the use of "parallel" is in order here. In the present paper, it is to be understood in the sense that morphology and syntax represent separate domains of language, each equipped with specific regulations and functions, but with parallel access to the structure building capacity of grammar. For a more non-modular but related understanding of the notion, see Jackendoff (2002), Jackendoff (2007) and its application in Schlücker (2014).

(2004: 180), Levi (1978), Li (1971), Zimmer (1971) – in contrast to syntactic structure building, which is considered to primarily fulfil a descriptive function. Thus, due to their pronounced naming function, word-formation products are seen as better inclined to undergo lexicalization, that is, to be stored in the mental lexicon, cf. Motsch (2004). This affinity has been argued to be particularly strong in languages like German,[2] where the link between category concept and linguistic expression is understood to be established primarily via a word-formation tier, cf. Brekle (1975), Pörings & Schmitz (1999).

While the distinction between phrases and compounds w.r.t. to their morpho-syntatic properties is evident in German, see, e.g., Klinge (2009), the connection between word-formation and concept naming cannot be based on an exclusive form-meaning link. On the one hand, there are numerous phrasal expressions, which also realize a naming function, e.g., *blauer Fleck* ('blue spot', *bruise*), cf., among others, Booij (2009a) for discussion, even though naming syntagmas of this type have sometimes been characterized to be less productive, cf. Klos (2011: 296). On the other hand, ad hoc compounds exist, which serve, e.g., an identificational rather than a naming function, as is instantiated in Downing's famous *apple-juice seat*, see Downing (1977), cf. also Brekle (1986) for an analysis of ad hoc compounds.

With this "multimorphism" in mind, naming provides an interesting test criterion as to what different conceptual functions morphological and phrasal structure building perform. It lies in the nature of the studies mentioned above to examine structural configurations to shed light on the separation of morphology and syntax from a grammatical, morpho-syntactic perspective. The current paper approaches the issue from a semantic-conceptual perspective and analyzes the division of labor between morphology and syntax from a functional angle. Against this background, the following chapter investigates semantic-conceptual differences between products of word-formation and phrasal expressions with a particular focus on the question as to whether the former have a more pronounced naming function than the latter and how this can be tested.

3 Semantic and conceptual differences between compounds and phrases

Semantic differences between phrasal and compound complexes are multifaceted and concern various aspects of semantic compositionality. One such difference lies in the genericity of the non-head of compounds like *truck driver*

[2] For a discussion of cross-linguistic differences in the different modes that languages employ in word-formation domains and on the association between word-formation and lexicon see, e.g., Berg (2012), Hüning (2010), Gaeta & Schlücker (2012).

or *whale hunter*, for which specific interpretations are usually blocked, in contrast to the *of*-complements of the phrasal counterparts, which adopt specific interpretations, cf. *driver of a truck*, *hunter of a whale*, cf. Alexiadou & Schäfer (2010). As a consequence, truth-conditional differences show up such that, e.g., for a compound like *matchbox* the actual existence of matches in the box denoted by the head noun is not entailed; in opposition to a phrasal expression like *box with matches*, for which the entailment holds. Furthermore, semantic specialization[3] manifests itself, for example, in German adjective-noun compounds with deverbal head nouns like *Schnellraucher* ('fast_smoker'), which exhibit non-intersective interpretations only, in contrast to their phrasal counterparts (*schneller Raucher* 'fast smoker'), which show the well-known ambiguity between an intersective and a non-intersective reading. Last, even apparently fully transparent compounds like *Jungvogel* ('young_bird', *fledgling*) display semantic narrowing. As shown by Schlücker & Hüning (2009), this is evident in comparison with the phrasal counterpart (i.e. *junger Vogel*, 'young bird'), which, when used in a sentence like *Das Storchenpaar zog fünf Jungvögel / junge Vögel auf* ('the stork couple raised five young_birds / young birds), gives rise to the implicature that the birds denoted by the adjective-noun phrase are not the storks' biological offspring (ibid.: 216).

Effects of semantic specialization in compounds can be associated with the presence of an underspecified relation holding between the constituent parts, which has been characterized as a predicate *R* in the literature, cf., among others, Bücking (2010), Olsen (2004), Spencer (2011). According to this view, *R* is bound pragmatically in the compositional process thus spelling out the individual semantic modification relationship between the head and the non-head of a compound. Under the assumption that the specification of *R* is an essential feature of compound expressions, semantic specialization can be assumed to be active "right from the beginning" in the life of a compound. For example, a newly formed adjective-noun compound like *Blauschachtel* ('blue_box'), a per se compositional combination, can be used to denote a specific type of box for certain blue objects to be stored in without problems. The oberservation is in line with Barz's reasoning that compounds lose descriptive potential at the moment of their formation, see Barz (1996: 143).[4] In contrast, phrasal expres-

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[3] We define semantic specialization of compound expressions as a reflection of semantic narrowing as well as decreased transparency. It is instantiated in the compounds' compatibility with constructions like *Das Rotdach / #rote Dach wird so genannt, weil es rot ist* ('the red_roof / red roof is called like that because it is red') in contrast to their phrasal counterparts, which produce a tautology in this context.

[4] This insight, which we will be adhering to throughout the current paper, opposes the assumption for near semantic equivalence to hold between adjective-noun phrases

sions can be assumed to be interpreted compositionally at first and adopt idiomatic meanings only later in their life, see Klos (2011: 296). These two assumptions taken together will be our starting point in the following section. With occasional glances at noun-noun compounds where relevant, we will focus mainly on adjective-noun (A-N) compounds and adjective-noun phrases as they provide a serviceable test environment due to their minimal pair-like nature. For the central analysis, we will restrict ourselves to standard intersective, monomorphemic adjectives as instantiated by, e.g., dimensional (*high*, *deep*, *slim* etc.) or color adjectives (*red*, *blue*).[5] Likewise, in order to rule out confounding effects of semantic compositionality, we will concentrate on fully transparent adjective-noun combinations as a baseline, like *blau* ('blue') + *schachtel* ('box') or *schmal* ('slim') + *messer* ('knife') etc. To avoid circularity in the argumentation, we will make use of newly formed compound expressions, with a null frequency in the Wortschatz corpus.[6] The central hypothesis follows the argumentation in Spencer (2011), stating that the adjectival element in an A-N compound takes on a classifying function. Thus, the adjectival element loses its canonical attributive function and produces a shift in the intension of the head noun instead, see Zelinsky-Wibbelt (2011: 24). For the theoretical implementation, the classifying function of a compound will be traced back to its status as a name as well as its interpretation as a kind expression.

3.1 The naming status of A-N compounds in German

While there is consensus in the literature that word-formation products in languages like German are somehow prone to realize the naming function of the mental lexicon, cf. Schlücker (2014: 189ff.) for an overview, only few studies have investigated this correlation from a systemic, compositional semantic point of view, among them, e.g., Bücking (2010). In the literature, naming is usually defined as linking a conceptual category with a corresponding linguistic expression, cf. Booij (2010: 169). A name, in its lexical sense, can be associated with a function that establishes a node in a conceptual-ontological tax-

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and the respective compounds, as is occasionally stated in descriptive grammars, for example, in the IDS grammar "grammis" (hypermedia.ids-mannheim.de).

5 Thus, for example, non-intersective adjectives like *angeblich* ('alledged') as in *Angeblich-Anschlag* ('alleged_attack') will be excluded from the analysis. Compound expressions of this type, which are also noticeably expressive in their communicative nature, do usually not realize a naming function in the sense of a classifying expression, see Schlücker (2014: 73ff) for discussion, cf. footnote 8 also.

6 www.wortschatz.uni-leipzig.de

onomy, thus creating the lexical concept of a sub-category of the category denoted by the head noun, cf. Pörings & Schmitz (1999: 62f).[7] Consequently, naming is characterized as a mechanism with a twofold nature:

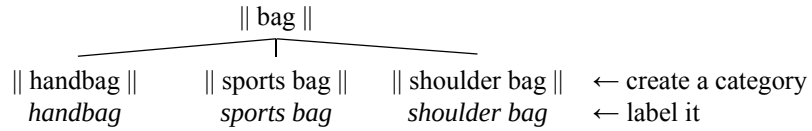

Figure 1: Naming

Importantly, creating a name requires the corresponding category to be name-worthy, i.e. the category needs to be (culturally or situationally) relevant to such an extent that an institutionalized label is worth to be created for it, cf. Downing (1977), Lipka et al. (2004), Štekauer (2002).

3.1.1 Naming as labelling

In the following, we will first examine naming in the sense of labelling per se, ignoring, for the moment, the ontological implications that naming processes give rise to. Various linguistic environments hint at the naming status of an expression, including name-selecting predicates, which involve a form of the predicate *nenn-* ('call'). With them a contrast between A-N phrases and A-N compounds is produced, which can be associated with the pronounced naming function of the latter, cf. Bücking (2010), Schlücker & Hüning (2009):[8]

(1) a. Man nennt so etwas ein ??rotes Dach / Rotdach.
'one calls this a red roof / red_roof'
b. Das ist eine sogenannte ??tiefe Grube / Tiefgrube.
'this is a so-called deep pit / deep_pit'

In these environments novel compounds contrast with phrases in acceptability: *Nenn-* ('call') and *sogenannt-* ('so-called') are sensitive to the naming status of an expression and expressions that have no particular naming function are odd with them. The question remains why exactly this is so.

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[7] Note that sub-category and super-category need not necessarily to share the same name. For example, *Dunkelkammer* ('dark_room') does not represent a sub-category of *Kammer* ('chamber') in German but rather some sub-category of *room*.

[8] The A-N compound pattern in German is subject to the restriction that multisyllabic adjectives are generally blocked here, cf. *Gelbton* ('yellow_hue') vs.**Gelblichton* ('yellowish_hue'), see Hüning (2010: 5). Exceptions are loans ending in *-al*, *-iv*, as well as adjectives like *billig-*, *fertig-*, *extrem-* etc. Observe that, despite the productivity of the pattern, newly formed A-N compounds are considerably marked, i.e. they give rise to a relatively pronounced novelty effect, see chapter 4 below for discussion.

A prominent explanation for why certain expressions are infelicitous in the context of a *nenn*-predicate implies that they presuppose the corresponding noun to accept an interpretation as a well-established kind, cf., among others, Carlson (1977), Krifka et al. (1995). Note, however, that *nenn*-predicates are indeed compatible with expressions that involve non-kind individuals. The A-N phrase in (2) contains the psych-predicate *beeindruckend* ('impressing'), with its thematic requirement for the experiencer argument only (i.e. the subject referent) to be in the denoted psychological state, thus not complying with the classic definition of an established kind:[9]

(2) Sowas nenne ich eine beeindruckende Dokumentation.
'this is what I call an impressive documentary'

For that reason, a pragmatically oriented explanation for the contrast in (1) will be favored here, focusing alone on the labelling function of the *nenn*-complement rather than its status as a well-established kind. Our analysis holds that a *nenn*-predicate requires worthiness of the name to be identified as such.[10] A *nenn*-environment identifies a label, which a certain speech community has agreed on but which the addressee is assumed to be unfamiliar with. Semantically transparent phrases like *rotes Dach* or *tiefe Grube*, however, as in the examples in (1), deliver canonical object descriptions rather than label a particular conceptual category. They, thus, produce a tautology in a context that delivers an explanation for the particular make-up of the name, cf. Bücking (2010), Carlson (1977), Gunkel & Zifonun (2009), Krifka et al. (1995):

(3) #Das rote Dach wird so genannt, weil es rot ist.
'the red roof is called like that because it is red'

Evidently, phrasal expressions of this type, in contrast to their compound counterparts, are always interpreted compositionally at first, i.e. as canonical object description, not suitable for a naming-context emphasizing the status of the expression as conventionalized label. That is also why the phrasal expressions in (1) are just as odd as, say, ??*One calls this a roof*, with the explanation that calling a roof *roof* is a commonly accepted convention, not worth to be communicated. Principally, *nenn*-predicates are sensitive to degrees of conventionalization: The more conventionalized an expression, the less suitable it is for a *nenn*-context. This implies, to turn the argument on its head, that actually any "unconventional" (e.g., somehow non-transparent) expression will harmonize with a *nenn*-context, including, of course, phrasal expressions:

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[9] In how far the example can be argued to involve the establishment of an ad hoc kind will be left open here.

[10] A different, though pragmatically related function of *sogenannt* ('so-called') is to express a certain reservation of the speaker w.r.t. to the appropriateness of the modified expression, see Predelli (2003).

(4) eine sogenannte weiche Flamme[11]
'a so-called soft flame'

Crucially, however, coercing a semantically transparent phrase like *rotes Dach* ('red roof') into functioning as a name and making it compatible with a *nenn*-predicate involves significantly more communicative effort in comparison to compounds. Phrases show a tendency to call for an additional marking here, like capitalization (see ((5)a)) or (air) quotes (see ((5)b)) to indicate the naming function of the complex, whereas this is not required with the corresponding compounds:

(5) a. ein sogenannter Roter Zwerg
'a so-called red dwarf'
b. sogenannter "kalter Regen" / Kaltregen
'so-called "cold rain" / cold_rain'
c. ein sogenannter "heißer Tag" / Heißtag
'a so-called "hot day" / hot_day'

By using quotation marks, in their use as modality indicators signaling a neologism (cf. Klockow 1980),[12] the producer of the utterance marks the expression in quotes as new to some extent and as not established enough in the lexicon of the corresponding speech community (see ibid.: 170f, cf. also Meibauer 2007). In this name-indicating function, quotes are thus on a par with the semantic function of a *nenn*-predicate, which, in turn, explains the contrast in the uses of quotes illustrated in (5): Only the phrase requires an additional characterization as label, which is not the case with the corresponding compounds as they suggest themselves as labels directly. Support for this assumption comes from an explorative corpus search using Google,[13] in which the frequency of

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[11] *Weiche Flamme* is a notion connected to welding, denoting the strength of a flame, see http://www.fachlexika.de/technik/mechatronik/schweissen.html, online access: February 19, 2015.

[12] It is important to keep apart the name indicating function of quotation marks from their function to signal a meaning shift in the expression, i.e., in this case, in the attribute, see Klockow (1980) for discussion. In their name indicating function, quotes are around the entire name, e.g., *ein sogenannter "blauer Fleck"* ('blue spot', *bruise*), whereas with the second type, quotes are preferably on the attribute alone, as in *sogenannter "grüner" Käse* ('green cheese', *immature cheese*). Quotes of the latter kind are connected to the apologetic use of quotes (so-called scare quotes), see Meibauer (2007), Predelli (2003) for further discussion.

[13] The search was performed between March 03 and March 16, 2015. Multiple tokens of a sentence were counted as one occurrence, e.g., the Wikipedia definition of *Schwarzlicht* ('blacklight') in the article 'Fluoresenz', which frequently reoccurred

use of quotation marks with two A-N constructions both containing the adjectival modifier *schwarz* ('black') were compared:

(6) a. *sogenanntes Schwarzlicht* ('so-called black_light')
n = 59
frequency class:[14] 17
with quotes: 9 (15.2 per cent)
without quotes: 50

b. *sogenanntes schwarzes Loch* ('so-called black hole')
n = 91
frequency class: 17
with quotes: 27 (29.7 per cent)[15]
without quotes: 64
with quotes, capitalized: 17 (18.7 per cent)
without quotes, capitalized: 44 (48.4 per cent)

The results reveal a stronger tendency for the A-N phrase to be used with quotation marks, which is in accordance with the above assumption that its naming status does not manifest itself routinely and, thus, needs to be enforced by supplementary means. This is also borne out by the affinity for the A-N phrase to be realized in capitals, which provides an alternative graphemic means to signal the naming status of an expression. Taking the use of quotes and capitalization together, only 20 instances (22 per cent) of the A-N phrase occurred in the data without additional marking. Note that capitalization in phrases cannot be taken as direct evidence for a more pronounced name marking compared to compounds, as compound nouns are also capitalized in German. In this respect, however, the high number of phrases is revealing that exhibit both, quotation marks and capitalization (18.7 per cent), which is in line with the above assumption for phrases with a naming function to call for a more salient marking.

The pronounced naming status of compound expressions can also be used to explain the acceptability contrast between N-N compounds and their phrasal N-PP counterparts in predicative constructions involving a temporal incompatibility between the contained nominal expressions. Consider the contrast between the following two examples:

(7) a. ?Der Rentner Otto Meier ist ein Schüler mit Bestnoten.
'the pensioner Otto Meier is a pupil with top grades'

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in the results. Occurrences with meanings not relevant here, e.g., *black hole* as metaphor for depression, were excluded from the data.

[14] The frequency class was taken from Wortschatz corpus (wortschatz.uni-leipzig.de).

[15] In all cases, quotes were around the entire noun phrase, cf. footnote 12.

b. Der Rentner Otto Meier ist ein Bestnotenschüler.
'the pensioner Otto Meier is a top_grade_pupil'

The copula-predicative constructions in (7) imply a dissociation between the temporal anchoring of the subject entity (*pensioner*) and the temporal anchoring of the nominal in the predicative (*pupil*): Normally, being a pensioner is temporally distinct from being a pupil. The examples illustrate a noticeable contrast between phrases and compounds in their ability to enter such a construction in the present tense.[16] Rapp (2014) has argued for a temporal dissociation of this type to be viable only if the nominal predicative has a specific labelling function and, hence, is temporally not dependent on the subject. According to Rapp, this explains the contrast between "label nouns" and participial predicatives in this environment, as is illustrated in (8), where only the former, as products of word-formation, have taken on a labelling status:

(8) a. Mein Arbeitskollege ist ein Flüchtling aus dem Tschad.
'my colleague is a refugee from Chad'
b. ??Mein Arbeitskollege ist ein Flüchtender aus dem Tschad.
'my colleague is a flee-PARTICIPLE from Chad'

Rapp's argument is that label nouns like *Flüchtling* ('refugee') can denote a property of an individual by means of the specific situation the individual has been involved in even if the situation itself does no longer hold. In contrast, a present participle form is always temporally dependent on some other constituent, which explains the oddity of ((8)a) on grounds of the mismatch between the temporal anchoring of the two nominals involved. Crucially, the same logic can be applied to the examples in (7) above: The phrasal complex *Schüler mit Bestnoten* ('pupil with top grades') – in contrast to the compound *Bestnotenschüler* ('top_grade_pupil') – does apparently not represent a suitable label to signify a permanent property.

In this chapter, we have collected evidence in support of the assumption that novel word-formation products are prone to accomplish the naming function of the mental lexicon in German. The comparisons revealed that a newly formed compound expression is indeed better compatible with a name-sensitive context than its phrasal counterpart, e.g., *Rotdach* ('red_roof') – *rotes Dach* ('red roof') or *Bestnotenschüler* ('top_grade_pupil') – *Schüler mit Bestnoten* ('pupil with top grades'). So far, we have understood naming as labelling, i.e. as providing linguistic material to function as a sign for a lexical concept. In the following chapter, we will approach the question if the naming affinity of word-formation products is also prevalent in the domain of kind reference.

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[16] Note that both *Schüler mit Bestnoten* and *Bestnotenschüler* are felicitous in the construction if it is in past tense.

3.1.2 Naming and reference to kinds

Are word-formation products predisposed to function as names for kinds?[17] A kind is defined as a conceptual category in an ontological taxonomy, cf., among others, Krifka et al. (1995), Mueller-Reichau (2011), and names for kinds have, in this context, been associated with a classifying function, cf. also Gunkel & Zifonun (2009). A kind can be characterized as a conceptual grouping of objects which have certain properties in common and which is thus not perceived as an arbitrary collection of individuals. In endocentric compounds, a classifying modifier is, by virtue of the semantic relation holding between modifier and head, associated with a subset of the extension of the head noun, as, e.g., *hand bag* denotes a subset of the extension of the noun *bag*.

A classic test for kind reference employs characterizing sentences. With them, a definite noun phrase which cannot refer to an (established) kind is blocked, see Carlson (1977) via Krifka et al. (1995: 11), cf. Schlücker (2014: 192ff.) also for discussion. Observe the following contrast:

(9) a. The Coke bottle has a narrow neck.
b. ??The green bottle has a narrow neck.

The contrast can be traced back to the long-established understanding that characterizing sentences, as constructions that express regularities about specimen of a kind, see Pelletier (2006), presuppose a firm generalization across a larger set of objects. The set can be referred to in the same way an individual object can be referred to – hence the definite article, see Carlson (1991), Gunkel & Zifonun (2009), Krifka et al. (1995). This requirement is fulfilled by *Coke bottle* as it represents a well-established type of bottle, in contrast to *green bottle*. Bücking (2010) observes contrasts between phrases and compounds in their ability to enter kind-sensitive constructions, where it is the latter that proves to accommodate the necessary kind interpretation more easily. Consider the following examples,[18] involving the kind predicate *to be developed*:

(10) a. Das ?rote Dach / Rotdach wurde in Belgien entwickelt.
'the red roof / red_roof was in Belgium developed'

The example in (10) demonstrates that the compound expression can adopt the kind interpretation required here without difficulty, in contrast to its phrasal counterpart. The insight is compatible with observations from a cognitive perspective also. Prasada et al. (2012) have argued on grounds of experimental

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[17] The question if names (excluding proper names) in fact always refer to kinds, including ad hoc kinds, must be left open in the current paper.

[18] The example in (10) is my own.

data for a correlation to exist between linguistic form and category representation such that compound nouns, in contrast to phrasal expressions, map onto kind representations.

A second observation as to whether A-N compounds are inclined to represent kind names comes from coordination environments. Note that in coordinating constructions, a crossing between descriptive and classifying modification is blocked, cf. **impressive and white sharks*, cf. Booij (2010: 185f). A kind-based account for the effect implies that a classifying modifier like *white* as in *white sharks* relates to a classificatory interpretation of the compound and, thus, cannot be combined with a non-kind-denoting, descriptive modifier like *impressive*. Crucially, the effect does not depend on the lexicalization of the expression as we can observe parallel contrasts with newly formed compounds also. Consider the example of (non-existent) *Großkiefer* ('big_pine') in the coordinating construction in ((11)a).

(11) Der Förster erfasste die Zahl an …
'the ranger counted the number of'

a. ??brandgeschädigten und Großkiefern im Wald.
'fire-damaged and big_pines in the forest'

b. brandgeschädigten und gesunden Kiefern im Wald.
'fire-damaged and intact trees in the forest'

c. Kanarischen und Großkiefern im Wald.
'canarian and big_pines in the forest'

The unacceptability in ((11)a) can be explained if we assume for the novel A-N compound *Großkiefer* to have already adopted a kind interpretation. The compound is thus unable to enter a coordination with the descriptive modifier *brandgeschädigt* (*fire-damaged*). Following the same logic, ((11)b) is felicitous because both modifiers promote a descriptive interpretation, just as ((11)c) is acceptable due to a matching interpretation of the two modifiers, i.e. *kanarische* and *groß-*, in this case both referring to kinds of pines.

A third type of kind-sensitive environment involves the kind-pertaining particle *an sich* ('on REFL', *per se*), used in postnominal position, as well as kind-sensitive adjectives like *typisch* ('typical') or *klassisch* ('classic'), both also producing acceptability contrasts between phrases and compounds.

(12) a. Der ?leichte Topf / Leichttopf an sich ist kostengünstig in der Produktion.
'the light pot / light_pot per se is cost-efficient in production'

b. Eine typische ?hohe Lampe / Hochlampe benötigt keinen Überspannungschutz.
'a typical tall lamp / tall_lamp does not require overvoltage protection'

The contrasts demonstrated in the characterizing sentences in (12) can again be traced back to the compounds' affinity to establish expressions for kinds and, in particular, to the specific composition of a kind as an ontological notion. For the explanation, recall that the meaning of any kind expression *X* comprises the totality *Z* of all objects contained in the extension of the concept of *X*:

(13) $[[\ X^{\text{KIND}}\ ]] = Z$
$Z = \{x : x \in Z\}$

A kind expression relates to a generalization over an appropriate number of individual instances of the kind and, therefore, the respective set has to contain a minimum number of elements, exemplified by *p*, *q*, and *r* in (14) below. Importantly, the predicate *typisch* denotes a function that ranges over a prototypical instantiation[19] – let this be *p* – of the elements contained in the extension of the argument of *typisch*:

(14) $Z = \{p, q, r \ldots\}$
$\lambda x\ [\text{TYPICAL}\ (x)]\ (p)$

The oddity of *hohe Lampe* ('high lamp') in the context of *typisch*, as illustrated in ((12)b), can now be accounted for by virtue of the fact that a phrasal expression of this kind (typically) represents an object description, which is not based on a generalization over several instances of the referent. Therefore, no prototypical, i.e. "typical" instantiation exists for the phrasal referent. Rather than that of a kind, *hohe Lampe* receives a canonical intersective interpretation,[20] with the only restriction for the intersection not to be empty:

(15) $hohe_{\text{A}}\ Lampe_{\text{N}}$ ('high lamp')
$[[\ \text{A}\ ]] \cap [[\ \text{N}\ ]]$
$\{x : x \text{ is } A \text{ for an } N\}$

Notice, in this context, that a kind name involving a compound expression like *Hochlampe*, in contrast to its phrasal counterpart, supports a subsective interpretation only and always stands in a hyponymic relation to the head noun:

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[19] The statistical nature of prototypicality and its link to the concept of normality is described in Schurz (2001). See also Prasada & Dillingham (2009) for an elaboration of the notion of typicality and how it relates to principled connections between the type of an object and its properties.

[20] I am following the established view here that dimensional adjectives like *hoch* ('high') are intersective and involve an additional variable coding a comparison class. For details, see, among others, Bierwisch (1989), Kennedy and McNally (2005).

(16) *Hochlampe*$_{AN}$ ('high_lamp')
[[AN]] $\subseteq$ [[N]]
{x : x is a kind of N associated with A}

Expressions like *typisch* and *an sich* figure in sentential contexts involving intensional attributes, i.e. predicates relating to the semantic content of the modified noun. In many cases, *an sich* can be used on a par with modifiers like *in seiner Natur* ('in its nature'):

(17) Der Damaltiner (an sich) ist (in seiner Natur) familienfreundlich.
'the dalmatian (per se) is family-friendly (in its nature)'

With this characteristic in mind, it follows naturally that, just like *typisch*, *an sich* (in the sense intended here)[21] also calls for a kind interpretation of the modified nominal expression. Thus, as is illustrated in (18), *an sich* is incompatible with particularizing sentences as they do not take on a kind interpretation, Crucially, a parallel reasoning can be used to explain the oddity of the phrasal expression in ((12)a) above.

(18) Der Damaltiner ($^{\#}$an sich) ist erst zwölf Wochen alt.
'the dalmatian ($^{\#}$per se) is only twelve weeks old'

As a final observation in this context, let us have a brief look at constructions containing the kind-sensitive demonstrative *so*. In constructions like in (19), it has a deictic function, which expresses a similarity relation, see Umbach & Gust (2014).[22] In the example, it presupposes a similarity between a particular instance of a bike, accessible in the situational context, and a bike Max wishes to own:

(19) Só ein schnelles Rad besäße Max auch gern.
'such a speedy bike Max would also like to own'

In its default interpretation, *so* is used ad-adjectivally and relates to a particular degree on a velocity scale. Focal stress falls on *so*[23] and the sentence can be paraphrased by *Ein so* / *solch schnelles Rad besäße Max auch gern* ('a such

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[21] *An sich* can also be used to express a certain qualification w.r.t., e.g., the validity of a characteristic trait of the nominal referent: *Anna ist an sich ein fröhliches Kind, aber seit einiger zieht sie sich immer mehr zurück* ('Anna is per se a happy child but she has been withdrawing more and more lately'). This usage will not be discussed in the current paper.

[22] I wish to thank Carla Umbach for her input on this matter.

[23] In a second reading, which less prevalent, Max would like to own a speedy bike in general, as a particular kind of bike opposed to, say, the less sporty city bike. With this reading, focal stress is preferably realized on the adjective *schnell* ('speedy') and the article can cliticize onto *so*, cf. *So'n schnélles Rad besäße Max auch gern.*

speedy bike Max would also like to own'). Consider, now, the interpretational differences that arise with the compound counterpart:

(20) Só ein Schnellrad besäße Max auch gern.
'such a speedy_bike Max would also like to own'

With the compound, the ad-adjectival interpretation, in which the velocity scale is referred to with *so*, is no longer present. Instead, accented *so* takes on an adnominal function here and relates to a particular instantiation of the type of bike denoted by the compound, that is, to a particular sample of the type 'speedy bike'. *So*, according to Umbach & Gast (2014), involves references to an (ad hoc) kind, from which a similarity relation can be derived. Notice that this kind has to be a sub-kind (*A'* in (21)), standing in a hyponymic relation to a superordinate category (*A*):

(21) *so ein Schnellrad*$_i \rightarrow$ [[*Schnellrad*$_i^{\text{KIND-A'}}$]] $\subseteq$ [[*Schnellrad* $^{\text{KIND-A}}$]]

The interpretational contrast between phrase and compound in this construction can be explained on grounds of the fact that *so* does not have scope over the adjectival modifier of a compound. The modifier, as a non-head, is located below the word level and is not accessible for modification, which, in turn, induces the sub-kind interpretation of the construction.

In this chapter, we have examined a number of linguistic environments that involve kind-sensitive features as well as properties relating to the status of an expression as a concept's name. The general conclusion we can draw is that novel A-N compounds in German are indeed inclined to constitute labels for lexical concepts and represent kind names. As was observed, novel compounds accommodate a kind name reading easily and take on an interpretation deviating from the compositional basis. Note that it is not intended to imply here that phrases cannot figure as kind names – there are numerous phrasal names in German, cf. *Kleiner Tümmler* ('common porpoise'), *rote Karte* ('red card'), *grüner Tee* ('green tea'), all clearly referring to kinds of things. Rather, the reasoning pursued here holds that a semantically transparent modifier in a phrasal complex is interpreted as descriptive per default, in contrast to the compound counterpart, whose modifier promotes a classificatory interpretation from the moment of the compound's coinage. And even though an adjectival modifier like *hoch* ('high') in *Hochlampe* ('high_lamp') may transparently refer to the property of the referent of being tall, this is not a necessary condition as *Hochlampe* could – in contrast to its phrasal counterpart – also refer to a special kind of lamp used, for instance, at high altitude. Semantic specialization of this type is can be linked to a saturation of the underspecified relation R, a typical characteristic of compound expressions as instances of lexical

modificaton.[24] In (22), this is illustrated through a localization relation *LOC* holding between the referent *x* of the head noun and the (implicit) referent *v* associated with the adjectival modifier:[25]

(22) *Hochlampe*
$\lambda x\ [\text{LAMP}\ (x) \wedge \text{HIGH}\ (v) \wedge \text{R}\ (x, v)]$
$\lambda x\ [\text{LAMP}\ (x) \wedge \text{HIGH}\ (v) \wedge \text{LOC}\ (x, v)]$

In the following chapter, we will address the question of why compounds instantly undergo semantic specialization. In essence, a pragmatic reasoning will be pursued, which holds that deviation from the canonical form of a complex construction implicates deviance from the compositional meaning of the complex.

4 Pragmatic implementation of markedness and semantic specialization

For a first illustration of why a pragmatic approach could be meaningful for an implementation of the specific semantic characteristics of novel compounds let us have a look at the following contrast:

(23) a. Das ist ein optimales Design, fast schon ein Optimaldesign.
'this is an optimal design almost an optimal_design'
b. ??Das ist ein Optimaldesign, fast schon ein optimales Design.
'this is an optimal_design almost an optimal design'

The examples contain A-N complexes that involve the adjective *optimal*, i.e. a multisyllabic Latin loan adjective (these are not blocked in German A-N compounds, cf. footnote (19)). For A-N complexes of this type, semantic equivalence has been claimed to hold between the phrasal expression and its compound counterpart, cf. Schlücker & Hüning (2009) for an analysis.

We will adhere to this basic insight here but note that the "equivalence assumption" is challenged by the acceptability contrast displayed in (23). The contrast can be explained on grounds of the implication of a scale involved in constructions containing *fast schon* ('almost'). *Fast*, as a scalar particle, signifies that some property of the modified element is not fully attained and that its complement still holds: *almost X* → *not X*, see Rotstein & Winter (2004), cf. also Rapp & von Stechow (1999). In this sense, the examples in (24) below express a scalar contrast between two properties, where the predicative introduced by *fast* in the second conjunct corresponds to the "stronger" property (see (24)a) or category ((24)b), respectively:

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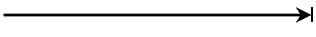
[24] See chapter 3 above.

[25] See Bücking (2010), Maienborn (2003) for details. For a portrayal of modification in compounds and its semantic formalization the reader is referred to Olsen (2012).

(24) a. This is very serious music, almost dramatic.
b. This is a very good thought, almost a theory.

In these constructions, the property expressed in the first conjunct relates to a point in the scale range that is left adjacent (though proximate, cf. Horn 2011) to the range associated with the predicative in the second conjunct.

The contrast established in ((23)a) is not rooted in a compositional difference between *optimales Design* and *Optimaldesign* in a sense that *Optimaldesign* denotes a somehow more optimal design in comparison to *optimales Design.* Rather, the scalar contrast involved in the example in ((23)a) is associated with an intensification of a category match, i.e. an intensification as to how established an expression is as a category of some kind, that is, as a kind name:

(25) 

The acceptability contrast between ((23)a) and ((23)b) indicates that, while their compositional meaning may be equivalent, the A-N compound is closer to the right edge of the scale, i.e. to the category name, than the A-N phrase.

How can the effect illustrated in (23) be modelled from a pragmatic perspective? For an answer, first, the observation is relevant that the meaning of *almost*, as outlined above, is linked to a scalar implicature, which the selection of the non-compound expression in the first conjunct gives rise to: The choice of the weaker expression *Z* (i.e. *optimales Design* in ((23)a) indicates that the stronger categorization *X* (*Optimaldesign*) on the scale in question does not hold in the context of the utterance, cf. Horn (1972):

(26) CATEGORY (*Z*) < CATEGORY (*X*)
almost $X \rightarrow Z \mid Z = \neg X$

At this point, the question remains of why a compound expression like *Optimaldesign* is perceived as a representative of a stronger category as compared to the phrasal counterpart. Observe, in this respect, that newly formed compounds have been argued to generate a communicative effect, which is rooted in the novelty of the expression. This novelty effect has been associated with a certain "markedness" of word-formation products, i.e. with the unusualness of an expression, which is perceived as non-conventionalized to a significant degree, see Barz (1998: 12ff.), cf. Olsen (1986).[26] The strength of a novelty effect is determined by a number of linguistic criteria relating, for example, to grammatical rule-boundedness of a novel compound or its paradigmaticity, see Barz (ibid.). Thus, a novel synthetic compound like *Gemäldebewerter* ('painting_estimator'), due to its grammatical regularity, will produce a relatively

[26] I wish to thank Sebastian Bücking for his input on this matter.

weak novelty effect; similar to a determinative compound nouns like *Erbsenkuchen* ('pea_cake'), whose head is a member of an established paradigm including compounds like *apple cake*, *plum cake*, *spinach cake* etc. Compounds giving rise to strong novelty effects – we typically find them in tabloid or advertisement language – are often grammatically deviant or strongly dependent on context, cf. *Totraser* ('dead_speedster'), *Herzlos-Vermieter* ('heartless_landlord'). Likewise, phrasal compounds like (*over-the-fence gossip*, *all-or-nothing principle*) have been characterized as particularly expressive, cf. Meibauer (2007).

From this perspective, it is crucial to observe that newly formed A-N compounds in German, although the pattern is clearly productive, see Fleischer & Barz (1995), create a considerably stronger novelty effect in comparison to N-N compounds, cf. *Flachkiste* ('flat_box') vs. *Fahrradkiste* ('bicycle_box'), *Weichkamm* ('soft_comb') vs. *Kamelhaarkamm* ('camel_hair_comb'). But through what exactly is the stronger effect for A-N compounds produced? Part of the answer lies in the compositional similarity between A-N phrases and A-N compounds: A N-N compound like *Fahrradkiste* ('bicycle_box') can, per default interpretation,[27] take on a variety of meanings (e.g., a box to be used on a bike's luggage carrier or a special box for bikes to be transported in), which distinctly differ from the compound realization in their grammatical appearance and require additional lexical material. In contrast, an A-N compound like *Flachkiste* ('flat_box') does per so not suggest a meaning deviating from the intersective interpretation of the phrase, i.e. *flache Kiste* ('flat box'). Rather, it is the choice of the A-N compound form and the deviation from the canonical phrasal realization, which forces the addressee to infer a deviating meaning – apparently a costly process, which is reflected in a comparatively strong novelty effect.

Viewed in this light, the interplay between choice of a grammatical form and interpretation, as outlined, can be implemented as a manner-based conflict resolution in the sense of Levinson's M-principle, see Levinson (2000: 136):

(27) M-principle: Indicate an abnormal, nonstereotypical situation by using marked expressions that contrast with those you would use to describe the corresponding normal, stereotypical situation.
Recipient's corollary: What is said in an abnormal way indicates an abnormal situation, or marked messages indicate marked situations.

As is known, the principle has been used to explain interpretational differences, for example, between lexicalized and periphrastic uses of verb meanings, cf. *The butler killed the Duchess* vs. *The butler caused the Duchess to*

[27] See, for example, Fanselow (1988) and Meyer (1993) for an analysis.

die, where the latter form receives an interpretation of a slow, indirect murdering, for instance, by poisoning. Also, morpho-syntactically more marked forms like the comparative as compared to the positive form as in *an older person* vs. *an old person*, where the latter is interpreted as having a higher age than the former, have been argued to give rise to M-based implicatures. Importantly, an expression is marked, according to Levinson, if it is morphologically complex and less lexicalized. Also on the form side are factors relating to the frequency of an expression as well as its grammatical neutralness. In turn, marked forms, by virtue of the M-principle, render meanings that are not present with the unmarked, default expression (ibid.: 137).

Against this background, the above observed novelty effect caused by the markedness of A-N compounds like *Flachkiste* ('flat_box'), *Rotdach* ('red_roof'), *Blauschachtel* ('blue_box') can be characterized as a trigger of an M-based implicature. As a word-formation product, the compound form requires a grammatical operation that departs from the canonical formation of complex expressions involving adjectival modification, i.e. from the phrasal expression. Thus, with the compound, a costlier form is chosen over of the default expression. Crucially, the selection of the marked, costlier form indicates a deviation from the meaning of the unmarked form. In (28), the "less costly than" relation is signified by means of an ordering relation:

(28) A form-meaning pair *A'* is re-interpreted (by virtue of the M-principle) if there is an alternative form-meaning pair *A* such that $A < A'$.

In this manner, the interpretation of a novel A-N compound as semantically specialized and as an expression of a kind name, as demonstrated in chapter 3 above, can be characterized as an instantiation of an M-based implicature elicited through the markedness of the expression. In the sense of Horn's Q-principle ('Make your contribution sufficient'), see Horn (1984), the A-N compound is inferred to be more informative than the A-N phrase, given that the phrasal expression does not encode more than the canonical compositional semantic interpretation.

There is an additional factor relevant here, relating to the difference in length of compound expressions. Levinson's I-principle ('Say no more than is required') states that an expression should be minimal and just efficient enough to achieve a certain communicative goal, see Levinson (2000: 114), cf. also Horn's (1984) R-principle. The principle produces, for instance, the implicature of a causal link to hold between two clauses like *Max is intelligent and Jim admires him*, despite the fact that it does not involve an explicit causal connector. As regards A-N compounds, however, there is in fact no particular reason, except for the absence of inflectional features, to assume an advantage for A-N compounds to be communicatively more efficient than A-N phrases.

That is also why A-N compounds are unexpected to occur as nonce expression with a meaning indented to match the compositional meaning of the phrasal counterpart. Consider the corresponding contrast between ((29)a), containing the felicitous N-N nonce form *Vortrags-Hemd* ('talk_shirt'), and the unacceptable nonce A-N compound *Weiß-Hemd* ('white_shirt') in ((29)b):

(29) a. Tom hat ein Hemd für den Vortrag und ein Hemd für die Party gekauft. Das Vortrags-Hemd hat einen Stehkragen.
'Tom bought a shirt for the talk and a shirt for the party. the talk_shirt has a stand-up collar'

b. Tom hat ein weißes Hemd und ein schwarzes Hemd gekauft. Das *Weiß-Hemd / weiße Hemd hat einen Stehkragen.
'Tom bought a white shirt and a black shirt. the white_shirt / white shirt has a stand-up collar'

From a structural point of view, both forms are equally instructive, hence the implausibility of an I-based, i.e. economy-driven selection of the compound over the phrasal form. Consequently, given the economic equivalence between the two forms, the choice of an A-N compound can again be argued to induce an M-based implicature and re-interpretation in the sense outlined above. Notice that, in contrast to A-N compounds, the selection of a N-N compound over a corresponding phrase, given the compound's shortness, does produce a communicative advantage. This benefit balances out the costs that come with the information left implicit in N-N compounds, regarding the specific semantic relation between the constituent parts, which is inferred on grounds of default reasoning as well as contextual information.

The rationale developed here is on a par – but with a reversed logic – with existing analyses of pragmatically induced interpretations of lexical items. For example, Levinson uses the M-principle, among other things, to explain interpretational differences between N-N compounds and corresponding phrasal expressions such that, for example, *box for matches* denotes some non-prototypical box used for matches – in contrast to *matchbox*, which embodies the default interpretation as a specific type of box, see Levinson (2000: 147).[28] The case is subject to the M-principle due to the fact that *matchbox* represents a conventionalized form and a deviation from it implicates a meaning deviating from the one of the conventionalized form. Meibauer (2014) analyzes rivalries between words and phrases of this kind as instances of "Poser blocking", i.e. as cases of blocking – out of the lexicon into syntax – under which words "beat", i.e. rule out phrases, cf. Embick & Marantz (2008), Poser (1992), Williams (2007). An example is the blocking of the phrasal expression *more smart* by virtue of the existence of the synthetic comparative *smarter*. Applying the

[28] I wish to thank Martin Schäfer for his input on that matter.

logic to compound-phrase pairs like *matchbox* vs. *box for matches* entails that the latter is ruled out by the former and can, thus, not denote the conventionalized meaning of the former. From this perspective, a newly formed A-N compound can be viewed as a "wannabe" conventionalized word form – considering that compound forms in German suggest themselves for lexicalization, as Motsch (2004: 380) argued. Accordingly, employing a Poser blocking approach, a novel compound like *Rotdach* ('red_roof') also rules out the meaning of the phrasal expression *rotes Dach* ('red roof') by virtue of its status as a unitary word form, and adopts the status of a kind name instead:

(30) A form-meaning pair *A'* (e.g. *Rotdach*) beats an alternative form-meaning pair *A* (*rotes Dach*) if *A'* < *A* w.r.t. conventionalization.

In sum, the approach proposed here rests on the central assumption that the formation of a novel A-N compound gives rise to an M-based implicature that leads to a re-interpretation of the complex into a kind name, with a specialized semantics. Thus, as a unitary lexical word form, the compound form takes on a restricted meaning, being more specific than the meaning of the phrasal counterpart, which, in turn, is blocked by the novel form.

The proposed analysis systematically accounts for the data observed in chapter 3. For example, the higher affinity for phrasal A-N expressions to be used with quotations marks in contexts containing name-selecting predicates like *sogenannt* ('so-called')[29] can now be accounted for by virtue of the fact that a phrasal expression, as an unmarked expression is, principally, interpreted in a compositional way, with no deviation from the canonical meaning. Thus, the status as a name and the corresponding deviation in meaning needs to be signaled by additional communicative means, i.e., for example, by means of quotes. Likewise, the observed unsuitability of phrasal expressions to occur in naming contexts can be explained on grounds of the unmarkedness of the expression, which does not suggest a particular naming function, conflicting, thus, with the selectional requirement of a name-selecting predicate. In this context, it can also be conjectured that the kind-pertaining modifier *an sich* ('on REFL', *per se*) that we have observed to be less compatible with phrasal expressions,[30] co-occurs, in fact, more often with phrases than with compounds, due to the lesser degree of conceptual-semantic pressure for the latter to promote its status as a kind expression.

The analysis implies that a semantic specialization in compounds is not produced after or by lexicalization – as is often claimed – but is operating "right from the beginning" and can be attributed to the effect of the pragmatic mechanism outlined above: If we choose an expression which differs from the

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[29] See the data in (6) in chapter 3.1.1 above.

[30] See the examples in (12) in chapter 3.1.2 above.

conventional one used for descriptions, it is likely that this expression does not deliver a compositionally constructed description but rather conveys a deviating, more specialized denotation. This reasoning is in line with the findings from Prasada et al. (2012), who show on grounds of experimental data that word-formation automatically involves a shift from a non-classifying to a kind representation. Alternative approaches often claim lexicalization to be the cause for semantic specialization in compounds, cf. Schlücker (2013), (2014), for further discussion see also Klos (2011) and Schlücker & Hüning (2009). As we have observed above, however, A-N compounds receive interpretations deviating from the one of their phrasal counterparts at the moment of their formation and promote a kind reading and / or a semantically specialized interpretation that, in turn, shows a tendency to be stored as lexicalized concept:

(31) Novelty effect → semantic specialization / kind reading → kind name / lexicalization

At this point, the question is still open as to the specific modelling implications of the proposed analysis. This issue will be addressed in the following chapter.

5 A parallel model for word-formation and syntax

The suggested analysis is best compatible with a grammar model which upholds a functional distinction between word-formation, i.e. morphology, and syntactic structure building. A functional separation between the two domains may not imply a separation with respect to structural aspects, though. Consider, however, how the functional differences between compounds and phrases are reflected in terms of structural configurations. For example, the hyponymic interpretation of the kind-sensitive demonstrative *so* in the context of an A-N compound, as in *So ein Schnellrad besäße Max auch gern* ('such a speedy_bike Max would also like to own'),[31] can be explained on grammatical-configurational grounds and, in particular, by the fact that *so* does not have scope over the adjectival modifier of a compound, that is, an element below the word level. Thus, an interpretation of *so* relating to the scale the adjectival element denotes, as in *So ein schnelles Rad* ('speedy bike') *besäße Max auch gern*, is blocked with the compound.

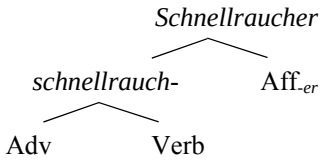
Likewise, semantic narrowings that can be observed with A-N complexes with a deverbal head are linked to a configurational rationale. It is a well-described fact, see Larson (1998) among others, that A-N phrases like *a beautiful dancer* have two readings: an intersective one (*somebody who is a dancer and who is beautiful*) and a non-intersective one (*somebody who dances beautifully*). A standard analysis implies that the event variable of the nominalized

[31] See (19) in chapter 3.1.2 above.

predicate (*dancer*) is accessible for adverbial modification, thus allowing the non-intersective interpretation also. Note that the non-intersective reading is only feasible when the verbal element is linked to a head position – with a corresponding V-*ing* + N compound like *dancing girl*, where the verbal element is in a non-head position, a non-intersective modification is blocked: *Beautiful dancing girl* can only denote a girl who is beautiful.

Reversely, with A-N compounds the non-intersective reading is the only one available. For example, *Schnellraucher* ('fast_smoker') can only denote somebody who smokes fast and not somebody who sprints fast, as is also – though not preferred – conceivable for the phrasal counterpart *schneller Raucher* ('fast smoker'). The explanation for the difference between deverbal A-N phrases and A-N compounds in this respect is a structural one. It again rests on the assumption that in the case of A-N compounds modification takes place below the word level and that at this level only the verbal element is accessible for modification and not the nominal element, which is provided by *-er* in the derivation only after the adverbial modification:

(32)



This type of semantic restriction for A-N compounds to take on only the non-intersective reading can thus be seen as a result of specialized word-formation configurations (and not of a general non-compositionality of compounds, as is, for example, suggested by Kamp & Partee 1995: 144).

The above illustrated grammatical-configurational differences between compound expressions and phrases support a modelling rationale in which a separation between morphological and syntactic structure building is preserved and in which pragmatic factors can be implemented to restrict the derivation in systematic ways. Hence, we will adhere to a non-integrative, lexicalist approach but implement a parallel architecture, as depicted in Ackema & Neeleman (2004), (2010), see chapter 1 also. A parallel design allows syntax and morphology to economically share a common recursive structure building apparatus (see ibid.: 210), but with specific grammatical restrictions holding in each domain[32] as well as distinct functional profiles. The suggested parallel design is in line with the reasoning proposed by Nóbrega & Miyagawa (2015), who view the recursive operation Merge to be responsible for hierarchical structure building in syntax as well as in words, and, thus, argue against the

[32] For a related view, see Jackendoff (2002: 128f).

view of compounds as living fossils from some protolanguage stage of the human species.

In languages like German, as we have argued in the current paper, the functional characteristics of the domain of word-formation are such that it generates linguistic forms which are typically mapped onto representations of kinds, privileged to be stored in the mental lexicon. The rationale developed above holds that syntactic structure building represents the default way of producing complex expressions to fulfill a descriptive, non-classifying function. A deviation from the canonical path of generating a complex expression, i.e. by producing a compound, implicates (via the M-principle) a deviation from the compositional meaning of the complex, which leads into semantic specialization as well as a re-interpretation into a kind name. Hence, the semantic shift to a kind representation correlates with the generation of a morphological product, as an expression to be lexicalized. Consider the following illustration:

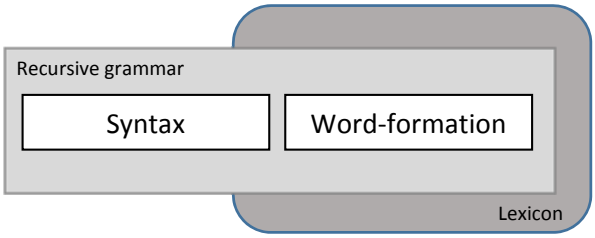


Figure 2: Parallel architecture

The model incorporates phrasal expressions, supposedly originating in syntax, which adopt a naming function, e.g., *blauer Fleck* ('blue spot', *bruise*), *Mann von Welt* ('man of world', *cosmopolitan*), *blauer Brief* ('blue letter', *pink slip*), *grüne Welle* ('green wave', *synchronized traffic light*), and which are, as such, stored in the mental lexicon. Note, however, that naming syntagmas of this type, even though they undoubtedly represent lexicalized names, often do not exhibit sub-kind readings in the strict sense: *Blauer Fleck* does not a denote particular kind of spots disparate from, say, pink spots, and, likewise, *blauer Brief* does not represent a particular kind of letter, in contrast to, e.g., *Großbrief* (*large letter*). The observation is in line with Prasada's et al. (2012) analysis, which holds that compound expressions enter hierarchies of kinds (e.g., *A polar bear is a kind of bear*) whereas phrasal expressions map onto class representations, supporting only class inclusion relations (*A white bear is a bear*). Thus, even though, in principle, both syntactic as well as morphological products may be lexicalized as names, only the latter show a preference to adopt a

function as a representative of a kind. Viewed in this light, cross-classifications of complex expressions that employ features like '+/– morphological' and '+/– lexical' to classify compounds, see Gaeta & Ricca (2009: 38),[33] should be extended to also include a 'potential kind' feature associated with morphological (but non-lexicalized) complex expressions like those in ((33)b):

(33) a. [+ morphological] [+ lexical]
Auslandsstudent ('abroad_student'), *Festplatte* ('hard_disc')
b. [+ morphological] [– lexical]
Entwickungslandsstudent (developing_country_student), *Bestnotenschüler* ('top_grade_pupil')
c. [– morphological] [+ lexical]
Mann von Welt ('man of world', *cosmopolitan*), *blauer Fleck* ('blue spot', *bruise*)
d. [– morphological] [– lexical]
Schüler mit Bestnoten ('pupil with top grades'), *rotes Dach* ('red roof')

The proposed implementation implies a modular separation between morphological and phrasal structure building in the lexicalist sense, see chapter 1, based on functional as well as on configurational grounds. Note that with its functional distribution seen in isolation and ignoring the proposed pragmatic rationale behind it, our analysis may also be compatible with non-modular, integrative models, which employ, for example, a construction-based reasoning, cf. Booij (2009). Here, interpretational differences between types of constructions are rooted in distinct default form-meaning pairings, each realizing distinct semantic features. The present account, however, is not compatible with non-rule-based, frequency-driven models, in which exemplar-based analogy is seen as the exclusive driving force behind the formation of novel lexical units, cf. Baayen, Kuperman & Bertram (2010), Schlücker & Plag (2011). In the latter models, a principled separation between phrasal and compound categories is denied – which we have found strong evidence against in the current paper. Furthermore, effects of frequency and analogy are self-evident and have long been explicated as relevant for the description of lexical productivity as well as in language processing in general. But while analogy-based accounts see frequency conditions as the cause for distinct types of expressions, the current study recognizes a categorial and creative rule system as the force behind the formation of lexical units – and their frequencies as its effect.

[33] See also Masini & Benigni (2012: 443f) for critical discussion.

6 Conclusion

The current paper puts the conservative assumption to the test that the word-formation tier in languages like German has privileged access to the mental lexicon – an assumption that has turned out to be correct. In this context, we investigated newly formed A-N compounds and analyzed their behavior w.r.t. realizing a labelling function, on the one hand, and to be mapped onto kind representations, on the other. We found evidence, for example, for A-N compounds to be better suitable for contexts containing name-selecting predicates. Regarding their pronounced status to represent kinds, A-N compounds were observed to be better compatible with kind-sensitive environments, including, for instance, the kind-pertaining particle *an sich* ('on REFL', *per se*).

For the theoretical implementation, we employed a pragmatic approach towards the formation of complex expressions and their interpretation. Specifically, a manner-based reasoning was utilized, along the lines of Levinson's M-principle, see Levinson (2000). The principle holds that deviation from the default way of expressing a complex linguistic unit implicates deviation from the compositional meaning of the unit. Here, the comparatively strong novelty effect that A-N compounds give rise to plays a central role. The effect is form-based and, thus, triggers the M-based implicature for the compound expression to be semantically specialized and adopt a kind interpretation. Support for such an analysis comes from scale-sensitive environments involving A-N complexes, which are generally identical in meaning, e.g., *Optimaldesign* and *optimales Design*. These, however, turned out to realize, in fact, distinct conceptual-semantic functions such that the compound expression is located to the right of the phrasal counterpart on a category scale and, thus, was argued to represent the stronger category.

Regarding the architectural implications of the proposed analysis, we pursued a modular approach, with a lexicalist undertone, in which a separation between morphological and syntactic structure building is maintained. This view is based on the observed functional and conceptual differences between phrasal and compound expressions as well as on grammatical-configurational differences between the two categories. The rationale followed here led to the implementation of a parallel design for syntax and morphology, with both domains sharing a common structure building apparatus. The two grammatical domains are each subject to specific structural conditions and realize distinct semantic types – with word-formation to be inclined to realize concept names and, thus, operate the "short route" to the lexicon.

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