

What drives morphological change? A case study from the history of German

Stefan Hartmann
University of Mainz

This is a [post-print](http://dx.doi.org/10.1075/li.37.2.06har) version. Link to publisher's version:
<http://dx.doi.org/10.1075/li.37.2.06har>

The page numbers in parantheses represent the page numbers in the final print.
The Figures and Tables are placed as follows in the final print:
Fig. 1: p. 276; Fig. 2: p. 278; Fig. 3: p. 282; Fig. 4: p. 286.
Tab. 1 and 2: p. 281; Tab. 3: p. 283.

[p.275] Introduction

Over the past few decades, a variety of tools has been developed to empirically investigate the diachronic change of word-formation patterns. Most importantly, the question how the morphological productivity of a pattern can be measured has attracted considerable attention. According to Scherer (2006), word-formation change can be defined as change in word-formation constraints, which is mirrored by changes in morphological productivity. This definition aims at delineating “word-formation change in the narrow sense” from a variety of interface phenomena. However, much recent work “has suggested that ‘pure’ changes [...] are a construct of theories and methodologies, rather than realities of language use.” (Traugott & Trousdale, 2013, p. 30) Hence, even word-formation change in the narrow sense is determined by – among others – semantic, syntactic, and extralinguistic (e.g. cultural) factors. This paper addresses the question of how the interaction between these factors can be taken into account in a corpus-based analysis of morphological patterns. As an example, I will discuss the diachronic change of German nominalization patterns. More specifically, I will focus on nominalization by means of the suffix *-ung* (e.g. *Erwartung* ‘expectation’) as well as on the competing pattern of infinitival nominalization (e.g. *das Singen* ‘(the) singing’). In the remainder of this paper, I will discuss how these patterns and their diachronic development from the 16th to the 18th century interact with

syntactic, lexical, and semantic factors. The data are derived from two corpora: To investigate the transition from Early New High German (ENHG) to New High German (NHG), the as yet unpublished Mainz ENHG Corpus (MzENHG) is used, which has been compiled by Kristin Kopf and colleagues at the University of Mainz (82 texts, 388.598 tokens, balanced for 30-year periods, covering the years 1500-1710). Our analysis of the early stages of the NHG period will draw on the GerManC corpus (Durrell [p. 276] et al., 2007, 336 texts, 683.302 tokens, balanced for 50-year periods, covering the years 1650-1800).¹

The present study is situated in the framework of Construction Grammar (CxG). CxG conceives of lexicon, morphology, and syntax as a continuum, which is why “[i]n Construction Grammar, no interfaces are needed” (Hilpert, 2014, p. 79).² Nevertheless, CxG retains the classic distinctions between different levels of grammatical organization for heuristic purposes. In this sense, I will use the notion of “interfaces” throughout this paper, i.e. referring to developments overarching the traditional components of grammar. Such interface phenomena demonstrate that in the complex system of language, cognitive, cultural, and social-interactional factors are closely intertwined.

1. Morphology and Syntax: What syntactic preferences and collostructions reveal about morphological schemas

In CxG, it is assumed that constructions are acquired through generalizations and abstractions over actual language use (cf. Goldberg, 2006). Word-formation products, like all other words, are not encountered in isolation but in specific [p.277] contexts. Importantly, these contexts can give valuable clues to the semantics of both the word-formation product and the word-formation pattern, which, in a constructionist view, can be conceptualized as a constructional schema (cf. Booij, 2010). For nominalization by means of the suffix *-ung*, Demske (2000) has observed significant diachronic changes with regard to the syntactic patterns in which *ung*-nominals occur. For example, their frequency in determiner and plural constructions increases significantly. This observation is confirmed by the corpus data. While only a slight, but not significant increase can be observed for the relative frequency of *ung*-nominals both in determiner and in

¹ The overlap between both corpora is deliberate: Massive differences between the last period of MzENHG and the first period of GerManC might point to the conclusion that the samplings of both corpora are not comparable with regard to the phenomenon in question.

² But see Booij (2010) for a different view, largely retaining the concept of an autonomous morphology, which is linked to other components of grammar via various interface rules.

plural constructions in the ENHG period, their increase in the period covered by the GerManC corpus is highly significant (*ung*-nominals with determiner³: Kendall's $\tau=0.6$; $T=84$; $p<0.01$; pluralized *ung*-nominals: $\tau=0.77$, $T=93$, $p<0.001$ ⁴).

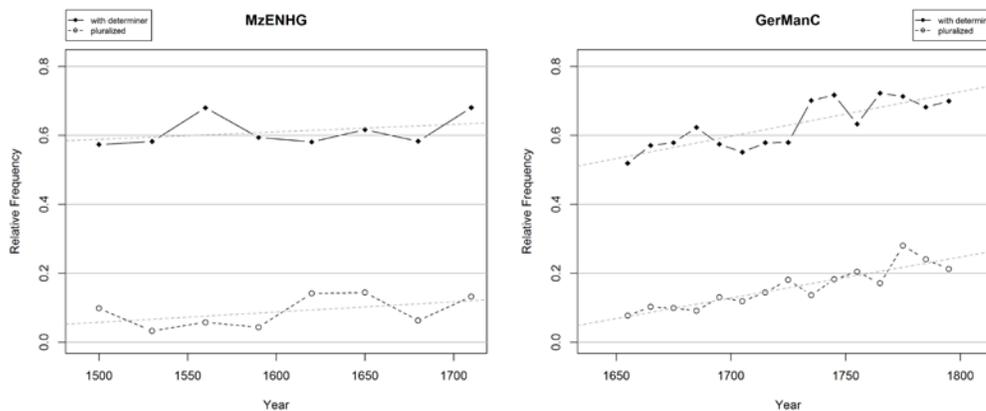


Fig. 1: Frequency of *ung*-nominals with a determiner and pluralized *ung*-nominals in relation to the total number of *ung*-nouns in the MzENHG corpus and the GerManC corpus, respectively.

These changes have important implications for the semantics of the word-formation pattern. Both pluralization and the use of determiners evoke (or, in some cases, coerce) a ‘count noun’ construal, cf. *beer* – *a beer* – *beers* ‘different types of beer’ (cf. Vogel, 1996, pp. 115, 131). This fits in with the hypothesis that *ung*-nominals tend to assume a more ‘nouny’ construal over time (cf. Demske, 2000). For example, *Rüstung* (< *rüsten* ‘equip, prepare’) in (3) below is used in a very verb-like fashion. In a phrase like *neben anderer ruestung vnnd zeug* (NOBD-1590-ST-neu | MzENHG) ‘apart from other **armor** and gear’, by contrast, it is used in a collective sense. In this context, a determiner can be used,

³ In line with Thielmann (2007: 808), I use ‘determiner’ as an umbrella term for demonstratives, possessive pronouns, pronominal genitives and quantifiers as well as for definite articles and indefinite articles. The term ‘article’, by contrast, only refers to the latter two. However, the increase is particularly significant for definite articles (Kendall's $\tau=0.50$, $p<0.01$).

⁴ Kendall's Tau is a signed-rank correlation coefficient which has been advocated as an appropriate measure for assessing frequency changes in diachronic corpora by Hilpert & Gries (2009). Howell (2010) offers a very accessible explanation of this test.

but is not obligatory. However, if the singular form *Rüstung* is used in the ‘count noun’ reading which prevails in the NHG period, it has to be accompanied by a determiner, e.g. by a possessive pronoun as in *Ich wil meine **Ruestung** anlegen* (DRAM_P1_NoD_1673_Leonilda | GerManC) ‘I want to / will buckle my armor’. To be sure, the increase in the use of determiners can partly be attributed to the further obligatorification of (definite and indefinite) articles, which had started out in the Middle High German period (cf. Nübling et al., 2013, pp. 294-297). However, if we take a look only at the article constructions in the corpus rather than the corpus as a whole, we find that the frequency of *ung*-nominals in these constructions relative to the overall number of article constructions increases highly significantly, as well ($\tau=0.90$, $T=100$, $p<0.001$).

[p. 278] While *ung*-nominals are used more frequently in determiner and plural constructions, the frequency of *ung*-nominals used as complements of prepositions decreases significantly. More specifically, the [P NOM (COMP)] construction, i.e. a preposition followed by a (singular) nominal without a determiner, which in turn can be complemented by a genitive or a subordinate clause, enjoys increasing popularity in the ENHG period but falls out of use in the GerManC period ($\tau=-0.71$, $T=15$, $p<0.001$; see Figure 2). [P NOM (COMP)] constructions constitute independent, and in principle omissible, parts of the sentences they occur in. Consider the following examples:

- (1) *sie seye beschaefftiget **in Beschreibung** fremder Sitten* ‘she was_{CONJ} busy **describing** strange customs’ (NEWS_P2_WOD_1722_Zuerich | GerManC)
- (2) ***bey Betrachtung** dieser ganz besondern Gegend ‘**in looking at** this very special scenery* (SCIE_P3_OMD_1778_MineralogischeGeographie | GerManC)
- (3) ***Mit ruestung** zu der Reise gehn viele Tage weg* ‘Many days pass **with preparing** for the journey’. (DRAM_P1_NoD_1699_Euridice | GerManC)

Importantly, this construction tends to highlight the ‘verby’ characteristics of the *ung*-nominals occurring in the N slot. Prepositions like *in*, *bei*, and *mit* in (1)-(3) above, but also less frequent prepositions such as *neben/nebst/nächst* ‘next to’ express, in the most prototypical cases, the simultaneity of the action or event described in the PP with the action or event described in the main clause. In the case of the prepositions *vor* ‘before’ and *nach* ‘after’, a relationship of anteriority

or posteriority is construed. *zu* ‘to’ and *durch* ‘through/by’ are used in a causal sense, construing the event denoted by the nominal as a goal or as a means to an [p.279] end, respectively. All these cases require what is denoted by the *ung*-nominal to be construed as an event unfolding in time, rather than an atemporal entity.

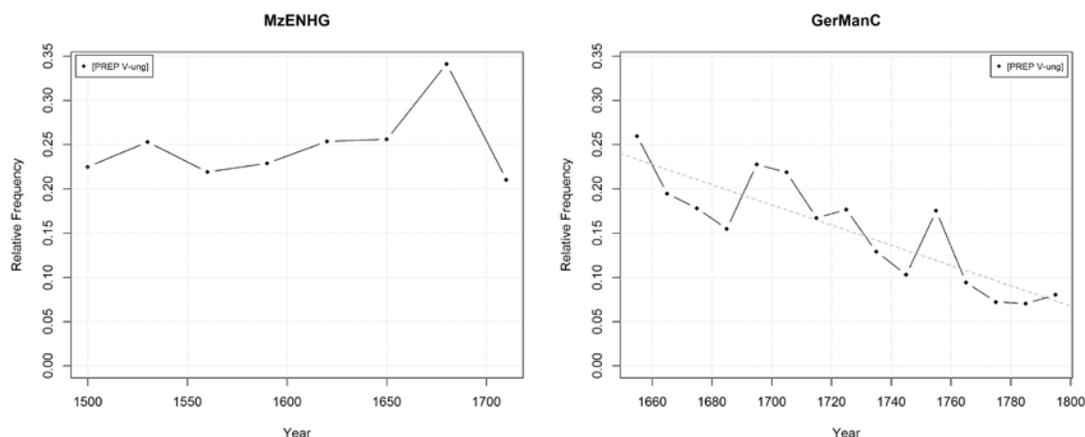


Fig. 2: *ung*-nominals in the [P NOM (COMP)] construction in relation to the total number of *ung*-nominals in the respective corpus period.

If we use collocation analysis (Stefanowitsch & Gries, 2003) to determine which *ung*-nominals are particularly ‘attracted’ to or ‘repelled’ by this construction, we find that precisely those word-formation products that tend to be used in a lexicalized and ‘reified’ reading hardly occur in the [P NOM (COMP)] construction at all. In collocation analysis (more specifically: simple collexeme analysis), the association of a particular lexical item l_i (e.g. *Beschreibung* in (1)) to a construction c (here: the [P NOM (COMP)] construction) is determined by taking into account a) the frequency of l_i in c , b) the frequency of l_i in all other constructions belonging to the class of constructions under investigation ($\neg c$), c) the frequency of other lexemes of the same word class L (here: verbs) occurring in c ($\neg l_i$), and d) the frequency of all other verbs ($\neg l_i$) in all other constructions ($\neg c$). The p -value of a Fisher Exact Test then serves as indicator of collocation strength.

Lemma	Frequency	Expected Frequency	p -value (Collocation Strength)
ATTRACTION			
Anschung ‘view(ing)’	46	13.28	1.52E-25

Vermeidung ‘avoiding’	20	5.78	1.62E-11
Befindung ‘deciding’	10	2.89	4.03E-06
Ermangelung ‘want of’	9	2.60	1.40E-05
Verfliessung ‘elapsing’	7	2.02	0.00017
Lesung ‘reading’	7	2.31	0.001
REPULSION			
Verordnung ‘regulation’	2	17.04	8.53E-07
Nahrung ‘food’	1	14.44	1.12E-06
Erscheinung ‘apparition’	1	13.86	2.96E-06
Beschreibung ‘description’	4	19.64	3.13E-06
Hoffnung ‘hope’	16	38.41	5.13E-06
Meinung ‘opinion’	26	51.98	7.26E-06

Tab. 1: ‘Attracted’ vs. ‘repelled’ *ung*-nominals in the [P NOM (COMP)] construction according to a simple collexeme analysis (excerpt).

To be sure, the items ‘attracted’ to this construction are not necessarily highly transparent *ung*-nominals either. Instead, phrases like *in Ansehung* and *bei Vermeidung* can be regarded as constructional idioms, i.e. as non-compositional form/meaning-pairings in their own right (cf. Sections 2 and 3 below). Apart from such “constructionalized” instances, however, the construction is used productively in the ENHG and at the beginning of the NHG period, the NOM slot being filled by durative verbs like *Lesung* ‘reading’ or iteratively construed verbs, e.g. *gele zen kommen vonn brauchung vnd essunge des honiges* ‘yellow teeth are caused by consuming and eating honey’ (OMD-1530-ST-neu | MzENHG).

2. Morphology and Lexis: Word-formation and constructionalization

A long-standing debate in morphological theory concerns the question whether complex words are derived in a rule-based manner in language production and comprehension or if at least some complex words are listed in the lexicon. From a CxG perspective, these two options do not exclude each other. As Langacker (1987, p. 29) remarks, using an example from inflectional morphology,

It is gratuitous to assume that mastery of a rule like N + -s, and mastery of forms like *beads* that accord with this rule, are mutually exclusive facets of a speaker's knowledge of his language.

Instead, it seems plausible to assume that both complex words and their bases form part of the constructional network that constitutes a speaker’s linguistic knowledge, the so-called “constructicon” (cf. Hilpert, 2014, p. 50). However, the [p. 280] association strength between different items in the constructicon can be assumed to vary to a considerable degree depending on their frequencies and the

contexts in which they are used. For example, *Meinung* ‘opinion’ is not only much more frequent than its base *meinen* ‘think/believe’, but it also occurs in highly unpredictable meaning variants, some of which can be traced back to meaning variants of the base verb that have fallen out of use (e.g. Middle High German *meinen* ‘to mean’). Examples (4) and (5) exemplify two of those readings:

- (4) *das man fürnämlich auff den sin_ vnd **mainung**/ vnnd nicht auff die blosse wort achtung haben solle* ‘that one should especially pay attention to the sense and **meaning**, not just on the mere words’ (WOBD-1560-KT-043.txt | MzENHG)
- (5) *2. Unzen schwarzer Nießwurzel **nach** Hartmanni **Meinung** praepariret* ‘two ounces of black hellebore, prepared **according to** Hartmann’ (SCIE_P1_WMD_1687_ArtzneyKunstRAW | GerManC)

Example (5) also illustrates the relevance of so-called constructional idioms, i.e. “syntactic constructions with a (partially or fully) non-compositional meaning contributed by the construction“ (Booij, 2002, p. 301). The meaning variant ‘according to’ is only possible for *Meinung* in this specific construction; thus, the PP *nach Meinung* has become a construction in its own right, i.e. it has undergone constructionalization (Traugott & Trousdale, 2013). Note, however, that *Meinung* occurs, in the GerManC corpus, much more often in other contexts than in combination with a preposition (see Table 1). Hence, it seems reasonable to assume that the base verb *meinen*, the nominal *Meinung*, and the constructional idiom *nach Meinung* are represented as distinct, albeit interconnected, entities in the constructicon.

Similar considerations could be brought forward for most *ung*-nominals as well as for many Nominalized Infinitives (NIs). Note that a large number of *ung*-nominals, but only few NIs exceed their base verbs in frequency (see Figure 3). While this does not necessarily mean that these word-formation products are lexicalized, we can safely assume that, in many if not most cases, the quantitative “emancipation” from the base verb goes along with a change in meaning.

formation construction. Morphological cross-tabulation analysis takes as its input a) the frequency of the derivative in question, here labeled as $W [w (b_i)]$, indicating that the derivative of the word class W comes about by inserting the base word b_i in the open slot of the constructional schema w ; b) the frequency of all other [p. 281] derivatives formed according to the pattern w ; c) the frequency of the base b_i in its original word class B , and d) the total number of instances of the word class B apart from b_i (see Table 2).

	Base b_i of class B	Other words of class B
Word-formation construction w deriving words of word class W	$W [w (b_i)]$	$W [w (-b_i)]$
Word class B of the base	$B(b_i)$	$B(-b_i)$

Tab. 2: Contingency table for morphological cross-tabulation analysis.

The results, presented in Table 3, show that lexicalized nominals display a particularly high degree of ‘attraction’. Consider, for instance, *Versammlung* ‘assembly’, which refers to a meeting, i.e. the result of a gathering of people, rather than to the process of coming together, or the NI *Verbrechen* ‘crime’, whose base verb is almost entirely restricted to the idiom *etwas verbrochen haben* ‘having committed a crime’. All in all, however, the tendency towards lexicalization seems to be much weaker in NIs than in *ung*-nominals (cf. Barz, 1998). Note in this regard that many more *ung*-nominals than NIs exceed their base verbs in frequency (see Figure 4). Also note that the ‘repelled’ *ung*-nominals based on highly frequent [p. 282] verbs (*Machung*, *Nehmung* etc.) have fallen out of use by the end of the period covered by the GerManC corpus and are ungrammatical in present-day German.

Rank	Lemma	Association strength (<i>p</i> -value)	Lemma	Association strength (<i>p</i> -value)
		ung-Nominalization		Infinitival nominalization
ATTRACTION				
1.	Ordnung ‘order’	9.75E-231	Leben ‘life’	0
2.	Meinung ‘opinion’	4.82E-132	Vergnuegen ‘joy’	1.97E-114
3.	Handlung ‘action’	4.36E-102	Ansehen ‘reputation’	3.87E-59
4.	Wirkung ‘impact’	5.95E-78	Mitleiden ‘sympathy’	9.84E-53
5.	Hoffnung ‘hope’	6.9E-71	Vermoegeen ‘ability / wealth’	1.03E-51
6.	Bewegung ‘movement’	5.61E-54	Verbrechen ‘crime’	7.1E-47
7.	Versammlung ‘assembly’	1.01E-45	Vorhaben ‘plan’	2.33E-43
REPULSION				
1.	Machung ‘making’	6.17E-37	Gehen ‘going’	4.89E-09
2.	Haltung ‘holding’	1.98E-29	Stehen ‘standing’	9.02E-05
3.	Nehmung ‘taking’	1.95E-28	Ziehen ‘pulling’	0.001
4.	Findung ‘finding’	1.00E-27	Sprechen ‘speaking’	0.006
5.	Setzung ‘setting’	2.43E-15	Wissen ‘knowing’	0.02
6.	Nennung ‘mentioning’	6.21E-12	Denken ‘thinking’	0.03
7.	Ziehung ‘drawing’	9.78E-12	Erkennen ‘recognizing’	0.03

Tab. 3: Results of morphological cross-tabulation analysis for *ung*-nominalization and infinitival nominalization.

3. Morphology and Semantics: Cognitive construal and word-formation

The analyses presented in the previous sections of this paper demonstrate the pivotal role of interface phenomena for a comprehensive understanding of morphological patterns. In addition, they can provide clues to the initial question of this paper: What drives morphological change? Taken together, the empirical results presented above lend support to a usage-based theory of word-formation [p. 283] change in the spirit of Cognitive Grammar (Langacker, 1987, 1991). Cognitive Grammar assumes that the syntactic and morphological aspects of a language are “*motivated* by semantic aspects and that they can be exhaustively described by means of symbolic structures.” (Taylor, 2002, p. 29) As discussed in Section 1, the meaning of a construction arises from generalizations over constructs (i.e., concrete instantiations of a construction) in their respective contexts. These contexts are in turn constituted by the instantiations of specific constructions. Thus, the interaction of different constructions has to be taken into account in order to discern the meaning of both lexical items and more abstract constructions. As an example, consider *Ansehung*, which is almost exclusively attested in the idiom *in Ansehung (von)* ‘in view (of)’ in the GerManC corpus.

- (6) *in Ansehung deiner grossen Suenden-Schulden*/ ‘regarding your great guilt’ (SERM_P2_OOD_1709_Orgel | GerManC)

[p. 284] The figurative reading exemplified in (6) is usually unavailable for the base verb *ansehen* ‘look at, regard’. However, a notably different figurative reading is possible for the verb in the constructional idiom *für/als* ADJ *ansehen* ‘regard as (ADJ)’. In addition, the NI *Ansehen* is lexicalized in the meaning of ‘reputation’. In the period covered by the GerManC corpus, it is furthermore used in the meaning of ‘look, outward appearance’ (see (8)).

- (7) *Alles dieses **Ansehen** hatte er der Kappe zu danken* ‘All this **reputation** he owed to the cap’ (NARR_P2_WOD_1746_Muetze | GerManC)
- (8) *Diese drey Sorten Endivien, ob sie gleich dem **Ansehen** und ihren Blättern nach unterschieden sind, [...] so erfordern sie doch einerley Erziehung und Wartung* ‘These three types of chicory, although they differ in **appearance** and in their leaves, require the same kind of nurture and maintenance.’ (NEWS_P3_WOD_1781_Heilbronn | GerManC)

Lexicalization is of course a matter of degree. While some nominals are almost entirely disentangled from the semantics of their base verbs, others preserve certain aspects of their base verbs’ meanings, and some, such as *Landung* ‘landing’, remain entirely transparent. However, even fully transparent nominals modify the semantics of their base verbs. From a Cognitive Grammar perspective, it would be a gross simplification to state that the phrases *Das Flugzeug landet* ‘The plane is landing’ and *Die Landung des Flugzeugs* ‘The landing of the plane’ have “the same meaning”. Instead, it seems more appropriate to say that both utterances express the same conceptual content, but they differ in construal. Langacker (2008, p. 55) argues that “[a]s part of its conventional semantic value, every symbolic structure construes its content in a certain fashion.” The distinction between conceptual content and construal can be linked up with the two major functions of word-formation that have often been discerned in the morphological literature (e.g. Kastovsky, 1986, p. 409; Dressler, 1987, p. 99): On the one hand, word-formation is used to label new concepts, i.e. to express a specific conceptual content (e.g. *wheel-chair*, *smart-phone*). On the other hand, word-formation patterns also serve the purpose of “syntactic recategorization” (Kastovsky, 1986, p. 412), e.g. by converting verbs into nouns. The change of lexical category goes along with a change in construal. In the terminology of CxG, parts of speech such as noun and verb can be seen as (very abstract) constructions. Drawing on the distribution of lexical items in syntactic patterns, but also relying on semantic and phonological clues (cf. Hollmann, 2013), language users discern different word classes as prototypically structured

categories. For example, German nouns prototypically denote objects. In Croft's (2001, p. 87) universal-typological parts of speech model, these are defined as non-relational, static, and permanent. The prototypical German verb, [p. 285] by contrast, denotes an action, which is defined as relational, processual, and transitory. Since language users are well-acquainted with the (default) semantics of different parts of speech, "coercing" a concept usually expressed by another part of speech into a specific word class will not leave its semantics unaffected. Therefore, "nominalization involves a conceptual reification." (Langacker, 1991, p. 22)

On a less abstract level, these considerations also pertain to the word-formation constructions discussed throughout this paper. Word-formation patterns like *ung*-nominalization and infinitival nominalization arise through generalizations over constructs, i.e. actual usage events, in context. Note that the meaning of a construct depends on its context to a considerable degree. Just like nominalization changes the construal of a specific conceptual content due to language users' knowledge about the category [NOUN], as well as due to their knowledge about the respective nominalization pattern, syntactic patterns, by virtue of being constructions carrying (schematic) meaning, modify how the conceptual content of the lexical items inserted into their open slots is construed. Changes in the use of specific constructs – e.g., changes regarding the syntactic patterns in which a construct preferentially occurs – can therefore entail changes in the generalization over these constructs, i.e. the construction. Regarding *ung*-nominalization, it therefore seems plausible to assume a complex interaction between a) the decline of the [P NOM (COMP)] construction, b) the increasing use of *ung*-nominals in the more "nouny" determiner and plural constructions, c) the emergence of new, more concrete meaning variants for *ung*-nominals through lexicalization, and d) the diachronic change of the word-formation construction as a whole.

Given that, over time, more and more *ung*-nominals assume a highly concrete, 'reified' meaning (cf. Present-Day German *Heizung* 'heating installation', *Bedienung* 'waiter/waitress'), it seems reasonable to assume that the construction, i.e. the word-formation pattern of *ung*-nominalization, has become 'nounier' as well. This might explain the emergence of word-formation constraints affecting this pattern: New words like *googeln* 'to google' cannot be nominalized

with *-ung*⁵, and previously felicitous *ung*-nominals like *Machung* ‘making’ or *Schweigung* ‘silence’ have fallen out of use. Demske (2000) observes that e.g. durative, iterative, and inchoative verbs as well as verbs of transfer cannot function as base verbs for *ung*-nominalization any more. Conversely, the restrictions affecting infinitival nominalization seem to have decreased. Punctual verbs like *zerschlagen* ‘to smash’ [p. 286] can now be nominalized according to this pattern, whereas no NIs based on such verbs are attested in earlier stages of German (cf. Werner, 2012). Given the declining productivity of *ung*-nominalization (cf. Demske, 2000), infinitival nominalization can thus be seen as a “replacement pattern” (Barz, 1998) and as the new default pattern used to derive nouns from verbs.

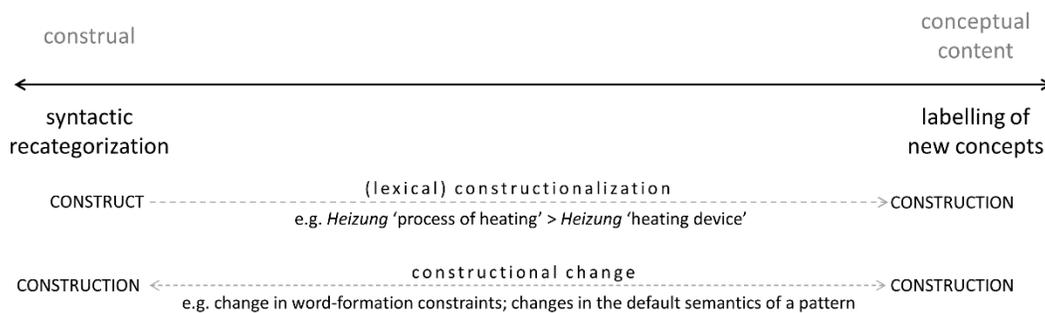


Fig. 4: A usage-based model of word-formation change.

Figure 4 provides a simplified summary of the main ideas presented above, drawing on the concepts of construal vs. conceptual content and the two functions of word-formation discussed above as well as on Traugott & Trousdale’s (2013) notions of constructionalization and constructional changes. While constructionalization is defined as the emergence of a new form/meaning pairing in the construction, “[a] constructional change is a change affecting one internal dimension of a construction” (Traugott & Trousdale, 2013, p. 26). For example, *Heizung* ‘heating device’ is enriched with additional, idiosyncratic meaning, thus emancipating itself from the word-formation pattern and becoming a construction in its own right. Likewise, the emergence of a constructional idiom such as *in*

⁵ An anonymous reviewer points out that this might be due to the non-native origin of *googeln*. However, *googeln* can be regarded as relatively well-integrated, especially due to the *-eln* ending which is characteristic of the infinitive of many native verbs. In addition, *-ung* used to take many non-native bases (especially loan verbs from French) in the timespan covered by the MzENHG corpus and the GerManC corpus.

Ansehung ‘in view (of)’ can be considered a case of constructionalization. By contrast, word-formation change in the narrow sense, i.e. change in word-formation constraints, affects a word-formation construction as a whole but does not entail the emergence of a new form-meaning pairing. Overall, the main function of *ung*-nominals seems to shift from syntactic recategorization to labelling new concepts, which in turn constrains its potential to be used productively. Conversely, infinitival nominalization seems to undergo a relaxation in constraints. In addition, only few NIs exhibit idiosyncratic meanings. Thus, infinitival nominalization, being a word-formation construction with the main function of syntactic recategorization, is ideally suited as a “replacement pattern” for *ung*-nominalization.

Conclusion

This paper has discussed the role of interface phenomena in word-formation change from a usage-based and constructionist perspective. In this view, processes [p. 287] that have traditionally been treated as interface phenomena are considered to be the rule rather than the exception. Since constructions are acquired via generalizations over actual language use, and since constructions at all levels of abstraction are assumed to be meaningful, a significant degree of interaction between lexical, morphological, and syntactic constructions is to be expected.

The concepts of constructionalization and constructional change capture the interaction of these factors in the emergence of new form-meaning pairings and in the change of existing ones. The diachronic change of German nominalization patterns arguably provides a prime example for processes of constructionalization and constructional change in word-formation: At the beginning of the period under investigation, *ung*-nominalization is a highly productive word-formation pattern. Its word-formation products tend to be used in a processual sense, which is promoted by its frequent occurrence in the [P NOM (COMP)] construction. Over the centuries, however, *ung*-nominalization is subject to a significant decrease in productivity. Various factors interact in this development. Among them, the decline of the [P NOM (COMP)] construction and the lexicalization of certain highly frequent *ung*-nominals figure prominently. Remarkably, the development of the [P NOM (COMP)] construction bears striking resemblance to the diachronic change of *ung*-nominalization in that its stagnation is preceded by the constructionalization of some highly frequent instantiations. For infinitival nominalization, qualitative studies (Werner 2012) have detected a relaxation of constraints, whereas a quantitative analysis of the GerManC corpus reveals a

slight increase in productivity (cf. Hartmann *forthc.*). This fits in with the hypothesis that infinitival nominalization gradually replaces *ung*-nominalization as the default word-formation pattern deriving nouns from verbs.

Importantly, these developments can only be understood if we take interface phenomena into account rather than investigating both patterns in isolation. Both the theoretical considerations and the empirical findings discussed throughout this paper demonstrate the need to broaden the scope of morphological research from the investigation of individual phenomena to the study of interaction patterns between constructions at different levels of abstraction.

References

Barz, I. (1998). Zur Lexikalisierungspotenz nominalisierter Infinitive. In I. Barz, & G. Öhlschläger (Eds.), *Zwischen Grammatik und Lexikon* (pp. 57–68). Tübingen: Niemeyer.

Booij, G. E. (2002). Constructional Idioms, Morphology, and the Dutch Lexicon. *Journal of Germanic Linguistics* 14, 301–327.

Booij, G. E. (2010). *Construction Morphology*. Oxford: Oxford University Press.

[p.288]

Croft, W. (2001). *Radical Construction Grammar. Syntactic Theory in Typological Perspective*. Oxford: Oxford University Press.

Demske, U. (2000). Zur Geschichte der *ung*-Nominalisierung im Deutschen. Ein Wandel morphologischer Produktivität. *Beiträge zur Geschichte der deutschen Sprache und Literatur* 122, 365–411.

Dressler, W. U. (1987). Word-Formation (WF) as Part of Natural Morphology. In W. U. Dressler (Ed.), *Leitmotifs in Natural Morphology* (pp. 99–125). Amsterdam, Philadelphia: John Benjamins.

Durrell, M., Ensslin, A., & Bennett, P. (2007). The GerManC Project. *Sprache und Datenverarbeitung* 31, 71–80.

Goldberg, A. E. (2006). *Constructions at Work. The Nature of Generalization in Language*. Oxford: Oxford University Press.

Hartmann, S. (*forthc.*) “Nominalization” Taken Literally. *A Diachronic Corpus Study of German Nominalization Patterns*. To appear in: Italian Journal of Linguistics, Special Issue “New Territories in Word-Formation”.

Hilpert, M. (2014). *Construction Grammar and its Application to English*. Edinburgh: Edinburgh University Press.

Hilpert, M., & Gries, S. T. (2009). Assessing Frequency Changes in Multistage Diachronic Corpora. Applications for Historical Corpus Linguistics and the Study of Language Acquisition. *Literary and Linguistic Computing* 24, 385–401.

Hollmann, W. B. (2013). Nouns and Verbs in Cognitive Grammar. Where Is The 'Sound' Evidence? *Cognitive Linguistics* 24, 275–308.

Howell, D. C. (2010). *Statistical Methods for Psychology*. 7th ed. Belmont: Wadsworth.

Kastovsky, D. (1986). Diachronic Word-Formation in a Functional Perspective. In D. Kastovsky, & A. Szwedek (Eds.), *Linguistics across Historical and Geographical Boundaries. Vol. 1: Linguistic Theory and Historical Linguistics* (pp. 409–421). Berlin, New York: De Gruyter.

Langacker, R. W. (1987). *Foundations of Cognitive Grammar. Vol. 1. Theoretical Prerequisites*. Stanford: Stanford University Press.

Langacker, R. W. (1991). *Foundations of Cognitive Grammar. Vol. 2. Descriptive Application*. Stanford: Stanford University Press.

Langacker, R. W. (2008). *Cognitive Grammar. A Basic Introduction*. Oxford: Oxford University Press.

Nübling, D., Dammel, A., Duke, J., & Szczepaniak, R. (2013). *Historische Sprachwissenschaft des Deutschen. Eine Einführung in die Prinzipien des Sprachwandels*. 4th ed. Tübingen: Narr.

Vogel, P. M. (1996). *Wortarten und Wortartenwechsel. Zur Konversion und verwandten Erscheinungen im Deutschen und in anderen Sprachen*. Berlin, New York: De Gruyter.

Scherer, C. (2006). Was ist Wortbildungswandel? *Linguistische Berichte* 205, 3–28.

Stefanowitsch, A., & Gries, S. T. (2003). Collostructions. Investigating the Interaction of Words and Constructions. *International Journal of Corpus Linguistics* 8, 209–243.

Taylor, J. R. (2002). *Cognitive Grammar*. Oxford: Oxford University Press.

Thielmann, W. (2007). Substantiv. In L. Hoffmann (Ed.), *Handbuch der deutschen Wortarten* (pp. 791–822). Berlin, New York: De Gruyter.

Traugott, E. C., & Trousdale, G. (2013). *Constructionalization and Constructional Changes*. Oxford: Oxford University Press.

Werner, M. (2012). *Genus, Derivation und Quantifikation. Zur Funktion der Suffigierung und verwandter Phänomene im Deutschen*. Berlin, New York: De Gruyter.

Abstract

This paper investigates the role of syntactic, semantic, and lexical factors in the diachronic development of German nominalization patterns. Drawing on an extensive corpus analysis of Early New High German and New High German texts, it is shown that a) deverbal nominals in the suffix *-ung* tend to develop more reified meaning variants, which is reflected in the syntactic patterns in which the word-formation products preferentially occur, and b) infinitival nominalization becomes more productive and is established as the new default word-formation pattern deriving nouns from verbs. These considerations fit in neatly with a cognitively-oriented theory of word-formation change situated in the framework of Construction Grammar.

Keywords:

Word-formation change; Construction Grammar; Cognitive Linguistics;
Morphology/syntax interface; Morphology/semantics interface

Author's address:

Stefan Hartmann, German Department, University of Mainz, Jakob-Welder-Weg
18, D-55099 Mainz, Germany, stefan.hartmann@uni-mainz.de