

# From compounding to derivation

The emergence of derivational affixes  
through “constructionalization”<sup>1</sup>

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## Abstract

This article argues that the rise of new derivational affixes can be analyzed adequately as a case of “constructionalization” within the framework of Construction Morphology as developed by Booij (2010). It reviews some aspects and problems of previous accounts that view the emergence of derivational affixes as a case of grammaticalization or as a case of lexicalization, respectively. In line with recent developments in grammaticalization research, not the isolated element (word or affix) is viewed as the locus of change, but the complex word as a whole – seen as a “construction” in the sense of Construction Grammar – and its relation with other constructions. Morphological change can be conceived as constructional change at the word level.

**Keywords:** affixoid, constructionalization, constructional change, lexicalization, elative compound

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# 1 Introduction

Like every aspect of grammar, word formation patterns are subject to constant change in (and through) language use. New patterns arise and existing patterns change with respect to their formal and semantic properties. We can observe changes in productivity: some patterns become popular and gain new possibilities of use, while others decrease in productivity; that is, they are no longer used for new formations or may fall from use altogether, whereby the corresponding words disappear from the language.

In this article, we will focus on the emergence of new word formation patterns. We will discuss how the development of new patterns and of new affixes from lexical words has been treated as a case of grammaticalization, and we will point out some problematic aspects of this account with respect to word formation. The rise of new affixes has, on the other hand, also been treated as a case of lexicalization and we will discuss this account too (Section 2)

In line with recent approaches to grammaticalization in which constructions are seen as the locus of change (Bybee, Perkins & Pagliuca 1994, Traugott 2003), we will show that Construction Morphology might offer a more adequate way of dealing with the emergence of new word formation patterns. In Construction Morphology, the rise of new patterns and of new affixes can be described as “constructionalization” and morphological change can be seen as “constructional change” (Section 3). It will become clear that these are not only alternative labels, but that the constructional approach offers an alternative and a better way to understanding how word formation patterns arise or change. We will illustrate this claim with a case study of German compounds with *stock-* (Section 4). Section 5 summarizes our findings.

## 2 Grammaticalization vs. lexicalization

How does a new derivational affix enter a language? The wide-spread idea is that this happens either through borrowing of sets of complex words containing that affix (external change) or through a process within a particular language (internal change): when a word is used in a series of compounds, it may acquire a new, often more abstract meaning and finally become a bound morpheme, an affix. It is this second process that has been labeled *grammaticalization* in the literature.

That bound morphological formatives often have their origin in independent lexical items has been a “commonplace observation” for at least two hundred years (DeLancey 2004: 1590). This holds not only for derivational affixes, but for inflectional affixes as well. Well-known textbook examples from German are (see, e.g., Szczepaniak 2009: 27):

- (1) inflectional suffix:  
the development of the preterite suffix *-te* from the verb *tun* ‘to do’ (or better: from the Germanic word from which German *tun* originates)
- (2) derivational suffix:  
the development of the adjectival suffix *-lich* from the noun *lih* (which originally meant ‘body’), as in *freundlich* ‘friendly’ or *grünlich* ‘greenish’.

In both cases, a lexical item, a free/unbound morpheme, can be seen to develop into a bound morpheme. It is this observation that has led many linguists to view the development of inflectional as well as derivational affixes as cases of grammaticalization. While this characterization is relatively undisputed for the inflectional suffixes, there has been a lot of

discussion about the derivational affixes, and we will look at this discussion in some more detail.

Hopper & Traugott (2003), for example, consider the rise of the English suffix *-hood* as a case of grammaticalization, since a new grammatical element, and in particular a new derivational affix, is added to the grammar. Booij (2010: 58) follows this reasoning in his analysis of Dutch prefixoids, but also notes that these prefixoids still have a lexical meaning. We find this view in the literature on historical word formation, too. Munske (2002), in his overview of changes in word formation, mentions the rise of German nominal affixes like *-schaft*, *-heit*, and *-tum* and analyzes them as the “grammaticalization of constituents in compounds”. In his view, the notion grammaticalization is very well suited to account for these phenomena:

Ich halte den Terminus *Grammatikalisierung* für gut geeignet, die Entstehung von Affixen zu beschreiben. Umso mehr, als damit nahegelegt wird, neuere Ergebnisse der Grammatikalisierungsforschung i.e.S. auch auf die Wortbildung anzuwenden.<sup>2</sup> (Munske 2002: 28)

Munske mentions criteria such as semantic bleaching, the loss of syntactic autonomy (i.e. free morphemes becoming bound morphemes), phonological erosion, etc., all found in historical word formation and all typical ingredients of grammaticalization. He admits, however, that there are hardly any cases where *all* the ingredients are present. In a similar vein, Wischer (2011: 364) argues that derivational affixes, “as long as they have their origin in independent lexemes, have run through a process of grammaticalization”, even if – synchronically – they do not have a grammatical status. Therefore, they are “situated on a continuum between grammar and lexicon” and “have a predominantly lexical status” (2011: 363). The basis for this view can be found in a conception of grammaticalization as a matter of degree, as in Kuryłowicz’ well-known definition:

Grammaticalization consists in the increase of the range of a morpheme from a lexical to a grammatical or from a less grammatical to a more grammatical status, e.g. from a derivative formant to an inflectional one. (Kuryłowicz 1965: 69)

Other scholars, however, are hesitant to analyze the development of derivational affixes as resulting from grammaticalization. They emphasize that derivational affixes are usually not indicators of grammatical categories like tense, mood, number, person, or aspect. These grammatical functions have a categorial status because they have to be expressed obligatorily, which is not the case for derivational patterns. Therefore, linguists like Christian Lehmann argue that derivational affixes should be seen as lexical units, morphemes with a special lexical meaning or function that can be used for the formation of complex words. In Lehmann’s (1989: 12) view, then, the development of derivational affixes has to be characterized as *lexicalization*.

This view is taken up by Szczepaniak (2009: 26) in her monograph on grammaticalization in German, where she argues that derivational affixes are bound lexical morphemes that are not used for the creation of grammatical word forms (inflection), but for the creation of new words (word-formation). Unlike inflectional affixes, derivational affixes are not obligatory, and they often have quite a concrete lexical meaning. Therefore, like Lehmann, she does not want to see the rise of derivational affixes as grammaticalization; however, she is also hesitant to call it lexicalization.

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<sup>2</sup> ‘I consider the notion *grammaticalization* to be well suited to account for the emergence of affixes; the more so, since this suggests that recent results of grammaticalization research in the narrow sense can also be applied to word formation.’ [our translation – MH & GB].

There is a lot of inconsistency in the literature with regard to the classification of the development of derivational affixes. As mentioned above, the rise of the English suffix *-hood* is presented as an instance of grammaticalization in Hopper & Traugott (2003), but in Brinton & Traugott (2005) the rise of derivational affixes is qualified as a case of lexicalization since the morphemes involved acquire a new, unpredictable meaning.

Brinton & Traugott (2005) present definitions of the two processes that might help decide whether the rise of affixes has to be seen as grammaticalization or lexicalization:

**Lexicalization** is the change whereby in certain linguistic contexts speakers use a syntactic construction or word formation as a new contentful form with formal and semantic properties that are not completely derivable or predictable from the constituents of the construction or the word formation pattern. Over time there may be further loss of internal constituency and the item may become more lexical. (Brinton & Traugott 2005: 96)

**Grammaticalization** is the change whereby in certain linguistic contexts speakers use parts of a construction with a grammatical function. Over time the resulting grammatical item may become more grammatical by acquiring more grammatical functions and expanding its host-classes. (Brinton & Traugott 2005: 99)

At first sight, lexicalization seems to be the more adequate notion because its definition explicitly mentions “word formation”. But the definition does not apply to the word formation process or affix as such, but only to the individual words resulting from that process. In addition, these definitions are kind of circular: items may become more “lexical” through lexicalization and more “grammatical” through grammaticalization. This means that the distinction between lexicalization and grammaticalization obviously presupposes a distinction between lexical and grammatical categories.

In order to be able to distinguish between those categories, one might adopt the very broad distinction by Sapir (1921) between concrete concepts and relational concepts. Traugott (2005: 1703) uses this distinction in her attempt to distinguish between lexicalization and grammaticalization. She relates lexical meaning to the concrete concepts and grammatical meaning to the relational concepts. But this still does not seem to be very helpful to answer our questions. After all, the distinction between lexical and grammatical morphemes is not clear-cut, but rather gradient, as has been pointed out in the literature time and again (DeLancey 2004: 1591).

Most linguists working on grammaticalization adopt the concept of a “cline of grammaticality”, which is directly related to the lexical/grammatical distinction. The concept of a cline corresponds to the idea of a development from the lexical to the grammatical domain, a development that is usually conceptualized as being irreversible and unidirectional. A well-known type of such a cline can be found in Hopper & Traugott (2003: 3):

(3) content item > grammatical word > clitic > inflectional affix

Stevens (2005) adapts this cline to illustrate what he calls a “loss in lexicality”, which in his view is the same as grammaticalization. He illustrates this with the use of *-ful* as a derivational affix.

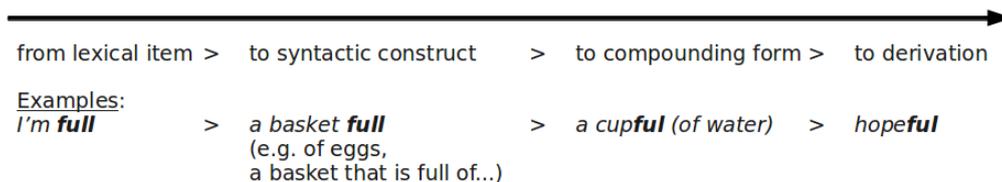


Figure 1. The grammaticalization cline for *-ful* (Stevens 2005: 75)

When this cline is interpreted synchronically, it tells us something about the relationship between the different uses of *full* (as a lexical item, as part of a compound with a specific meaning bound to the compound structure, i.e. an affixoid, and as an affix). When interpreted diachronically, it illustrates the different steps in the development of *full* into an affix.

In another diagram, Stevens shows how *inflectional* affixes may result from two different developments.

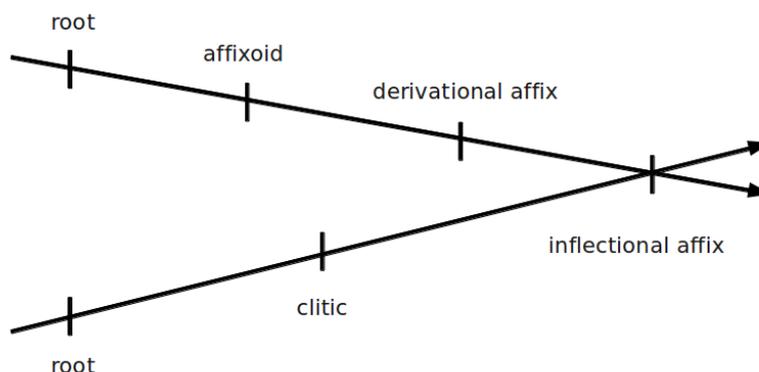


Figure 2. Clines from lexical item to inflectional affix (Stevens 2005: 81)

Each arrow represents a cline of grammaticalization resulting in an inflectional affix, one via word formation and derivation, one via clitics. There are, however, some problems connected to this view of the grammaticalization of affixes.

The first problem is that derivational patterns usually do not develop any further; that is, they do not get “more grammatical”. At least in recent stages of Germanic languages, it seems to be very exceptional that a derivational affix turns into an inflectional one. This suggests that the two processes are of a different nature.

An exception is the development in German of the derivational suffix *-er* into a plural marker (*Kälber, Männer*, etc.), which is mentioned in textbooks like Szczepaniak (2009) and which also serves as the only example in Stevens’ argumentation.<sup>3</sup> In the light of Booij’s (1996) distinction between inherent and contextual inflection, the plural forms of nouns are to be seen as cases of inherent inflection. Inherent inflection is the type of inflection chosen by the speaker to express semantic properties, whereas contextual inflection is the type of inflection that is determined by syntactic context, as is the case for inflection on a word that is required

<sup>3</sup> See Stevens (2005: 80) and Szczepaniak (2009: 56–58).

by agreement and does not add independent semantic information. Noun pluralization adds morphosyntactic properties with an independent semantic value to the stem of a word. Inherent inflection is therefore “more similar to derivation than contextual inflection is” (Booij 2002: 20). Hence, this is not a very strong case of a derivational affix turning into an inflectional affix.

A better example of the development of a lexical item to an inflectional element might be the English suffix *-ly*, which has developed into an almost obligatory adverbial marker (*an elegant woman – she dresses elegantly*). Hence, *-ly* is becoming fully productive and “close to qualifying as an inflectional suffix”, as Nevalainen (2008: 289) points out.<sup>4</sup> This formation of *-ly*-adverbials is to be seen as a purely relational, grammatical process, which is absent in German or Dutch, where the bare adjective can be used in these contexts (*eine elegante Frau* ‘an elegant woman’ – *sie kleidet sich elegant* ‘she dresses elegantly’). Therefore, it might be seen as a case of contextual inflection. German *-lich* and Dutch *-lijk*, on the other hand, are used as derivational affixes, but a further development into the inflectional domain is not in sight. On the whole, then, the rise of derivational affixes and the rise of inflectional affixes seem to be different processes that are not (or at least not always) instantiations of the same grammaticalization cline. The change from lexical item via affixoid and derivational affix to inflectional affix remains hypothetical in the overwhelming majority of cases.

There is a more general problem connected with the cline idea. The clines we find in the grammaticalization literature are usually presented as having two poles, a lexical one and a grammatical one. The suggestion is that these poles are in opposition and form a single continuum with “the lexical” at one end and “the grammatical” at the other end.

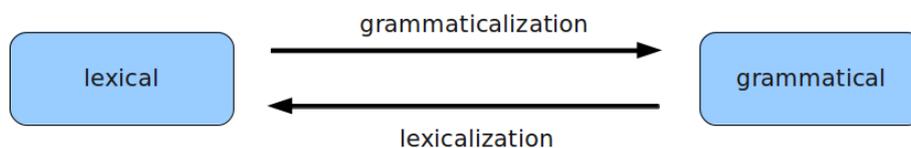


Figure 3. The lexical–grammatical opposition

Indeed, as Lightfoot (2005: 586) points out, it is tempting to interpret movement along the cline toward “the grammatical” as grammaticalization, and toward “the lexical” as lexicalization. The problem, then, is “that we would expect an item to undergo **either** one process **or** the other, but not both” (emphasis by Lightfoot). Further, Lehmann (2002: 1) states clearly that “grammaticalization is not the mirror image of lexicalization”. Still, we find the view that the lexical and grammatical pole are in opposition in many of the discussions about grammaticalization and lexicalization. Stevens’ (2005) clines, for instance, reflect this idea, when he interprets grammaticalization as loss of lexicality.

The rise of derivational affixes, however, reveals the problems of viewing grammaticalization and lexicalization as opposite developments. Lexicalization gives rise to new autonomous

<sup>4</sup> Nevalainen cites some researchers who argue that *-ly* has already become an inflectional affix (like Marchand 1969 or Baayen & Renouf 1996). In this respect, *-ly* thus resembles the Romance adverbial suffix *-mente*, mentioned in many textbooks as one of the classical examples of grammaticalization.

words, while derivational affixes are not autonomous, but bound morphemes. The results of grammaticalization, on the other hand, are grammatical elements, while derivational affixes often have lexical meaning and are used to form new lexical units (words). So, neither process really captures the development of derivational affixes, while each has aspects that do apply in the case of derivational affixes. For instance, both lexicalization and grammaticalization can account for the entrenchment of a new meaning connected to an existing form, but they differ in focus: while lexicalization emphasizes the lexical status of the element in question, the grammaticalization account focuses on its new grammatical function.

We agree with Lehmann and with Lightfoot's conclusion that we would do "best to view the two processes as related, yet separate, and not necessarily in opposition to one another [...] they can readily be at work together" (Lightfoot 2005: 607). This means that derivational affixes might be neither the result of lexicalization nor of grammaticalization. Or they are to be seen as results of both lexicalization and grammaticalization at the same time.<sup>5</sup>

Some of the problems we are confronted with here are connected to what Himmelmann (2004) called "the element based view on grammaticalization".<sup>6</sup> When we talk about the grammaticalization (or the lexicalization) of an element, in our case an affix, we often focus on that element exclusively. In the words of Croft (2000: 163),

it is precisely the specific, especially invariant, morphemes associated with the construction that are interpreted by the interlocutors as encoding the meaning characteristically associated with the construction as a whole [...]. It is this fact that gives the impression that grammaticalization is a process affecting individual morphemes (and the lexemes they are derived from).

But, as Himmelmann and Croft rightly point out, it is never just this element that undergoes grammaticalization. For a proper understanding, we have to look at the context, in our case the complex words in which the element gets new meanings and new possibilities of use. It is not isolated lexical items that become affixes; rather, it is complex words, compounds that get new interpretations and meanings. While this might seem obvious, the traditional grammaticalization approach and its cline representation of the diachronic facts tend to distract our attention from this basic insight.

More recently, however, the importance of the context has been widely emphasized in grammaticalization research. Most of the researchers agree that it is not isolated elements, but rather specific constructions that have to be seen as the locus of change. Therefore, some of them have embraced Construction Grammar as a framework that allows for a proper analysis of grammaticalization phenomena (see Gisborne & Patten 2011). Traugott (2008), for example, discusses in quite some detail the relationship between linguistic constructions and grammaticalization. She adopts the view that constructions – in the sense of Goldberg (1995) and especially Croft (2001) – "form part, possibly all, of the building-blocks in grammar" (2008: 220). She agrees with Lehmann's conclusion that "lexical items alone do not grammaticalize. They do so only in specific contexts, e.g. case markers derive from nouns, classifiers from numerals only under certain specifiable linguistic conditions" (Traugott 2008: 221). She stresses the importance of pragmatic and semantic environments for morphosyntactic change and presents grammaticalization as a multilayered phenomenon involving a number of correlated changes. As an illustration, she analyzes the development of

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<sup>5</sup> This co-occurrence of properties of grammaticalization and of lexicalization has been found in the literature more than once. Van der Auwera (1999: 134), for example, in his analysis of Dutch verbal prefixes, concludes: "More often than not relevant meanings are more grammaticalized and more lexicalized".

<sup>6</sup> Himmelmann (2004) himself prefers the term "grammaticization".

degree modifiers in English as an example of grammaticalization seen as constructional change. In Traugott & Trousdale (2010: 7), grammaticalization is even defined as “a constructional (form–meaning) change that occurs in micro-steps”.

In Booij (2010) the constructional approach has been extended to morphology: Booij argues for a word-based morphology and – in accordance with Goldberg’s definition of constructions – analyzes complex words as constructions.

Given the problems of the “element based view” and the problems that arise from an analysis of the emergence of derivational affixes in traditional approaches of grammaticalization and/or lexicalization, we will now introduce “Construction Morphology” and its approach to the problems we are dealing with here. We claim that the constructionist view is very well suited not only for the analysis of constructional change within syntactic constructions, but also to account for the rise of new derivational affixes.

As soon as we take a more holistic view and take seriously that affixoids and affixes only appear in complex words, the question whether these affixes are the result of grammaticalization or of lexicalization becomes less interesting and the need to decide whether the affix is a lexical or a grammatical element becomes less urgent.

While our view is perfectly compatible with the recent developments in grammaticalization research mentioned above, it might be worth considering avoiding the notion of “grammaticalization” (as well as of “lexicalization”) with respect to word formation. Both notions seem to lead almost inevitably into the rather fruitless discussion of the opposition of “grammaticalization” vs. “lexicalization”, which seems to obscure our view of the essential empirical findings rather than to help us understand what is going on. In our view, the developments typically found in the rise of derivational affixes can be described more insightfully as cases of “constructionalization”, the rise of new morphological constructions.

### 3 Constructionalization

In Construction Morphology, both complex words and phrases are constructs, that is, pairings of forms and meanings. It is assumed that complex words as well as phrases may be stored in the lexicon because of idiosyncratic aspects and entrenchment (as in the case of prefabs).

Word formation patterns can be seen as abstract schemas that generalize over sets of existing complex words which show a systematic correlation between form and meaning. Deverbal nouns like *baker*, *driver*, or *sender*, for instance, can be accounted for by assuming an abstract schema:

$$(4) \quad < [[x]_{vi} \text{ er}]_{Nj} \leftrightarrow [\text{Agent/Instrument of SEM}_i]_j >$$

Constructional schemas thus specify the predictable properties of classes of complex lexical items, and they specify how similar new words can be coined. Constructional schemas may dominate subschemas that specify additional or more specific properties of subclasses of lexical items. These subschemas represent local generalizations, for example with respect to the semantics or to the productivity of a pattern. It is essential to note that both abstract schemas and their instantiations may be stored in the lexicon, which is conceived of as a network of such schemas and subschemas and of individual lexical items.

In Booij (2010), these ideas are amply illustrated. One example is the use of the Dutch word *hoofd* ‘head’ in nominal compounds.

- (5) Dutch *hoofd*-
- |                               |                           |
|-------------------------------|---------------------------|
| (a) <i>hoofdpijn</i>          | ‘headache’                |
| (b) <i>hoofdkantoor</i>       | ‘head office’             |
| <i>hoofdinspecteur</i>        | ‘head inspector’          |
| (c) <i>hoofdbezwaar</i>       | ‘main objection’          |
| <i>hoofdgedachte</i>          | ‘main idea’               |
| <i>hoofdingang</i>            | ‘main entrance’           |
| <i>hoofdverantwoordelijke</i> | ‘main responsible person’ |

In (5a), *hoofd* is used in its literal meaning ‘head of a body’, while in (5b), i.e. in compounds referring to a hierarchy, it gets the abstract metaphorical interpretation ‘uppermost’. In the examples under (5c), *hoofd* gets an even more abstract meaning ‘most important, main’; these examples make up a group of words that is easily extendable with new formations. While Dutch *hoofd* is comparable with English *head* in many respects (as in (5a)–(5b)), *hoofd* in this third group of compounds is not equivalent with *head* in English. Dutch *hoofd* is a polysemous word and while the semantic contribution *hoofd* makes to the compounds in (c) can easily be connected to its other meanings, its ‘main’-interpretation is a bound meaning, only available in compounds. Therefore, we have to assume a subschema, reflecting the semantics and the productive use of this type:

- (6)  $\langle [[hoofd]_{Ni} N_j]_{Nk} \leftrightarrow [main SEM_j]_k \rangle$

This schema can be seen as an instantiation of the more general schema for NN compounds in Dutch to which it is tightly connected and from which it inherits properties such as right-headedness and the stress pattern. That means that constructional schemas may dominate subschemas which specify additional or more specific properties of subclasses of lexical items. These subschemas can be seen as local generalizations, for instance, with respect to the semantics or to the productivity of a certain pattern. A (sub)schema motivates the structure and the semantics of the complex words that can be seen as instantiations of the schema. It reduces the degree of arbitrariness of form–meaning relations in the lexicon.

The Dutch lexicon, thus, contains morphological schemas for compounds of various degrees of abstraction:

- (7) (a)  $[[a]_X [b]_Y]_Y$  compounds  
 (b)  $[[a]_{Ni} [b]_{Nj}]_{Nk}$  NN compounds  
 (c)  $\langle [[hoofd]_{Ni} [b]_{Nj}]_{Nk} \leftrightarrow [main SEM_j]_k \rangle$  *hoofd*-compounds

Because of its bound meaning in (7c), the element *hoofd* might qualify for the classification as an “affixoid”, which means that it corresponds to a word with respect to its form, but not (or only in part) with respect to its meaning. In the literature, the notion of affixoid is central to the discussion of grammaticalization and word formation. In Section 2, we already mentioned that it is connected to the “cline” idea and used to indicate an intermediate stage in the development from lexical item to affix (Stevens 2005). The notion remains highly controversial, however, in the relevant literature. Some scholars want to avoid it altogether (like Schmidt 1987); others want to establish affixoids as a special morphological category. Elsen (2009), for example, even argues in favor of a new (synchronic) word formation process “affixoid formation”, which should be distinguished from compounding and derivation. Since we have dealt with the affixoid controversy in another article (Booij & Hüning 2014), we will not go into details here. In our view, there is no need to establish a new category, and we will use the term “affixoid” only as a handy shortcut term for “compound constituent with an affix-like behavior which corresponds to an independent word with

respect to its form, but not with respect to its meaning”. It is a purely descriptive term, but without major theoretical implications.

If we wanted to analyze *hoofd* in terms of the grammaticalization cline toward an affix, we could compare it to its German equivalent *Haupt*; this item represents the next step on this cline, because it has almost lost its link with its lexical counterpart. The original noun *Haupt* ‘head’ is becoming obsolete in German. It is hardly used outside of archaic or very formal contexts, and it is replaced by *Kopf* when referring to the ‘head of a body’. As a bound morpheme, however, *Haupt-* is used as productively as Dutch *hoofd-* and shares with it the meaning ‘most important, main’.

- (8) *Hauptattraktion* ‘main attraction’  
*Hauptbahnhof* ‘main station’  
*Haupteingang* ‘main entrance’

Unlike Dutch *hoofd*, which, in the morphological literature, is still considered to be a noun or an affixoid and the first element of a nominal compound, *Haupt-* is treated as a derivational phenomenon and classified as a prefix in recent textbooks on word formation in German (Fleischer & Barz 2012: 257). The main reason (*Hauptargument*) for this is the loss of the lexeme *Haupt* in present-day German.

In Construction Morphology, we would account for the constructions with *hoofd-* in Dutch as well as those with *Haupt-* in German by assuming a constructional schema with the first slot filled and a variable as the second element. The schema looks almost identical in both cases and the question whether we regard the first element as a noun, a prefixoid, or a prefix is not a question of principle. The differences concern mainly the position of the schema within the network of constructions: is it (still) associated with the more general schema for nominal compounds? Do language users (still) see the connection with the original noun?

Another example would be the adjective *fähig* ‘able’, which occurs as the rightmost constituent in a huge number of German complex adjectives (Wilss 1984; 1986).

- (9) German *-fähig*  
(a) V + *fähig*: *lernfähig* ‘able to learn’  
(*ein lernfähiges Kind* ‘a child able to learn’)  
N + *fähig*: *zeugungsfähig* ‘able to father’  
(*ein zeugungsfähiger Hengst* ‘a fertile stallion’)  
(b) N + *fähig*:  
*internetfähig* ‘suitable for accessing the internet’  
(*ein internetfähiger Fernseher* ‘an internet-enabled television’)  
*konsensfähig* ‘fit for gaining consensus’  
(*ein konsensfähiger Vorschlag* ‘a proposal geared to consensus’)

In (9a), we find complex words in which the left element is a verb or a deverbal noun (nomen actionis), and in which the adjective *fähig* ‘able’ is predicated of animate entities that can perform intentional actions expressed by the verbal first element. In the resulting adjective, we can still observe the original meaning of the adjective *fähig*. When predicated of inanimate entities, these complex words tend to have a passive meaning: *wandlungsfähiges Design* means ‘design that can be changed’ (‘capable of being changed / easily allowing change’). It is with this ‘able’-meaning that the adjective *fähig* can be used as free form, without forming part of a compound, as in *Er ist fähig, neuen Stoff schnell zu lernen* ‘He is able to learn new things quickly’.

In denominal words like *internetfähig* or *konsensfähig*, we find a more generalized meaning of *fähig* (‘fit for X’). This more abstract, bound meaning of the adjective *fähig*, along with the observation that this use of *fähig* is very productive in complex words, made some linguists of German qualify *fähig* as an affixoid. Its use seems to be similar to that of derivational affixes, the main difference being that derivational affixes are defined as bound morphemes, whereas affixoids like *fähig* are also lexical morphemes.

The bound meaning of *fähig* is not restricted to just a few compounds; it can be used productively for the formation of new words. Hence, compounds with *-fähig* cannot just be thought of as instantiating a process of lexicalization restricted to individual words.<sup>7</sup> The relevant generalization can be expressed by assuming a productive subschema for those compounds with *-fähig*:

(10)  $\langle [N_i [fähig]_{A_j}]_{A_k} \leftrightarrow [\text{fit for SEM}_i]_k \rangle$

From a diachronic point of view, it is not the status of the “grammaticalizing” element that is interesting (is it still a word or an affixoid or already an affix?); what is worthy of note is the emergence of a new construction, a new constructional (sub)schema, and its place within the network of constructions. Language users recognize similarities, they generalize and group things together by analogical reasoning.<sup>8</sup> And they can use these schemas for the production of new words.

In what follows, we will analyze compounds with *stock-* in German (and Dutch) in order to illustrate some more facets of constructionalization and constructional change.

#### 4 Constructionalization and constructional change in compounds with *stock-*

In German we find a series of compounded adjectives with a first element *stock-*. Examples are:

- |      |                         |                                    |
|------|-------------------------|------------------------------------|
| (11) | <i>stockbesoffen</i>    | ‘very drunk’                       |
|      | <i>stockblind</i>       | ‘stone-blind’                      |
|      | <i>stockbürgerlich</i>  | ‘philistine/bourgeois to the core’ |
|      | <i>stockdunkel</i>      | ‘pitch dark’                       |
|      | <i>stockkatholisch</i>  | ‘catholic to the core’             |
|      | <i>stockkonservativ</i> | ‘conservative to the core’         |
|      | <i>stockreaktionär</i>  | ‘very unprogressive/reactionary’   |
|      | <i>stocktaub</i>        | ‘stone-deaf’                       |

The first element shares the form of the noun *Stock* ‘stick’, but not its meaning: *stock-* functions as an intensifier, with the original meaning of the noun being largely lost. It is because of its bound meaning that *stock-* is sometimes called an affixoid. The resulting compounds belong to the group of “elative compounds”, i.e. compounds that “indicate a high degree of a property that is expressed by their right-hand member, the head of the compound, usually by making use of some kind of conventionalized comparison” (Hoeksema 2012: 97). In the case of *stock-*, these compounds often have negative connotations: being very drunk or

<sup>7</sup> Some of the examples mentioned by Leuschner (2010) seem to be isolated or hardly productive cases. Therefore, we prefer to see them as lexicalized compounds.

<sup>8</sup> See Fischer (2008, 2011) on the role of analogy in grammaticalization.

extremely conservative easily irritates and annoys other people, and *stockbesoffen* or *stockkonservativ* are used *par excellence* to indicate that.

Historically, we can identify comparative compounds like *stockstill* or *stocksteif* (both meaning ‘very stiff’) as a starting point for the development of this group. These compounds correspond to a phrasal pattern, the “phrasal simile” or “stereotyped comparison” (Fiedler 2007: 43):<sup>9</sup>

- (12) *stocksteif* (so) *steif wie ein Stock* ‘as stiff/rigid as a stick’  
*wieselflink* (so) *flink wie ein Wiesel* ‘as nimble as a weasel’  
*schneeweiß* (so) *weiß wie Schnee* ‘as white as snow’  
*daumengroß* (so) *groß wie ein Daumen* ‘as big as a thumb’

Accordingly, we have two related constructional idioms, the phrasal patterns (*so A wie N*) and the corresponding compounds (N+A), both meaning ‘as A as N’, and the compounds express the original comparison found in the phrasal patterns. Phrasal similes and comparative compounds can be accounted for by assuming constructional schemas such as the following:

- (13) (a) < [(so) [b]<sub>Aj</sub> wie (DET<sub>indef.</sub>) [a]<sub>Ni</sub>] ↔ [as SEM<sub>j</sub> as SEM<sub>i</sub>] >  
 (b) < [[a]<sub>Ni</sub> + [b]<sub>Aj</sub>]<sub>AK</sub> ↔ [as SEM<sub>j</sub> as SEM<sub>i</sub>]<sub>k</sub> >

Phrasal similes of this kind easily get an intensifying meaning, with the meaning of the noun only being available in the background. *As white as snow* means ‘very white’ and *so flink wie ein Wiesel* becomes ‘very nimble’. In Germanic languages, intensification is one of the functions often expressed by the first constituents of compounds,<sup>10</sup> and therefore the comparisons can be easily transmitted to the compound structures. Still, not every comparison lends itself to this interpretation (*so groß wie ein Daumen* ‘as big as a thumb’, for example, and also the corresponding compound *daumengroß* do not show this meaning shift).

Noun–adjective compounds are very frequent in German and in other Germanic languages, and the intensifying type is a very productive subschema of the more general noun–adjective schema given above in (13b). This class of relative compounds contains a great many different subpatterns (see Oebel 2012 for a cross-linguistic overview).

Both intensifying phrases and compounds are productively formed, which can be illustrated by coining a nonsense comparison like *so blöd wie ein Kaktus* ‘as stupid as a cactus’. This comparison would also immediately get the interpretation ‘very stupid’, and with this interpretation it could easily be condensed into a compound: *kaktusblöd* would be interpreted as ‘very stupid’ as well.

In the case of *stocksteif*, the compound schema takes on a life of its own. Based on the old compounds *stockstill* and *stocksteif*, which can both be interpreted literally (‘as stiff/rigid as a stick’) and as an relative compound (‘very stiff/rigid’), new words were formed by analogy. According to the *Deutsches Wörterbuch* by Jacob and Wilhelm Grimm (DWB), there were a lot of new formations in the sixteenth century.

- (14) *stockalt* ‘very old’, *stockblind* ‘very blind’, *stockdumm* ‘very stupid’, *stockdunkel* ‘very dark’, *stockdürr* ‘very skinny’, *stockfaul* ‘very lazy’, *stockfinster* ‘very dark’, *stockfremd* ‘very foreign’, *stockkrank* ‘very sick’, *stocknackt* ‘very naked’, *stockstarr* ‘very rigid’, *stocktaub* ‘very deaf’, *stocktot* ‘very dead’, *stockübel* ‘very nauseous’, *stockungelehrt* ‘very illiterate’, ...

<sup>9</sup> For the relationship between word formation and multi-word expressions, see Hüning & Schlücker (in press).

<sup>10</sup> This kind of intensification is not only found in adjectival compounds, but also in nominal compounds such as *Riesensauerei* ‘giant mess’.

Some of them still allow for the literal interpretation: *stockdürr* might be interpreted as ‘as thin as a stick’ and *stockstarr* as ‘as rigid as a stick’, but for most of the newly coined words, the comparative interpretation and the literal meaning of *stock* are not available any more (*stockdunkel* is ‘very dark’ and *stockalt* means ‘very old’). The pattern, thus, developed a very general intensifying meaning, and with this abstract meaning it was used productively in former centuries. We can assume a subschema that accounts for the semantics and the productivity of this specific subclass of N+A compounds, a case of constructionalization. Relatively new formations are compounds like *stockhäßlich* ‘very ugly’, *stockheiser* ‘very hoarse’, *stocklangweilig* ‘very boring’, and words referring to the excessive consumption of alcohol: *stockbetrunken*, *stockblau*, *stockbesoffen* – all meaning ‘very drunk’ (the opposite, *stocknüchtern* ‘stone-cold sober’, is used frequently, too).

In present-day German, however, the pattern has lost its general productivity. New compounds with *stock-* are scarce, and many of the early formations are not in use any more (like *stockkrank* ‘very sick’, *stocknackt* ‘stark naked’, or *stocktot* ‘stone-dead’ – all obsolete in present-day German).

We find the equivalent pattern and a very similar development in Dutch. As in German, the oldest form is *stoc stille* ‘as stiff as a stick’ (thirteenth century). Its synonym *stokstijf* is – according to the dictionaries – much younger. From the sixteenth century onwards, there are some formations in which the meaning contribution of *stok* is reduced to intensifying ‘very’: *stokdonker* ‘very dark’, *stokoud* ‘very old, ancient’, *stokblind* ‘very blind’, *stokdoof* ‘very deaf, stone-deaf’ (van der Wouden 2011). But as far as we know, the pattern never became as productive as in German. Dutch also shows some variation in form: *stekeblind* ‘very blind’ (15th century) or *stikdonker* ‘very dark’ (17th century) are attested early and these are the forms that are still used in present-day Dutch. Other words with *stok-* as a first element are – according to the *Woordenboek der Nederlandsche taal* – attested, but by now out-dated: *stokarm* ‘very poor’, *stokdood* ‘very/completely dead’, *stokduister* ‘very dark’, *stokstom* ‘very dumb’. Nowadays, the pattern as a whole is not productive anymore in Dutch.

Back to German. As mentioned above, a lot of the *stock-*compounds were in use for a limited period only. In the course of time, the intensifying pattern largely lost its productivity, and it might even be questionable whether it is productive at all in present-day German. Inside the pattern, however, we find a number of words that are semantically very tightly connected, a “semantic niche”, that still allows for further analogical extension.<sup>11</sup>

- (15) *stockkonservativ* ‘conservative to the core’, *stockbürgerlich* ‘philistine/bourgeois to the core’, *stockkatholisch* ‘catholic to the core’, *stockreaktionär* ‘very unprogressive/reactionary’ etc.

The adjectives characterize mental attitudes, beliefs, and ideologies, and they are all used with negative connotations. Interestingly, none of the compounds is listed in the *Deutsches Wörterbuch* (DWB), which suggests that they are relatively young (starting in the twentieth century). Within this semantic niche, the pattern is still used productively. The productivity of the intensifying pattern, thus, got restricted to a semantically coherent subpattern, resulting in adjectives denoting a certain human trait or behavior and indicating a negative attitude toward this trait or behavior. The change in productivity and the development of this subpattern can be qualified as an instance of “constructional change”.

<sup>11</sup> See Rainer (2003) and Hüning (2009) for the relevance of “semantic niches” in (diachronic) word formation.

If we look at the DECOW2012-corpus, a large (9 billion tokens) web-based corpus developed at Freie Universität Berlin (Schäfer & Bildhauer 2012),<sup>12</sup> we find that *stockkonservativ* is by far the most frequently used word of this group. It is also the oldest and the only one that can be found in Dutch, too (*stokconservatief*). This word might therefore have functioned as the word heading the development of the semantically restricted subschema, which, in turn, gave rise to a series of new formations in the course of the last century (all attested in the DECOW2012 corpus):

- (16) *stockfaschistisch* ‘fascistic to the core’, *stockjüdisch* ‘jewish to the core’, *stockkonventionell* ‘conventional/orthodox to the core’, *stockprotestantisch* ‘protestant to the core’, *stockliberal* ‘liberal to the core’, *stockseriös* ‘serious, prudent to the core’, *stocksolide* ‘decent to the core’, *stockspießig* ‘narrow-minded to the core’.

Fairly recently, the pattern got extended to include words indicating a sexual orientation and the related behavior: *stockschwul* ‘gay to the core’ or *stockhetero* ‘heterosexual to the core’, which are used for persons tenaciously living their sexual orientation. Like the other compounds in this group these words usually have negative connotations (‘too much, annoyingly’). Formations like *stockdämlich* ‘goony to the core’ or *stockdoof* ‘utterly stupid’ show that semantic aspects such as ideology, belief, or convictions are not or no longer essential ingredients of new compounds with *stock-* indicating human traits/behavior.<sup>13</sup>

Like in most of the intensifying compounds, the literal meaning of the noun *Stock* has been lost completely in the compounds represented by the semantically restricted subschema. Their formation might have been influenced by the existence of the deverbal adjective *verstockt* ‘obdurate’, etymologically also related to the noun *Stock*. When somebody is called *stockkatholisch*, this not only means that he is ‘very catholic’ or ‘catholic to the core’, but it also implies that he is conservative and *verstockt* (or obdurate) with respect to his religious or ideological convictions. While the influence of the word *verstockt* can probably not be proven, it is easily imaginable that it might have been beneficial for the development of the pattern.

How to account for the developments and changes we have just described? We have proposed an account that makes use of the notions of constructionalization and constructional change. A possible alternative would be to see the development of *stock* as a case of lexicalization (as suggested by Lehmann, see Section 2). The implication would be that affixoids (or even affixes) such as *stock* are lexical entries on their own, with a lexical meaning. This would be appropriate for a morpheme-based, syntagmatic morphology in which complex words are seen as results of syntagmatic word formation rules. But the status of an element like *stock* as an independent lexical element with the meaning ‘very’ is extremely debatable. Speakers of German would probably never come up with ‘very’ when asked for the meaning of *stock*; it gets its intensifying meaning only in certain contexts, in combination with certain adjectives. This is evidence for a word-based morphology as advocated by Construction Morphology, and one way to formulate such specific meanings of compound constituents is by assuming constructional schemas. Affixoids and affixes do not have a meaning of their own. They only contribute to the meaning when used in complex words.

<sup>12</sup> For more information about “COW – Corpora from the web”, see the project website <http://hpsg.fu-berlin.de/cow/>

<sup>13</sup> The German adjective *doof* got its present-day meaning ‘stupid’ in the course of the twentieth century. Before, it has been used only as a Low-German equivalent of *taub* ‘deaf’. Therefore, *stockdoof* ‘utterly stupid’ might also be a recent reinterpretation of a former meaning (‘very deaf’).

## 5 Conclusions

Let us start by summing up some findings from our small case study of *stock-*. First of all, our analysis of *stock-* nicely illustrates the idea of a hierarchical lexicon as developed by Jackendoff (2008) and Booij (2010). In this view, the lexicon consists of a network of constructions on different levels of abstraction, ranging from very abstract schemas to individual words. Or, in the words of Adele Goldberg (2006: 18): it is “constructions all the way down”.

The bound meaning of the element *stock-* can be accounted for by assuming a subschema (c) sanctioned by the general schema for relative N+A compounds (b), which itself is dominated by the general schema for endocentric compounds (a). The pattern of *stock-*compounds denoting a human trait or behavior (d) can be analyzed as a subschema of (c). Schema (d) is also used to account for the productivity of the semantically restricted pattern and for the negative connotations connected to the resulting adjectives.

- (17) a. general schema for endocentric compounds  
 $\langle [[a]_{Xi} + [b]_{Yj}]_{Yk} \leftrightarrow [\text{kind of SEM}_j \text{ related to SEM}_i]_k \rangle$
- b. schema for comparative (relative) adjectives  
 $\langle [[a]_{Ni} + [b]_{Aj}]_{Ak} \leftrightarrow [\text{as SEM}_j \text{ as SEM}_i / \text{very SEM}_j]_k \rangle$   
*schneeweiß, wieselflink, stocksteif ...*
- c. schema for relative compounds with *stock-*  
 $\langle [[\textit{stock}] + [b]_{Aj}]_{Ak} \leftrightarrow [\text{very SEM}_j]_k \rangle$   
*stockalt, stockbesoffen, stockdunkel, stocktaub ...*
- d. schema for adjectives with *stock-* denoting a human trait or behavior  
 $\langle [[\textit{stock}] + [b]_{Aj}]_{Ak} \leftrightarrow [\text{very/extremely/too SEM}_j // \text{SEM}_j \text{ to the core}]_k \rangle$   
 The pattern can be used productively; the resulting adjectives carry negative connotations.  
*stockkonservativ, stockkatholisch, stockreaktionär, stockdämlich ...*

Subschemas, thus, allow for generalizations over subsets of words within a morphological category. They can be seen as instantiations of more general schemas and they are connected to other (semantically) related schemas within the network of constructions.

Diachronically, the rise of *stock-* as an intensifying prefix has to be explained as a case of constructionalization, starting from phrasal similes and corresponding N+A compounds expressing a comparison. These comparative uses of *stock-* then developed a more abstract, intensifying meaning and the relation with the meaning of the corresponding noun became opaque through their analogical use in a series of compounds.

Subsequently, another change could be observed in the *stock-*compounds: in new formations, not only was the motivating relation with the noun (*Stock*) absent, but also the pattern's interpretation as comparison. Moreover, in the course of time, the pattern has turned out to be productive only with an intensifying meaning characterizing human traits and human behavior

(based on mental attitudes, beliefs, and ideologies as in *stockkatholisch*). Hence, the case of intensifying *stock* in German not only illustrates the rise of a new pattern through constructionalization, but also subsequent constructional change.

In both processes, the underlying mechanism is analogy. Language users recognize word families, interconnected by formal and semantic properties. They recognize compounds that share either the first or the second constituent as belonging together and they also recognize “semantic niches”. They are able to generalize and to turn the analogical relations they see into productive use of the pattern or even into a new pattern.

We have claimed that the notion of grammaticalization is not necessary for an adequate analysis of these developments. This view goes against recent papers on diachronic morphology (e.g. Munske 2002), which suggest extending the concepts and methods of grammaticalization research to the domain of word formation. It is, in particular, the rise of new derivational affixes that has been treated as a case of grammaticalization.

Instead, we have suggested analyzing morphological change within Construction Morphology as developed by Booij (2010), a theoretical framework that is well embedded in the larger endeavor of Construction Grammar. We tried to demonstrate that Construction Morphology itself is very well suited to account for the diachronic changes involved in the rise of new affixes. There is thus no need to make use of the concept of grammaticalization in order to describe and/or explain what is going on when lexical items become derivational affixes. On the contrary, applying the concepts and the terminology of what is sometimes called “grammaticalization theory” to the domain of word formation might even be counterproductive in shifting our attention to questions that are not essential for an adequate treatment of the phenomena involved. It is especially the dichotomy of “the lexical” vs. “the grammatical” that turns out to be inadequate for a proper account of word formation phenomena, since in word formation we always have to deal with both aspects.

Trousdale (2008a; 2008b) tries to show “how constructional approaches can account for both grammaticalization and lexicalization within a unified framework” (2008a: 156). He uses “constructionalization” as an umbrella term for what is traditionally seen as grammaticalization or lexicalization. This idea is taken up in Trousdale & Norde (2013) who argue “that grammaticalization is a subset of grammatical constructionalization, and that lexicalization is a subset of lexical constructionalization” (2013: 44). It remains to be seen whether the distinction of grammatical and lexical constructionalization is more than a redefinition of the lexicalization–grammaticalization dichotomy and, thus, solves the problems related to this dichotomy with respect to word formation phenomena. The general concept of constructionalization does, however, offer a way out of the problems associated with the “element based view” and with the idea of a “cline”, discussed above. As Trousdale (2008a: 172) rightly points out, the constructional approach “suggests not a cline, but a taxonomic network of related constructions.” Our case study illustrates this idea.

Jackendoff (2011) formulates a number of criteria of adequacy, which each model of grammar should conform to. Central is the criterion of “graceful integration”: the model should allow for the incorporation of and be in harmony with the findings from neighboring cognitive disciplines and from linguistic domains such as historical linguistics and psycholinguistics. Our claim is that Construction Morphology does allow for this graceful integration of findings about morphological change. The development of derivational affixes from compound constituents is primarily a case of constructionalization, the rise of a morphological construction, and morphological change can adequately be analyzed as constructional change at the word level.

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