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Semantic non-transparency in the mental lexicon:
On the relation between word-formation and naming*

1 Introduction

The notion of *Eigentlichkeit* ('authenticity'), when approached from a perspective of language philosophy, is associated with the quality of linguistic entities of referring to things in the world in a truthful and a maximally transparent way, cf. Gardt (1995). Obviously, there are numerous expressions that do not seem to conduct themselves accordingly and display a rather "non-authentic", i.e., non-transparent behavior instead, like indirect and ironic speech acts or idiomatic expressions like *Cat got your tongue?* Not unexpectedly, though, such expressions – despite their apparent lack of transparency – have merits in their own right. These can often be explained on grounds of Grice's conversational maxims, see Grice (1975). For example, indirect speech acts, as is known, come to the benefit of adhering to the politeness maxims and a certain metaphorical characteristic is added in the denotation of idiomatic expressions. So, we can hypothesize a systematic correlation to be functioning between authenticity, on the one hand, and expressivity, on the other.

In the current paper, the interplay between these two factors is investigated in the domain of word-formation. In particular, I will focus on aspects of semantic compositionality and the supposed naming function of novel compounds and how these factors relate to the perceived novelty or "markedness" of novel compounds. For the analysis, we will concentrate on novel adjective-noun compounds (*Blauschachtel* 'blue_box', *Schmalmesser* 'slim_knife' etc.) with occasional glances at noun-noun compounds where relevant. We will start from a lexicalist perspective and the conventional assumption that word-formation is the preferred route for establishing a concept's name in German, put this assumption to several tests and prove it to be correct. In the second part of the paper, I will argue that a systematic relation holds between the markedness of an A-N compound and its interpretation as a kind name as well as its affinity to be lexicalized. Specifically, this relationship will be traced back to a pragmatic principle, which holds that deviance from a conventionalized form (that

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is, in our case, from a phrasal expression like *schmales Messer* ‘slim knife’) implies deviance from the meaning of this form – which, in turn, results in a re-interpretation as a kind name and in semantic specialization. Consequently, interpretation as kind name and semantic specialization in compounds will be characterized as the *cause* for potential lexicalization and not as its effect, as is often proposed in the literature. Some remarks about the compatibility of the proposed analysis to alternative, non-rule-based approaches (e.g., Construction Grammar) will conclude my paper.

2 Lexicon affinity of word-formation

Various researchers have argued for morphological products to be particularly prone to be stored in our mental lexicon, see, among others, Bauer (1988); Jespersen (1942); Motsch (2004). According to this view, the main task of word-formation in languages like German is to create lexical concepts, that is, *names* in the conceptual system, in opposition to syntactic complexes, whose primary function is often characterized as a *describing* one, see Downing (1977); Levi (1978). Naming, in this lexical sense, can be defined as a function that establishes a node in a conceptual-ontological taxonomy, cf. Booij (2010: 169) and compounds, as products of word-formation, realize this function by creating a taxonomic subcategory, see Pörings & Schmitz (1999: 62f.). However, the link between word-formation and naming is by no means exclusive and one may argue for it to be a preference rather than a strictly categorical rule, considering the significant number of phrasal entities which clearly name permanent lexical concepts as well, like *grüner Tee* (‘green tea’) or *Mann von Welt* (‘man of world’, *cosmopolitan*). These phrasal names – sometimes also referred to as “loose compounds” or “fixed expressions”, see Booij (2010: 171) among others – are undoubtedly an integral part of our lexical inventory, even though they have occasionally been argued to be less productive than “real” compounds, see Klos (2011: 296).

In view of phrasal names, can we adhere at all to the above-expressed position that morphological products are better disposed to lexicalize names? It is interesting to note in this context that novel compounds like *Blauschachtel* (‘blue_box’), an adjective-noun compound, seem to promote an interpretation without further ado that deviates from the strictly compositional one underlying the corresponding phrasal complex *blaue Schachtel* (‘blue box’). *Blauschachtel*, from the moment of its formation, can denote a (kind of) box for, say, certain blue things to be stored in – a reading which the corresponding phrase cannot adopt as easily as it supports the compositional (i.e., intersective) interpretation only. Now the question is how we can explain this semantic “shift” in compounds. Is the compounds’ tendency to semantic non-compositionality

in some way correlated to the alleged naming function of compounds? And what is the exact nature of the link between naming, semantic transparency and word-formation?

2.1 Compound versus phrase: Structural and semantic differences

In this chapter we will examine linguistic differences between compounds and phrases from the background of a lexicalist perspective, which upholds a modular separation between morphological and phrasal structure building,¹ see, among others, Di Sciullo & Williams (1987); Lieber (2004); Scalise & Guevara (2005), cf. Härtl (2013a), (2013b) for discussion. Foremost, I consider this separation to be a *functional* one, thus assuming that morphological and phrasal constructions display significant differences in their conceptual-semantic function.

It is a hotly debated question if *structural* differences between compounds and phrases call for a modular architecture or not, see, for example, Kremers (2011) for a critical discussion. In this context often the *Principle of lexical integrity* is consulted, see Anderson (1992); Lapointe (1980), which holds that syntactic operations do not have access to word-internal structure, cf. also Selkirk (1982). For example, the principle can be used to explain why *one*-coordination is felicitous with phrases but ungrammatical with compounds, cf. **Max is a truck driver and Jim is a car one*, in which the pronominal *one* targets the head of a compound, i.e., an element below the word-level. However, the principle is somehow “porous”, taking into account the various infringements we can observe. An example is the pronominal reference to a compound’s non-head element, which is fairly acceptable if the pronoun is (information structurally) part of a background domain, as in *Tom is a Porsche_i driver and his son wants to own one_i, too*, cf. Lieber (1992: 130).² Furthermore, certain endocentric compounds – specifically, ones with an attributive modifier, as argued by Giegerich (2004) – do enter the *one*-coordination effortlessly, cf. *a plastic chair and a baby one*. Also, in certain cases an argument of a non-head can be attached word-externally, cf. *Fahrgemeinschaft nach Italien* (‘ride_community to Italy’, *ride sharing to Italy*), where *nach Italien* satisfies the goal argument of *fahr-*, see Härtl (2013a) for a discussion.

But the majority of cases like these can be easily explained on pragmatic grounds and without having to give up the lexical integrity principle, see also

¹ I will return to this matter and briefly consider modeling implications in chapter 5.

² Note that the construction is considerably less acceptable if the anaphor is part of a focus domain, cf. *What did the Porsche_i driver prefer?* ??*He preferred one_i with a GPS system*, cf. Ward, Sproat & McKoon (1991) for an information-structural analysis of word-internal antecedents.

Egg (2013). In this context, Booij's distinction between *access* to and *interruption* of word-internal structures has turned out to be useful, see Booij (2009), where, as he argues, it is actually the latter operation but not the former which is ruled out by the principle. It has also been argued that access to word-internal elements of compound structures relates systematically to their semantic transparency and degree of lexicalization, see Schäfer (2013) among others. For example, the unacceptability of *??a hárd drive and a fragile one* can be ascribed to the non-transparent semantics of *hard* in this case, which blocks a coordination with a corresponding compositional adjectival element, i.e., *fragile*. Note that the construction improves considerably when the second conjunct contains a modifier from the same ontological domain as the modifier in the first conjunct: *a hard drive and a flash one*.

With a similar explanation, the crossing between descriptive and classifying modifiers is blocked in coordinating constructions, cf. **aggressive and white sharks*, see Booij (2010: 185f.). A conceptually based account for this effect implies that a classifying modifier like *white* in *white sharks* relates to an interpretation of the compound as a classificatory kind³ expression and, thus, cannot be combined with a non-kind-denoting, descriptive modifier like *aggressive*. Crucially, the effect does not necessarily depend on the lexicalization of the expression as we can observe similar contrasts with newly formed compounds also, see the example of *Großkiefer* ('big_pine') in ((1)a):

- (1) a. *??beeindruckende und Großkiefern*
'impressive and big_pines'
- b. *beeindruckende und große Kiefern*
'impressive and big pines'
- c. *Kanarische und Großkiefern*
'canarian and big_pines'

The unacceptability in ((1)a) can be explained on the assumption that a novel adjective-noun compound like *Großkiefer* has adopted a kind interpretation at the moment of its formation and is thus incompatible with a coordination construction involving a descriptive modifier like *beeindruckend*. Accordingly, ((1)b) is felicitous because both modifiers promote a descriptive interpretation, just as ((1)c) is acceptable due to a corresponding interpretation of the two modifiers, i.e., *kanarische* and *groß-*, in this case both referring to kinds of pines.

To conclude, we have reason to assume that certain structural configurations, as they are associated with, e.g., lexical integrity or coordination, reflect the particular status of compounds as linguistic units. Furthermore, compounds

³ We define a kind as a conceptual category in an ontological taxonomy, cf. Krifka et al. (1995), Mueller-Reichau (2010).

can be hypothesized to be able to express a name for a kind “right from the beginning”. I am following Motsch (2004) here, who argues that compounds in German always function as “suggestions” for lexicalization (ibid.: 380), and Barz (1996), who maintains for compounds to lose descriptive potential with their formation (ibid.: 143). In the next section I will put this assumption to the test and examine a number of linguistic configurations which are sensitive to the pronounced naming function of compounds as well as to shifts of semantic compositionality in compounds.

2.2 *Some linguistic reflexes of naming*

A number of lexical items indicate the status of an expression as a kind name including, for example, name-selecting predicates, which involve a form of the predicate *nenn-* (‘call’). They indeed produce a clear contrast between phrases and compounds, which can be linked to the particular naming function of the latter, cf. Bücking (2009); Schlücker & Hüning (2009):

- (2) a. Man nennt so etwas ein ^{??}rotes Dach / Rotdach.
‘one calls this a red roof / red_roof’
- b. eine sogenannte ^{??}warme Decke / Warmdecke
‘a so-called warm blanket / warm_blanket’

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

A pragmatically oriented explanation for the contrasts in (2) implies that the phrases used in the examples merely *describe* an object rather than they denote a particular *kind*. And, crucially, *nenn-*contexts require a certain worthiness of the name to be identified as such. That is why the phrasal nominals in (2) are just as odd as, say, ^{??}*Man nennt so etwas ein Haus* (*One calls this a house*), with the explanation that calling a house *house* is a commonly accepted convention not worth to be pointed out. In general, *nenn-*contexts appear to be sensitive to degrees of conventionalization: the more conventionalized an expression, the less compatible it is with a *nenn-*context.⁴ This means, to turn the argument on its head, that actually any “unconventional” expression should harmonize with a *nenn-*context, including, of course, phrasal expressions:

⁴ This correlation is also the foundation for the running gag used in the BBC sitcom ‘Miranda’, where the mother of the main character recurrently displays a verbal quirk to embed common everyday nouns in *nenn-*contexts, as in *She has such an annoying – what I call – laughter*.

- (3) eine sogenannte weiche Flamme⁵
 ‘a so-called soft flame’

However, it is important to note that coercing a semantically *transparent* phrase like *rotes Dach* (‘red roof’) into functioning as a name and making it compatible with *sogenannt-* involves somehow more communicative effort in comparison to compounds. Semantically fully transparent phrases call for an additional marking here, like (air) quotes or specific prosody, to indicate the presence of a naming function whereas this is not required with the corresponding compounds:⁶

- (4) a. ein sogenannter „heißer Tag“ / Heißtag
 ‘a so-called “hot day” / hot_day’
 b. sogenannter „starker Regen“ / Starkregen
 ‘so-called “strong rain” / strong_rain’
 c. ein sogenannter „langer Marsch“ / Langmarsch
 ‘a so-called “long hike” / long_hike’

The above-illustrated difference between phrases and compounds can be ascribed to the preference of phrases to be interpreted, in the first instance, as object descriptions rather than particular object names, see Klos (2011: 296).

Strong evidence for the affinity of novel compound forms to figure as classificatory kind names comes from linguistic configurations which indicate kind reference per se. A standard test for kind reference involves kind-selecting predicates like *to be extinct/invented/developed*, cf. Gunkel & Zifonun (2009), Krifka et al. (1995), and, according to the above assumption, we should expect compounds to be better compatible with these kind-sensitive environments. Bücking (2010) indeed observes corresponding contrasts between phrases and compounds, where it is the latter type that proves to accommodate a kind interpretation more easily. Consider the following examples:

- (5) a. Das ??rote Dach / Rotdach wurde in Belgien entwickelt.
 ‘the red roof / red_roof was in Belgium developed’
 b. Die ??schwarze Hyäne / Schwarzhyäne ist ausgestorben.
 ‘the black hyena / black_hyena is extinct’

Other types of kind-sensitive expressions include the kind promoting particle *an sich* (‘on REFL’, *per se*), used in postnominal position, as well as kind re-

⁵ *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: 15 August, 2013.

⁶ The pragmatic implications of the correlation between naming and semantic transparency will be discussed in chapter 3.

ferring adjectives like *typisch* (*typical*), both also producing acceptability contrasts between phrases and compounds, which can again be attributed to the easily adopted kind interpretation of the latter:

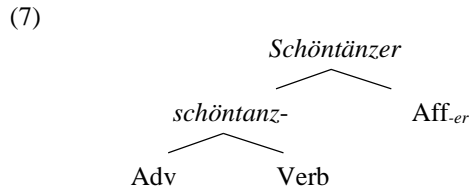
- (6) a. der Auslandsstudent / ??Student aus dem Ausland an sich
‘the foreign_country_student / student from abroad per se’
- b. der typische Auslandsstudent / ??Student aus dem Ausland
‘the typical foreign_country_student / student from abroad’

The above contrasts illustrate the affinity of compounds to accept a kind interpretation. Note that it is not intended to imply here that phrases cannot figure as kind names – there are numerous phrasal names, cf. *Kleiner Tümmler* (‘common porpoise’), *rote Karte* (‘red card’), *grüner Tee* (‘green tea’), all clearly referring to kinds of things. Rather, it is intended to imply that the modifier in a phrasal complex is initially and canonically interpreted as descriptive, in contrast to novel compounds whose modifier promotes a classifying interpretation from the moment of the compound’s coinage.

A third type of evidence linked to the specific naming function of compounds is connected to semantic shifts or specializations compounds are subject to. As has already been noted, e.g., novel adjective-noun compounds such as *Blauschachtel* (‘blue_box’) can denote compositionally deviating meanings, like that of a box used for storing certain blue things.⁷ A compositional narrowing can be observed with A-N complexes whose head is deverbal. 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 predicate DANCE is accessible to adverbial modification thus allowing the non-intersective interpretation (see *ibid.*). Note that the non-intersective reading is only feasible when the verbal element is linked to a head position – with a corresponding V-ing + noun compound like *dancing girl*, where the verbal element is in a non-head position, the non-intersective modification is blocked: *a 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: a *Schöntänzer* (‘beautiful_dancer’) can only denote somebody who dances beautifully just as a *Schnellessen* (‘fast_eater’) is somebody who eats

⁷ See, for example, Libben’s concept of what he calls *morphological transcendence* for an analysis of semantic shifts of constituents in compounds, see Libben (2010) and also Olsen (2012) for an application on German data. For a discussion on compositionality in compounds see also Klos (2011).

hastily and not somebody who moves fast.⁸ How can we explain this contrast between A-N phrases and A-N compounds? One explanation is that in the case of A-N compounds the modification takes place “below” the word level and that at this level only the verbal element is available for modification and not the nominal element, which is provided in the derivation with *-er* only *after* the adverbial modification:



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

Another type of shift in semantic compositionality, which is directly connected to the naming function of compounds, can be observed in the following examples:

- (8) a. ??Nur einer der Rentner ist ein Schüler mit Bestnoten.
 ‘only one of the pensioners is a pupil with top grades’
 b. Nur einer der Rentner ist ein Bestnotenschüler.
 ‘only one of the pensioners is a top_grades_pupil’

The copula-predicative constructions in (8) 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 contrast between phrases and compounds in their ability to enter such a construction in the present tense.⁹ Rapp (2013) has argued that a temporal dissociation of this type is only viable if the nominal predicative has a specific labelling function, i.e., functions as a name, and is therefore not temporally dependent on the subject. According to Rapp, this explains the contrast between participial predicatives and “label nouns”, as illustrated in (9), where the latter are the product of a morpho-lexical derivation (see *ibid.*):

⁸ A corresponding English example is *sweet-talker*, which also allows only the non-intersective reading, in contrast to *sweet talker*.

⁹ Note that both *Schüler mit Bestnoten* and *Bestnotenschüler* are felicitous in the construction if it is in past tense.

- (9) 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 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 sister constituent, which explains the oddity of ((9)b) 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 (8) above: the phrasal complex *Schüler mit Bestnoten* (‘pupil with top grades’) – in contrast to the compound *Bestnotenschüler* (‘top_grades_pupil’) – does not represent a suitable label to denote a permanent property. The effect can be observed with other “temporal” nouns as well, e.g., *child*, which also denote temporally limited properties and where compounding again renders a temporal dissociation between subject and predicative possible, cf. *Nur einer der Professoren ist ein ??Kind / ein Kindergarten-Kind* (‘only one of the professors is a kid / a kindergarten kid’).

To summarize: In this chapter we have examined a number of linguistic configurations which are sensitive to the particular naming function of compounds. First, novel compounds have been found to combine with *nenn*-contexts more easily (see (2) above), which can be explained on grounds of their low degree of conventionalization. We will elaborate on this correlation in the next chapter. Further, we have observed shifts in semantic compositionality of compounds as they relate to (i) the barring of the intersective interpretation of A-N compounds like *Schöntänzer* (‘beautiful_dancer’) and (ii) the labelling function of compounds like *Bestnotenschüler* (‘top_grade_pupil’), which include a temporally bound head-noun, whose realization in a compound (vs. phrase) has been observed to license the temporal dissociation between subject and predicative in a present tense copulative-predicative construction, see (8) above.

3 Novelty in word-formation: a pragmatic implementation

In this chapter we will elaborate on the hypothesis that the lexicon affinity of word-formation products can be explained on the basis of the *novelty effect* they produce. In particular, I will argue that the novelty of (A-N) compounds triggers a compositionally shifted interpretation, thus giving rise to a kind name reading, which, in turn, is prone to be lexicalized.

3.1 Novelty and markedness

In the literature, the novelty effect in compounding has been related to a certain “markedness” of word-formation products, i.e., to the unusualness of an expression, which is perceived as non-conventionalized to a significant degree, see Barz (1998: 12ff.), cf. Olsen (1986). 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 *Datenaufschreiber* (‘data_down_writer’, *data recorder*), due to its grammatical regularity, will not produce a strong novelty effect, just like a compound like *Spinatkuchen* (‘spinach_cake’), whose head is a member of an established paradigm including compound nouns like *apple cake*, *plum cake* etc. Compounds giving rise to a stronger novelty effect – we typically find them in tabloid or advertisement language – are often grammatically deviant and / 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).

Noticeably, adjective-noun compounds, although clearly productive,¹⁰ seem to create significantly stronger novelty effects in German, compared to noun-noun compounds, cf. *Flachkiste* (‘flat_box’), *Weichkamm* (‘soft_comb’) versus *Fahrradkiste* (‘bicycle_box’), *Kamelhaarkamm* (‘camel_hair_comb’).¹¹ We have reason to believe that the novelty effect associated with A-N compounds is also reflected cognitively: In a picture label memorization study reported by Kotowski, Böer & Härtl (2013), stronger memorization effects have been observed for novel A-N compounds in comparison to analogous A-N phrases. Furthermore, in another study, a self-paced reading time experiment, we presented critical items in sentential contexts and controlled the items for semantic markedness, that is, novel compounds and phrases were used that were equally non-transparent, e.g., *Weitlehrer* (‘wide_teacher’) and *tiefer Arzt* (‘deep_doctor’), and compared with fully transparent items, e.g.,

¹⁰ Multisyllabic adjectives are blocked in German A-N compounds, cf. *Gelbton* (‘yellow_hue’) versus **Gelblichton* (‘yellowish_hue’), see Hüning (2010: 5). Exceptions are loans ending in *-al*, *-iv*, as well as adjectives like *billig-*, *fertig-*, *extrem-* etc.

¹¹ We can explain this contrast on grounds of the deviance in compositionality compounds suggests – which, however, is not likely to be intended in the above A-N compounds: *Flachkiste* is unlikely to denote anything else than the canonical adjective-noun combination *flache Kiste* (‘flat box’). We will come back to this point below.

Langläufer ('long_runner', *long distance runner*) and *starker Schmied* ('strong blacksmith'). The behavioral data suggest that non-transparent compounds require more computational costs than non-transparent phrases, in contrast to transparent phrases and compounds, which were equally easy to process (see *ibid.*). While an explanation for these results aiming at segmentation difficulties connected to unknown compound complexes cannot be excluded, we believe that the effect is indeed linked to the pronounced cognitive status of word-formation products. The effect was also observed in environments of implicit verb causality (in German), as in *Sue appreciates the knife because she / it ...*, where novel compounds like *Schmalmesser* ('slim_knife') in the stimulus position in contrast to corresponding phrases were found to increase causal attributions – indicated by the pronoun choice in the *because*-sentence – to the stimulus entity (see *ibid.*).

3.2 Novelty, semantic transparency and the conversational maxims

In the previous chapter we observed that novel A-N compounds create effects relating to novelty and linguistic markedness. But what exactly does the effect originate from? Part of the answer lies in the semantic compositionality of A-N complexes: Note that novel (or low-frequent) forms like *Schmalmesser* ('slim_knife'), *Flachkiste* ('flat_box') or *Weichkamm* ('soft_comb') do *not* suggest an interpretation which differs from the interpretation of the corresponding phrases, i.e., *schmales Messer*, *flache Kiste*, *weicher Kamm*. In both cases, with adjectives of this type, a subsecutive semantics will be the prevalent, self-evident reading for the modificational pattern:

$$(10) \quad \textit{schmal-A messer}_N \\ \parallel \textit{AN} \parallel \subseteq \parallel \textit{N} \parallel \\ \{x \mid x \text{ is } A \text{ as an } N\}$$

Now, let's recall the classic understanding that, in German, phrasal structure building represents the conventionalized way of conveying object descriptions, see chapter 2 above. Then, the usage of a compound like *Schmalmesser*, when used to *describe* some particular slim instance of a knife, will give rise to a flouting of the conversational maxims and, more precisely, the manner maxim, see Grice (1975): If *schmales Messer* is the conventional expression then using a grammatical alternative, i.e., the compound, will be perceived as atypical.¹²

¹² A classic example is the usage of *cause to die* instead of *kill* to signify an atypical *killing*-situation, which will allow interpretations of unintentional or indirect killing, cf. Fodor (1970).

On the recipient’s side, this perceived atypicalness can only be “repaired” under the assumption that the speaker adheres to the cooperation principle (‘Make your conversational contribution such as is required [...]’, see *ibid*: 45). This, in turn, leads into a re-interpretation of the compound form and the implicature that the expression carries a meaning deviating from the purely compositional one. To put it more directly: *Schmalmesser* cannot describe an individual instance of a knife as slim because the regular expression would be *schmales Messer* – so *Schmalmesser* must mean something else. As a result, the implicature of a classificatory interpretation is triggered, in which an (ad hoc) kind reading (a *Schmalmesser* is a kind of knife) is accommodated, often with a shifted semantic compositionality (a *Blauschachtel* ‘blue_box’ can be a box for blue things). This type of accommodation is particularly evident in predicational copular sentences of the type in (11):

- (11) Das ist ein schmales Messer / Schmalmesser.
 ‘this is a slim knife / slim_knife’

Predicational sentences express a property – denoted by the complement – of the subject entity, and we can see that in the case of the A-N phrase the property expression is preferably linked to an individual token, whereas the compound refers to a type of thing, i.e., a kind, which is in some way associated with the property expressed by the adjective:

- (12) *Schmalmesser*_{ANC}
 $\| AN \| \subseteq \| N \|$
 $\{x \mid x \text{ is a kind of } N \text{ associated with } A\}$

Although the adjectival modifier in *Schmalmesser* may indeed transparently refer to the property of being slim this is not a necessary condition. *Schmalmesser* can also refer to a special kind of knife used, for instance, in narrow openings. It is a well-described property of compounds to involve such an underspecified relation *R* between their constituent parts,¹³ cf., among others, Bücking (2010); Olsen (2012); Schlücker (2013), which are typically related on, e.g., functional, cf. *Schwarzlicht* (*black light*), or mereological grounds, cf. *Rotkehlchen* (*redbreast*). The analysis proposed here implies that a semantic specialization of this type is not triggered 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 principle outlined above: If we choose an expression which differs from the conventional one used for descriptions, it is likely that this expression does not deliver a compositionally constructed description but

¹³ For the above example: $\lambda x [\text{KNIFE}(x) \wedge \text{SLIM}(v) \wedge R(x, v)]$

rather conveys a deviating, more specialized denotation. Alternative approaches often claim lexicalization to be the cause for semantic specialization in compounds, cf. Schlücker (2013), for further discussion see also Klos (2011) and Schlücker & Hüning (2009). As we have observed above, however, (A-N) compounds can 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:

- (13) *Schmalmesser*_{ANC}
 Novelty effect → semantic specialization / kind reading →
 kind name / lexicalization

The assumption proposed here is that semantic specialization and kind reading in A-N compounds originate from their novelty and markedness. This raises the question if the same is also true for noun-noun compounds. A crucial difference between A-N compounds and N-N compounds is that the latter do not constitute minimal pairs with respective phrases, cf. *a fish knife* versus *a knife used for eating fish*. So, in a way, it is the very nature of a novel N-N compound to differ from a description and mean “something else”. Furthermore, as we have already observed above, N-N compounds give rise to a less pronounced novelty effect compared to A-N compounds. One way of explaining this could be that the formation of a N-N compound generates a structural benefit as compounds are communicatively more economic in comparison to phrases: The benefit connected to the compound’s brevity seems to even out the novelty effect.¹⁴

Structural benefit can also be used to explain why N-N compounds – although they, too, display a preference to denote (ad hoc) kind names, see chapter 2.2 above – are often occasional formations, which correspond to non-kind denoting “descriptions” rather than kinds. Occasional formations have been characterized as context-dependent, see, e.g., Donalies (2005); Peschel (2002), that tend to be not stored in the mental lexicon, cf. Downing’s famous *juice-chair* example or nonce compounds like *Freitagsentscheidung* (‘friday_decision’, *decision from last Friday*), *Rotraser* (‘red_speedster’, *somebody who crossed a red light at high speed*) etc. A speculation on why they are so abundant could again be that the communicative benefit they produce due to their brevity levels out the decrease in explicitness they come with. Note that A-N compounds, in contrast, do not produce a considerable structural benefit (nor do they, at least formally, display a decrease in explicitness), which could be seen as related to why they rarely denote mere object descriptions: a

¹⁴ For a discussion of the conflict between economy of expression and explicitness of expression see Štekauer et al. (2005).

Schalmesser ('slim_knife') will always denote a kind of knife and never refer to some particular occurrence of a knife that happens to be slim. In general, A-N compounds that involve color and dimensional adjectives and other subjective adjectives like *schlau* ('intelligent') as well as intensional adjectives like *alt* ('old', *former*) don't seem to be suited to function as "describers"; and the speculation I would like to suggest is that it is their lack of structural economy, which is responsible for this: A-N compounds simply have to mean something else than their phrasal counterparts.

In this context Schlücker & Hüning's (2009) observation is interesting about A-N compounds involving multisyllabic loan adjectives (which are not blocked in German A-N compounds, cf. footnote (10)) like *Sozialstruktur* ('social_structure') or *Extremlösung* ('extreme_solution') and for which the authors witness semantic equivalence between compound and phrasal realization, cf. *ein extremer Gedanke* ('an extreme thought') and *ein Extremgedanke*. The authors argue, however, that the choice of one form over the other is not coincidental and depends on certain formal and syntactic configurations (ibid.: 225f.). Besides, a first explorative data analysis we conducted confirms the kind / description opposition for these formations also.¹⁵ The opposition is also reflected in the following examples:

- (14) a. Das ist eine extreme Analyse, fast schon eine Extremanalyse.
'this is an extreme analysis almost an extreme_analysis'
b. ??Das ist eine Extremanalyse, fast schon eine extreme Analyse.
'this is an extreme_analysis almost an extreme analysis'

The acceptability contrast between ((14)a) and ((14)b) can be explained on grounds of a scalar implicature involved in constructions containing *fast schon* ('almost'). From a more general viewpoint, the scale involved in *fast-schon* constructions refers to a semantic intensification of some attribute, cf. ((15)a), or an intensification in the sense of how close an expression corresponds to an established, "stronger" category, cf. ((15)b):

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

In this sense, the scale involved in the felicitous example in (14) can be characterized as 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:

(16) *description* \longrightarrow *category*

¹⁵ This seems to prove true also for A-N compounds containing monosyllabic adjectives like *kurz* ('short') as in *kurzer Bericht* ('short report') versus *Kurzbericht* ('short_report'), which are otherwise relatively parallel in meaning as well.

As is typical of scalar implicatures, cf. Horn (1972), the choice of the weaker expression (*extreme Analyse* in ((14)a) indicates that the stronger classification (*Extremanalyse*) on the respective scale does not hold in the context of the corresponding utterance. The contrast in (14) suggests that, while their compositional meaning is formally 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.

Compounds containing loan adjectives like *extrem-* do not give rise to a pronounced novelty effect, they can be characterized as fully productive, in contrast to the above-discussed A-N compounds like *Schalmesser*.¹⁶ The pragmatic account developed above is based on the insight that deviance from a conventionalized construction leads to a novelty effect, which, in turn, causes semantic re-interpretation. This analysis is compatible with the assumption in Barz (1998: 14) that the strength of a novelty effect depends on how strongly the form stands in opposition to the recipient's knowledge. In the case of A-N combinations, speakers of German know that object descriptions are conveyed by means of phrases. Thus, an A-N compound strongly advocates its being not an object description, which, in turn, calls for the accommodation of a kind reading and / or semantic specialization. We can now formulate the following principle:

(17) *Principle of conformity to form*

If the form of a complex expression $A-B$ does not meet the grammatical conventions of expressing $\|AB\|$, $A-B$ does not entail the meaning of AB .

The principle predicts that, as outlined above, A-N compounds of the type *Schalmesser* ('slim_knife') cannot receive the same compositional interpretation as the phrase, i.e., the interpretation of an object description and will thus accommodate a kind reading.

Note that the accommodation of a kind reading in A-N compounds (and compounds in general) is subject to an additional constraint, which holds that the resulting kind has to be a "good" kind. An apparent example of a somewhat "bad" kind would be *Schwerkoffer* ('heavy_suitcase'), for which it is relatively hard to balance out the markedness effect and accommodate the interpretation of a kind. Observe that the creation of a kind presupposes a certain significance of the kind to exist and a particular purpose or usefulness of the corresponding ontological category in the world: For example, *Leichtziegel* ('light_brick', *lightweight brick*) denotes a type of brick used for insulation purposes and *Schwermetall*, as a folk notion, is typically connected with a number of toxic substances. While it should be easy to construct a kind concept for *Leichtkoffer* ('light_suitcase'), whose purpose is straightforward, the sense in a suitcase's

¹⁶ An elaboration of this difference has to be left to future research.

being heavy is more difficult to comprehend. This, however, does not mean that the form is completely blocked. For example, in the context of suitcase manufacturing or airplane loading the heaviness of suitcases is of course worth creating a specific category.

To sum up, in the current chapter we have worked out an explanation for the affinity of A-N compounds for kind readings as well as semantic specialization and focused on the criteria of novelty and markedness as a foundation for an analysis. I have argued that the novelty effect of A-N compounds is due to a pragmatic principle (*Principle of conformity to form*) and a flouting of the manner maxim, which, in turn, leads to a re-interpretation of the form as a kind and to semantic specialization. Kind reading and semantic specialization have been characterized as the cause for potential lexicalization and not as its effect. N-N compounds have been observed to give rise to a less pronounced novelty effect, with the explanation that they come with a higher structural benefit, which, in turn, accounts for their tendency to adopt, as ad-hoc formations, non-kind-denoting interpretations also. The strong preference of A-N compounds to accept kind interpretations only can also be witnessed with seemingly identical phrasal and compound forms containing modifiers like *extrem-*, which we have found evidence for to be placed on the right edge of a description-category name scale.

5 Conclusion and modelling implications

The current paper puts the classic assumption to a test that word-formation products, in comparison to phrasal ones, show a preference to adopt a naming function and take on an interpretation as classificatory kind expression. We have found positive evidence for this assumption by considering several linguistic configurations including coordination as well as kind-selecting predicates. Furthermore, we have investigated naming contexts, with which compounds proved to be better compatible in comparison to phrases. In addition, semantic narrowing, which is connected to the particular naming function of compounds, has been examined in the context of, e.g., copula-predicative constructions involving a temporal dissociation between the subject and the nominal in the predicative, cf. *Only one of the pensioners is a pupil*, and where a compound – due to its labelling function – proved to be more acceptable as a predicative.

While the fact that novel compound expressions lose parts of their descriptive potential at the moment of their formation and are interpreted as suggestion for lexicalization as a kind name is comparatively easy to observe, its exact theoretical explanation turns out to be more complicated. The account I have

proposed – at least with respect to adjective-noun compounds – is a pragmatic one. Crucially, novel A-N compounds give rise to a comparatively strong novelty effect, which can be explained by a flouting of the maxim of manner: If we chose an alternative grammatical expression, i.e., the compound, its meaning must deviate from the one of the conventionalized expression, i.e., the phrase. As a result, a kind reading, often in connection to a semantic specialization, of the A-N compound is accommodated. Part of the explanation is that A-N compounds do not produce a significant structural benefit and hence there must be a semantic reason to use them. Structural benefit has also been used to explain the abundance of ad hoc, non-kind denoting N-N compounds. Their lack of explicitness is evened out by the communicative brevity they come with, which, in turn, promotes their usage as nonce formations. In this context, the observation is important that novel A-N compounds rarely take on non-kind, merely describing interpretations, which gives additional evidence for the above account. On the whole, linguistic markedness and pragmatic principles have been demonstrated to be related systematically to aspects of semantic compositionality, naming function as well as lexicalization.

The proposed analysis implies a modular separation between morphological and phrasal structure building in the lexicalist sense, cf., among others, Di Sciullo & William (1987); Lieber (2004). In the current study, the division between the two components of grammar is, first and foremost, based on functional differences and less so on distinct representational formats. Note that from this functional perspective the proposed analysis could be on a par with non-lexicalist, “integrative” models also, which employ, for example, a construction-based reasoning, cf. Booij (2009). 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, the existence of separated categories in the lexical domain is usually denied – which the current paper, however, has found strong evidence against. 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 categorical and creative rule system as the force behind the formation of lexical units – and their frequencies as its *effect*.

6 References

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