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## English *ing*-forms and the verb-noun continuum

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## Abstract

In der vorliegenden Arbeit wird das englische Morphem *-ing* und seine Beziehung zum Verb-Nomen-Kontinuum untersucht. Die gesamte Vielfalt der *-ing*-Konstruktionen wird kritisch im Rahmen der Kognitionslinguistik und Konstruktionsgrammatik diskutiert und in einer quantitativen Korpusstudie auf seine Konstruktionspezifität untersucht. Insbesondere wird die Rolle der Frequenz des Verbstammes mit der Kategorisierung des Morphems in Verbindung gebracht. Zunächst wird die Verbreitung der Konstruktion *-ing* im gesamten Bereich der englischen Grammatik aufgeführt und anschließend die historischen Gründe für die große Vielfalt diskutiert. Die Verbreitung des Morphems erstreckt sich über alle Hauptwortarten und kann formale Eigenschaften von sowohl Nomen als auch Verben besitzen. Eine Differenzierung wird in Frage gestellt. Um den funktionalen Zusammenhang aller Verwendungen der Konstruktion zu analysieren, werden zunächst die Eigenschaften der Hauptwortarten Verb und Substantiv diskutiert. Besonders die Gradienz von Hauptwortarten und verschiedene typologisch belegte Dekategorialisierungsmuster dienen als Anhaltspunkt für die anschließende Analyse des Morphems *-ing*. Es wird argumentiert, dass alle transparenten Verwendungen von *-ing* netzwerkartig verbunden sind und verschiedene Stufen von verbaler Dekategorisierung bzw. nominaler Rekategorisierung darstellen. Des Weiteren wird funktionale Ikonizität von Wortarten angenommen, wie sie vor allem in William Croft's *Radical Construction Grammar* postuliert wird. Unter der Annahme, dass tatsächliche formale Eigenschaften in Corpus-Daten die Kategoriezugehörigkeit von *-ing* widerspiegeln, werden Rangordnungen von Nominalität und Verbalität definiert und als Messinstrument operationalisiert. Als Grundlage dienen typologisch als universal beschriebene Markierungsmuster. In der Korpusstudie wird zunächst anhand einer Fallstudie mit *-ing*-Formen von 7 Verbstämmen die Annahme geprüft, dass Konstruktionen in einem spezifischen Zusammenhang zu einzelnen lexikalischen Einheiten stehen. Es wird ein signifikanter Zusammenhang zwischen den Verbstämmen und verschiedenen Konstruktionen festgestellt. Anschließend wird die zuvor entwickelte Rangfolge genutzt, um an einer zweiten Stichprobe die Assoziation von Verbstamm-Frequenz und Nominalität bzw. Verbalität zu testen. Als Teststatistik wird eine ordinale Regression verwendet. Das Ergebnis zeigt eine signifikante Korrelation. Seltene Verbstämme zeigen eine höhere Tendenz zur Deverbalisierung in Verbindung mit *-ing*. Das Ergebnis wird in Bezug zu Exemplar-

Mechanismen gestellt und diskutiert. Es wird vermutet, dass seltene Verben schwächer als Prozess oder Event im kognitiven System repräsentiert sind und dadurch stärker auf die de kategorisierende Eigenschaft vom Morphem *-ing* reagieren. Abschließend werden methodologische Probleme aufgezeigt und mögliche Verbesserungen und Erweiterungen vorgeschlagen.

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# 1. Introduction

Gerunds are one of the most debated topics in the history of English grammatical description. They are notoriously difficult to assign to a word class and they behave differently from context to context. They do not only challenge the neat word class categories of school grammar, but even complex theoretical frameworks. In this paper I revisit the *-ing* form from a Cognitive Linguistic perspective. The main focus is on investigating the relationship between *-ing* forms and the major word classes. The view is taken that different uses can be mapped onto the verb-noun continuum (Peters 2013). One of the main research question motivating this paper is whether *-ing*-forms form a homogenous group (polysemy) or separate categories (homonymy). In the corpus study, I approach the question whether there is an *-ing*-prototype, and I put forward the hypothesis that the prototypical function of *-ing* is to deverbalize, i.e. indicate that the verb stem is not used in its canonical way.

Among the smallest meaningful units of morphemes, *-ing* is an unusual one as it occurs in functions scattered all over the grammar. On the level of morphology, it is both a derivational and an inflectional morpheme. Bound in a lexeme, it functions as nominal, adjectival and verbal construction in syntax. On a semantic level, it can produce imperfective/continuous and perfective meanings; and finally, it can also take the discourse function of participants, modifiers and events. English has lost most of its inflectional morphology. The remaining inflections, such as *-ing*, are remarkable for their form to function economy compared to other languages like German (cf. König & Gast 2012). During the history of English, *-ing* has emerged from two affixes which are very different on a first glance: a nominalizing and a participial suffix. However, it turns out that both derivation processes result in similar discourse functions.

*-ing* is a prime example of a continuous phenomenon. It is related to many different kinds of continua among which are the verb-noun continuum, the inflectional-derivational continuum and the grammatical-lexical continuum. Especially word class systems have been a major focus of typological research (Hopper & Thompson 1984, 1985; Croft 1991, 2001, among others). A general distinction between nouns and verbs is, however, seen as universal (e.g. Givón 1979, Hopper & Thompson 1984, Schachter 1985, Croft 2001). The noun and verb

clusters are predominant among languages, whereas in-between categories such as gerunds, participles or infinitives are not.

In this paper, I draw upon the vast typological literature concerning universal markedness patterns. Selected combinations of these patterns are used to operationalize scales to measure how verb-like or noun-like a construction is. I am able to show that low frequency verbs are more susceptible to deverbalization. The interpretation suggested is that this reflects the prototypical nature of the morpheme since low frequency items are more susceptible to analogy processes.

I attempt to link quantifiable formal properties to discourse functional behaviour. Especially the progressive construction has been a major research area lately (Kranich 2013, De Wit & Brisard 2014). The importance of frequency data and statistical methods has been emphasized a lot in latest research. However, many recent studies on *-ing*, especially about its categorical status, do not take into account quantitative data (Pinker 1999, Lee 2007, De Smet 2010). Exceptions are De Smet (2008) and Fonteyn et al. (2015) on the historical development of nominal and verbal gerunds.

In the first sections, I will explore the different uses of *-ing* (§2) and discuss aspects of its diachronic development (§3). After that in section 4, I will summarize theoretical models of word class systems and especially relate to typological research. In section 5, I discuss the meaning and discourse functional properties of the major word classes that have been suggested by the literature. Section 6 summarizes different approaches to the categorization of *-ing*. In section 7, I will discuss the role of frequency in categorialization and summarize the insights of Cognitive Linguistics and Radical Construction Grammar in order to derive the hypotheses tested in the corpus study (§8-9). I will use a chi-squared test and ordinal regression for testing the hypotheses and discuss the results in section 10. Section 11 concludes.



## 2. A Category in between

### 2.1 Ranges of use

Normally, English *-ing* is considered to have two main areas of use: nominal uses mostly referred to as verbal noun or gerund (1-2)<sup>1</sup>, and adjectival or verbal uses, referred to as deverbal adjective or present participle (4-5). Examples (2-3) are in-between cases displaying both verbal and nominal aspects.

- (1) **Talking** is something they do easily but not well. (BNC: CG3)
- (2) I like **watching** rugby league. (BNC: KBC)
- (3) Why do you keep **saying** they're not? (BNC: KDE)
- (4) They're **making** good scent now. (BNC: K8V)
- (5) It is very **interesting** and is linked to the work we have been carrying out.  
(BNC: K42)

In the following sections, I will give an overview of both nominal and verbal uses concentrating on morphosyntactic features.

#### 2.1.1 Nominal Gerunds

*-ing* is a frequent derivational suffix for the nominalization of verbs. The resulting nouns are usually called verbal nouns, deverbal nouns, action nominals, nominal gerunds or sometimes gerundial nouns. (De)verbal noun is a cover term for all nouns derived from a verb stem by affixation or conversion, not only by *-ing*. On the other hand, not all *-ing* nouns are action nominals, as some refer to the result of an action rather than the action itself (*building, painting*, cf. Bauer & Huddleston 2002: 1702). The difference between the terms 'gerundial noun' and 'nominal gerund' is mainly one of perspective, i.e. the former focuses on the more lexicalized nouns, while the latter focuses on the derivational aspect. In this paper, since I focus on the suffix *-ing*, I will use the more common term nominal gerund.

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<sup>1</sup> Most examples were taken from the British National Corpus (Davies 2004-). The three letter code represents the file name of the text in the corpus. Emphasis was added. All rights in the texts cited are reserved.

Nominal gerunds behave like nouns concerning their morphology and behaviour in syntax. They can be found with determiners (6), with plural inflection (7) and possessive *-(e)s* (8).

(6) (...) all of them may not have been discovered during the **testing**. (BNC: A0H)

(7) The **readings** were all negative. (BNC: GOE)

(8) (...) a portion of the **building's** external wall would be destroyed (...) (BNC: A0B)

They can occur in argument position, e.g. as subject, object or complement (9), be modified by adjectives (10), and they take prepositional complements (11). Their distribution is almost identical to that of any other noun phrase.

(9) I love **teaching**. (BNC: A0U)

(10) There is good **surfing** too. (BNC: ECL)

(11) (...) there is no power to prohibit **reporting** of proceedings. (BNC: HHX)

De Smet (2008) further distinguishes bare nominal gerunds (10, 11, arguably also 9) and definite nominal gerunds, i.e. gerunds taking a definite article (6-8).

### 2.1.2 Verbal Gerunds

Frequently, *-ing* constructions display both nominal and verbal morphosyntax at the same time. Those occurrences are normally called verbal gerunds. In that respect, they are often considered a mixed category. Verbal gerunds have the internal syntax of a verb while having the external syntax of nouns (cf. De Smet 2008, Langacker 1991, Pullum 1991, Ross 1973). They occur in the same syntactic positions listed above. However, they can be modified by adverbs rather than adjectives (12), take objects (13), have a subject of their own (14), and they can occur with negation and in perfect or future tense auxiliaries (15) (*OED* 2015: *-ing*, suffix<sub>1</sub>, 2).

(12) **Eating** *sensibly* is vitally important for health. (BNC: GXJ)

(13) **Finding** *a good role* is now very difficult for Mel. (BNC: CH5,)

(14) A few people got terribly carried away, leaping up to voice their guilt at *John being* kidnapped. (BNC: FS0)

(15) On account of *not having read* the book it is difficult to remember. (BNC: K55)

The difference between nominal and verbal gerunds is mostly related to the presence or absence of nominal morphology. Bare nominal gerunds and verbal gerunds closely resemble each other both in distribution and discourse-function (De Smet 2008). Furthermore, in absence of an argument, this resemblance is even stronger. As a result, examples are either functionally equivalent (16) or ambiguous (17) (cf. De Smet 2008, Duffley 2006, Biber et al. 1999).

(16) a. The dismantling of the reactor took six months. (Duffley 2006: 162)

b. Dismantling the reactor took six months. (Duffley 2006: 162)

(17) I find that writing is like drinking. (Biber et al. 1999: 67)

Because of the internal syntax of a verb phrase, the verbal gerund differs from nominal gerunds in that it neither contrasts paradigmatically with ordinary NPs (not even other nominalizations), nor with verbs, but only with *to*-infinitives.

(18) I like **drinking** wine. / I like to drink wine.

(19) \*I like drink wine. / \*I like digestion wine.

On clause-level, however, the participial phrase does resemble noun phrases. Consequently, some linguists treat gerundial phrases as ‘phrasal nominalizations’ in analogy with nominal gerunds (e.g. Yoon 1996).

One particularly frequent environment -ing is found in is after prepositions. It occurs as object of phrasal verbs (20) or as prepositional object in fixed expressions like in (21-22). The function is similar to that of an ordinary object.

(20) You’re not thinking about **watering** or whatever you should be doing in the garden. (BNC: JJH)

(21) He had suspected someone of **forging** letters of Walter Machin. (BNC: H9D)

(22) You know, local authorities aren't expert in **looking** at company law. (BNC: G4H)

### 2.1.3 Participles and Deverbal Adjectives

The other main use of *-ing* forms is that of a participle. Participles are traditionally considered to have two major aspects. Firstly, they are used as adjectives formed from verb bases. Secondly, they are part of periphrastic verb forms. Similar to nominal gerunds, there are several ways to refer to those adjective-like uses of *-ing*. On the most lexicalized side, there are deverbal or participial adjectives..

(23) There were quite a few **interesting** pieces. (BNC: HBD)

(24) That's extraordinarily **interesting**. (BNC: G12)

Not all participial adjectives can be used attributively, and not all *-ing* forms can be used as adjective. However, *-ing* in a more verb-like use, traditionally called a participle, can be used as modifier productively in non-finite relative clauses (25) or in free adjuncts (26) (cf. Duffley 2006).

(25) There was a man **walking** up and down the corridor outside. (BNC: B0U)

(26) Still not **knowing** he's infected, Tom marries Janet (BNC: A07).

Those uses are adjective-like in function, but are usually distinguished from adjectives since they take objects and do not show adjectival morphology (intensifiers, comparatives).

When the present participle is used as a subject complement (27) or object complement (28), its function is most verb-like, differing from other verbs only in that they construe events/states secondary to the main verb.

(27) He kept **wanting** to stop and just stand there. (BNC: H7F)

(28) She heard him **coming** upstairs (...) (BNC: H7H)

By far the most frequent use of *-ing* in spoken language is found in the construction of the progressive, which can be seen as a special type of subject complement.

(29) So I went across and she was **sitting** by the fire exit (...) (BNC: KDW)

*-ing* in such uses as in (29) is often analysed as aspect or tense marker, especially in educational literature. While it is true that many *-ing* constructions evoke a progressive or imperfective meaning, there are counter-examples. For example, *-ing* does not necessarily produce an imperfective meaning in inversion (cf. Dorgeloh 1997, Duffley 2006).

(30) Coming in third was David Coulthard. (Duffley 2006: 11)

The typical progressive meaning is a property of the whole construction rather than the suffix *-ing* (cf. Pullum 1991, Lee 2007).

The predicative use of deverbal adjectives strongly resembles the use of *-ing* as a participle in the position of a subject complement when there are no other morphosyntactic indicators like objects or intensifiers. Additionally, there are also parallels in function. The distinction between participles and deverbal adjectives, however, is normally much easier than the distinction between verbal and nominal gerunds.

## 2.2 Grammaticalized Constructions and Minor Appearances

There are a few other environments for *-ing* that are not directly related to verbs, adjectives or nouns. *-ing* is part of a few prepositions: *during*, *including*, *according*, *concerning*, *depending* (5 most frequent prepositions ending in *-ing* in the BNC). Those deverbal prepositions often occur in syntactic environments resembling participial phrases in free adjuncts. The object of the *-ing* participle is reanalysed as prepositional object.

(31) Rubbish, **including** glass bottles, was strewn across the land (...) (BNC: K55)

(32) I'm going to tell her to come **during** the week. (BNC: KR0)

*-ing* forms are sometimes used adverb-like, mostly the swear words *fucking* and *bleeding*, or in complex adverbial constructions like *for the time being*. Furthermore, *considering* and *supposing* can take the function of a sub-ordinating conjunction when followed by a full clause. Participial prepositions and conjunctions are relatively rare in English and mostly limited to the written registers. They can be seen as emergent structures and the reanalysis as part of the grammaticalization process is not complete (see Kortmann & König 1992 for a more detailed discussion).

Finally, just for the sake of completeness, I will briefly discuss some other *-ing* forms that are only of minor importance if not completely unrelated. There are fossilized *-ing* forms where the stem has either fallen out of use or the meaning relationship has obscured completely: e.g. *morning* and *evening*. Both words derive from actual verbal nouns, but are semantically completely obscure today. *-ing* is also part of some proper names, such as *Sterling*. These are completely unrelated and unlikely to play a role in cognitive processes concerning morphemic *-ing*. Both opaque forms of etymological *-ing* words and proper names were disregarded in this paper and treated as errors in the data.

### **3. Historical Development**

Synchronic treatment of *-ing* tends to be heavily influenced by the diachronic development of the suffix. In Old English, there were distinct morphemes for participles and gerunds. Since traditional analyses are often motivated by the study of Classical Latin, where participles and gerunds were also distinct, there is the potential to do the same for Modern English, ignoring the formal identity. While it might be misleading to base the categorization of linguistic items solely on historical states of a language, the diachronic change can offer great insight into the organization of present-day language. In connection with a usage-based model, it is often emphasized that diachronic language change, especially grammaticalization, and synchronic language use are closely intertwined (e.g. Bybee & Hopper 2001, Diessel 2012).

### 3.1 Two Distinct Origins

Modern English *-ing* derives from two very different affixes in Old English: the present participle form in *-ende*, and the verbal noun in *-ung*. Both can still be found as separate forms in German (Partizip I: *-end*, nominalizer: *-ung*), which is a plausible reason that German lacks a gerundive form corresponding to the English *-ing*. The merging of the two forms in English has not only led to the variety of uses of *-ing* today, but it has also conditioned the emergence of the gerund.

In Old English, *-ung(e)* was used as nominalizer. It was a derivational suffix on verbs mostly to form nouns of action (OED 2015: *-ing*, suffix1, 1). It had a regional variant *-ing(e)*. In Middle English the form *-ung(e)* died out and the surviving *-ing* acquired a wider variety of uses until it became fully productive, with the exception of modal verbs (ibid.). The original function was that of a nominal without any verbal features (cf. Jespersen 1926, De Smet 2008). Being a fully-fledged verbal noun, it occurred with nominal morphology and in syntactic environments typical for nouns. It normally functioned as subject, direct object or indirect object. Many nominal gerunds today can be traced back up to Old English. Example (33) shows the modern use of *earning* which is related to the verb *earn*. It takes a determiner and the plural ending. (34) and (35) show similar uses from Old English and Middle English, respectively.

(33) (...) **the earnings** of architects have risen since the early 1970s (...) (BNC: APX)

(34) 3if we serueden god so we doð erninges.

(Old English, OED: R. Morris *Old Eng. Homilies* (1868) 1st Ser. 179)

‘By serving God, we pay tribute.’

(Literally: *If we serve God, we do [him] reward/earnings.*)

(35) God is constrayned to bring vs from this folishe persuasion of our deseruings and earninges by our owne workes.

(1577, OED: J. Knewstubb *Lect. 20th Chapter of Exodus* xiii. 242)

Only later, not before the late Middle English period, did the form acquire verbal features, and only gradually so (cf. Donner 1986, Houston 1989, De Smet 2008). By the time the verbal noun began to appear in more verb-like contexts, the *-ing* suffix had become identical in

form to the present participle, so one of the reasons for the emergence of the gerund could lie in analogical reanalysis.

The Old English present participle in *-ende* was frequently weakened to *-inde* and had an emergent variant *-inge*, especially in the south of England. Originally, the present participle was used as non-finite verb in non-finite verb phrases and as derivational suffix to form adjectives from verbs (*OED* 2015: *-ing*, suffix<sub>2</sub>). Deverbal adjectives in Modern English (*interesting*, *entertaining*) go back to this participial suffix. As a result of further grammaticalization, the participle suffix being used as subject complement ultimately led to the emergence of the progressive construction (Kranich 2013), which is the most frequent occurrence of *-ing* in Modern English. A progressive-like construction with the present participle was already used in Old English, but without the imperfective meaning typically associated with the progressive in present-day English (e.g. Kranich 2013). Other grammaticalized forms, such as some (deverbal) adverbs and prepositions (*concerning*, *notwithstanding*), are also derived from the participle.

### 3.2 A Grammatical Merger?

The two origins of *-ing* are responsible for its wide variety of uses in English today. The question is whether the two distinct suffixes in Old English are evidence enough to justify the differentiation of *-ing* in Modern English; or approached from another perspective, whether there is evidence for a categorical collapse of the nominal gerund and the participle. The two suffixes were originally used for different kinds of recategorization of verbs. Over time, both verbal noun and present participle have acquired verb-like features in certain uses (verbal noun → verbal gerund; participial adjective modifying nouns → non-finite verb taking objects). There is no complete consensus about the reasons why the verbal noun and the present participle merged in form. It is mostly assumed that the verbal noun and the participle simply became confused because of their similar pronunciations after 1450 (e.g. Houston 1989, *OED* 2015: *-ing*, suffix<sub>2</sub>).

After the merging of the phonetic forms, there was arguably merely a homophonic relationship at first. The formal identity, however, might have facilitated or even caused the appearance of verbal gerunds. The origin of verbal gerunds is generally seen as the verbal noun rather than the participle (cf. *OED* 2015: *-ing*, suffix<sub>1</sub>, 1). In contrast, De Smet (2008)



argues that verbal gerunds and nominal gerunds were never competing constructions, which contradicts the assumption of a gradual shift of nominal gerunds. Yet, even if there was no causal relationship, the fact remains that in Late Middle English verbal gerunds began to appear (De Smet 2008), thus broadening the array of meanings and discourse functions. This can be seen as bridging the gap between nominal gerunds and participles. The older uses of both nominal gerunds and participles have remained in the language. This reflects Hopper's (1991) concept of functional layering (cf. also Kranich 2013).

The merging of form and the appearance of verbal gerunds points towards a single emergent category. There are important similarities between participles and gerunds, e.g. in their discourse functions (e.g. Houston 1989) and in their semantics (e.g. Duffley 2006). Recently, a number of studies have revisited the diachronic development of gerunds with focus on their discourse function (e.g. Fonteyn et al. 2015, De Smet 2008, Fanego 2004). Fonteyn et al. (2015) show that nominal gerunds and verbal gerunds seem to have developed into two different directions from Early Modern English to late Modern English. Functionally, verbal gerunds denominalized and verbalized, while nominal gerunds further nominalized. They argue that the nominal gerund was more verb-like in its discourse function in Early Modern English. They conclude that this "(...) suggests that nominal gerunds anticipated the functional changes that accompanied the emergence of morphosyntactically verbal gerunds, but retracted again to more nominal behavior as verbal gerunds gained ground" (Fonteyn et al. 2015: 56). Additionally, De Smet (2008) claims that nominal gerunds survived mostly in specialized uses. The interaction between the two constructions presupposes that constructional changes are interdependent, causing push- or pull-shifts. However, this is not necessarily the case (cf. Hilpert 2013).

Before I take a more detailed look at the specific discourse properties of *-ing* constructions, I will first turn to the more general word class categories, especially nouns, verbs and adjectives, since they serve as the basis of comparison.

## 4. The Nature of Word Classes

As discussed in the previous sections, words in *-ing* mostly resemble verbs, nouns or adjectives, but they can also function as adverbs, and some constructions have grammaticalized into prepositions or conjunctions. That means, *-ing* forms spread over almost every traditional word class (e.g. as listed in Haspelmath 2001: 16538). Exceptions are only pronouns, numerals and determiners, which is not surprising, as they are the smallest and most restricted of the closed word classes. All of the categorization systems discussed above use resemblance of *-ing* constructions to the word classes as a main criterion. However, some mixed constructions are difficult to be classified as either verb or noun or adjective. In this paper I assume that there is a continuum of both *-ing* uses and the word classes. First, however, a classification on the basis of the relationship to major word class categories needs a thorough understanding of those word classes themselves before relating to 'typical' properties of them.

### 4.1 Form and Meaning

The analysis of word classes has a long tradition in linguistics; in fact, it is as old as the study of language itself, beginning with the study of 'parts of speech' by Greek and Roman philosophers. Category distinctions were first made solely on grounds of morphological and syntactical criteria. Especially in the generative paradigm, word classes (lexical categories) are treated as merely structural concepts. A connection to semantics or pragmatics is not seen as essential for the formation of linguistic structure or lexical categories in particular (cf. Chomsky 1970). Lyons argues that the correlation between word classes and their semantics is grounded in circularity: "The only reason we have for saying that truth, beauty and electricity are 'things' is that the words which refer to them in English are nouns" (Lyons 1968: 318).

The main criterion for the classification in the generative/transformational paradigm is the similarity of morphological features and syntactic distribution. English nouns, for example, all share morphological properties: plural *-(e)s*, genitive/possessive *-(e)s*. They also share syntactic properties: they take argument positions; they can be preceded by determiners, modified by adjectives, etc. The category 'verb', on the other hand, comprises

lexical items that share other morphosyntactic properties; and most importantly, they do not share the same properties with nouns. Word classes are seen as discrete categories, and elements in an utterance can either belong to a category (+N) or they do not (-N). This approach is highly problematic for the description of participles and gerunds, which share aspects of nouns and verbs (cf. Ross 1972). For that reason, the issues of mixed categories have remained to be a frequently discussed topic in the (post-)transformational literature (Yoon 1996, Pinker 1999, Blevins 2005, Lee 2007).

However, already Jespersen (1924) acknowledged the fact that lexical items, in order to be meaningful, have to be analysed in the context of meaning and use, in addition to morphosyntax. At least intuitively, members of word classes correlate with semantic properties. With the emergence of Cognitive Linguistics, the idea of independency between lexicon and grammar was fundamentally challenged and revised. Lexicon and grammar are described as a continuum, which emphasizes the interplay between form and function (e.g. Langacker 1987, 1991). However, the connection between grammatical categories and meaning is not as easily accessible as morphosyntax. Function words and affixes are often described as semantically empty. The search for the meaning properties of grammatical categories becomes extremely abstract rather quickly.

## **4.2 Cognitive Approach**

Typically, nouns are described as a category denoting physical objects, while verbs denote actions (cf. Dixon 1982, Schachter 1985, Langacker 1987, Croft 1991). This intuitive characterization holds for some central members of each category, but turns out to be a deficient generalization. Abstract nouns, for instance, do not denote objects and state verbs do not denote actions. At this point, one might simply start sub-categorizing and assume distinct classes of concrete and abstract nouns, etc. The first problem arising from this strategy is that it is impossible to objectively decide when to stop sub-categorizing (also cf. Croft 2001: 78). Furthermore, while it is true that some abstract nouns seem to have different morphological properties (e.g. they are usually not pluralized), there are many other instances of nominal concepts that are no physical objects, but exhibit all the formal properties of the so-called concrete nouns, e.g. *thought(s)*. Classical models assuming necessary and sufficient conditions are not suitable. Language conceptualizes many abstract

entities the same way as 'things' and also has the potential to conceptualize events as abstract entities.

In Cognitive Grammar, grammatical categories are treated as schematic symbolic structures (Langacker 1987). Form and meaning are seen as indissociable. An implication of this assumption is that a grammatical category necessarily has some kind of general semantic structure given it has a general phonological and morphosyntactical structure. Therefore, it is possible to find schematic characterizations that are valid for all class members (Langacker 1999: 9). In order to include all category members, the description needs to be general enough, i.e. on a high enough level of abstraction. The meaning of a noun, for instance, is described as a "region in some domain", while verbs are "sequentially scanned processes" (Langacker 1987: 58). All instances group around a category prototype, building a network of meanings (Langacker 1991: 268).

Prototypes play a major role in language. They are well studied for lexical categories (Labov 1973, Rosch 1973, Lakoff 1987, Langacker 1987). They are also argued to be important in the formation of word class categories (Hopper & Thompson 1985, Croft 2001) and in the learning of phonetic categories (cf. Reed 2013, Kuhl 1993). The intuitive account of nouns, mentioned before, finds its place in prototype theory. The prototypical category members are profiled as physical objects and construed as discourse participants. The meanings of other less prototypical members are related to the schematic characterization in that they are (metaphorical) extensions of the prototypical meaning (cf. Lakoff & Johnson 1980, Langacker 1999). Altogether, prototypical members and less prototypical members of a category bear family resemblance and form a network (Rosch 1973, Tversky 1977, Langacker 1991).

Underlying the organization of the major word classes are cognitive principles of perception. Perceived events are organized as a relationship of figure and ground against a background, and analogously sentence constituents are organized as participants in a specific setting (cf. stage metaphor in Langacker 1991). Typically, nouns or noun phrases in subject and object position serve as discourse participants, while prepositional objects and adverbials are ascribed less prominence and are, therefore, construed as setting. Verbs typically construe the relationship between the participants and the change of this relationship. The generalized schemas for nouns and verbs unite both semantic and

pragmatic aspects of meaning. The stage metaphor emphasizes the importance of discourse function.

### **4.3 Typological Perspective**

Especially evidence from cross-linguistic surveys has suggested that discourse function plays a major role in the organization of word class categories (Hopper & Thompson 1984, 1985; Croft 1991, 2001). Hopper and Thompson (1985) consider a purely semantically based distinction between word classes as misleading. Instead it is the discourse-function that shapes word class categories. They hypothesize that the potential of a linguistic form to display category coding (e.g. verbal inflection) increases with the salience of the discourse function it is used to fulfil (Hopper & Thompson 1984: 747). In the case of a verb, for example, this salient discourse function is seen to be 'event-reporting' (ibid; see §5 for discussion). Their argument that discourse function, rather than meaning, shapes word categories is well in line with Langacker's stage metaphor. In the broad theoretical environment of Cognitive Linguistics, a discourse-oriented approach is not any different from a semantic approach since semantics and pragmatics are one and the same construct (cf. Langacker 1999).

Hopper & Thompson suggest "that the basic categories N and V are to be viewed as universal lexicalizations of the prototypical discourse functions." (1984: 1) The universality of the classes N and V is grounded in the universality of the functions in discourse, which, in turn, are directly related to cognitive abilities. Nevertheless, there is considerable variation in the formal systems of languages. On a first glance, Lyons' circularity argument makes sense. The board variation in the languages of the world leads to suspect that word classes are highly language specific, i.e. completely arbitrary conventionalizations. In fact, languages have different ways of organizing concepts. What is a noun in one language might translate into a verb in another language. Classes of function words are particularly language specific and even the English 'major' class of adjectives does not necessarily match in other languages (see §5.3).

The universal nature of meaning and discourse function is to be understood in terms of tendency patterns. According to Croft's (2001) typologically motivated Radical Construction Grammar, these universal tendencies can be traced in markedness patterns.

Lexical items in a construction are assigned to semantic classes which are universal prototypes of their typical discourse function (p. 87). Semantic classes (e.g. objects, properties, actions) and the discourse function form a conceptual space. Languages differ in the way how this conceptual space is mapped out by formal categories. For example, a lexical item (*bear, table ...*) that prototypically describes an object universally tends to be unmarked when it is used in a referential function. In English, the prototype of referential objects maps onto the word class noun. Consider the English stem *train*:

(36) The **trains** were not allowed to pass (...) (BNC: A2M)

(37) They travelled to Chicago by **train**. (BNC: A0U)

*train* is strongly associated with objects, and when it fulfils a referential discourse function, it may occur with all possible morphosyntactical features like the plural, determiners, in subject position. On the other hand, when it is used for modification, i.e. non-referentially, it loses this potential. Therefore, (37) is marked relative to (36).

Markedness patterns like these make it possible to evaluate the prototypicality of certain constructions in a particular language. In conclusion, Cognitive Grammar and Radical Construction Grammar assume that syntactic structure reflects semantic structure (Croft 2001: 108ff). In addition, semantic structure arises from discourse function. Word classes in English stand in an iconic relationship to universal discourse functions (Hopper & Thompson 1984). With these theoretical assumptions in mind, I will now elaborate on semantic and pragmatic aspects of the word classes nouns and verbs and their relationship to one another.

## 5. The Verb-Noun Continuum

Nouns and verbs are commonly seen as endpoints on a scale ranging over the word class categories (cf. Ross 1973, Thompson 1988, Dixon 1982, Croft 2001). This property is not necessarily entailed by their universality. It is argued that verb and noun prototypes have the highest relative cue validity, i.e. they differ from each other maximally while having minimal resemblance (cf. Croft 1991, and Rosch 1973 for cue validity). Other word class categories in

a language tend to share characteristics with either nouns or verbs. But not only other word classes are arranged along the continuum, rather single instantiations of nominal or verbal verb stems can move along the cline as was demonstrated in (38-39). Hopper & Thompson (1985) even argue that nouns and verbs are only distinct if an overt distinction is required by the demands of discourse.

An extreme case of intermediacy is manifested in 'waste bin' categories such as adverbs, which share hardly any structural similarities to either end of the continuum. Furthermore, derivational categories cannot be considered either verbs or nouns. Nominalizations, for example, lose most of their verbal characteristics (cf. Hopper & Thompson 1994), but also tend to lack certain nominal properties. The same is true for the properties of infinite verb forms such as participles. Therefore, they can be seen as intermediate to nouns and verbs. *-ing* seems to be a slightly special case. It can mimic both nouns and verbs in their structural coding and also take any intermediate shape. The differences between different instantiation are gradual (Ross 1973).

Gradience is a fundamental property of linguistic structures in a cognitive model (cf. Rosch 1973, 1975, among others). Ross (1973) shows in an elaborate study concerning syntactical properties of noun phrases that a discrete concept of word classes cannot be upheld. He departs from the view that grammatical categories are discrete and proposes that the word classes are organized along a quasi-continuum (Ross 1972, 1973). He also acknowledges other 'squishy', i.e. fuzzy or continuous aspects of language, as, for example, grammatical acceptability, and idiomaticity. A non-discrete grammatical theory is particularly important for the description of phenomena such as the English gerund (Ross 1973: 420).

Several attempts have been made to define semantic and functional properties of nouns and verbs. I will briefly summarize some of the proposals of what the category defining properties are.

## 5.1 Nominal Features

The prototypical noun is a physical object that is thing-like, concrete, with contoured shape (Langacker 1987: 57). Givón (1979, 1984) described nouns in terms of time-stability. The more an expression refers to an entity that does not change over time, the more it is a

noun. Croft (2001: 87f) argues that prototypical nouns are defined along semantic classes. One of them is stativity, which is similar to time-stability. The property that sets nouns apart from adjectives, is being non-relational, i.e. the existence of another entity is not required. This concept is similar to the more traditional idea of valence. In cognitive terms, however, valence is a continuous measure of how prominent discourse entities are that are semantically related to the expression. In (38) *factory* does not saliently imply the existence of another related entity. At the same time it is time-stable. In contrast, *eating* in (12), repeated in (39), inherently alludes to an entity that does the eating and an entity that is eaten.

(38) In the old **factory** it was just all like home market. (BNC: GYY)

(39) **Eating** sensibly is vitally important for health. (BNC: GXJ)

It has to be noted that a purely semantic interpretation of such properties is misleading. Hopper & Thompson (1985) argue that the semantics of prototypical nouns is grounded in the prototypical properties of discourse participants, not vice-versa (cf. section 4.3). Accordingly, they discuss ‘discourse-manipulability’ as an important dimension along which the prototypicality of nouns varies. The concept is derived from referentiality, which, in the logic semantic sense, describes the relationship to an actual object in a possible world. Discourse-manipulability rather suggests the existence of a salient discourse participant. This does not necessarily have an existential presupposition (Hopper & Thompson 1985).

One main criterion for discourse-manipulability is whether the expression can be targeted by anaphora. Only the more nominal uses of *-ing*, including the verbal gerund, can be referred to by anaphoric expressions. Hence, *-ing* forms are very often non-manipulable. Another formal indicator for the referentiality is the syntactical independence of nouns (Hopper & Thompson 1985: 159). Talmy (2007) observed a prominence cline for the three syntactic functions of nouns: subject, object, oblique (high to low). This concept mirrors the idea of primary and secondary focal participants in Langacker (2009).



## 5.2 Verbal Features

A prototypical verb differs maximally from a prototypical noun. They are associated with the (prototypical) lexical category 'actions'. Their general schema is that of a sequentially scanned process (Langacker 1987). In Croft's view, they have the opposite semantic properties of nouns, i.e. they are non-stative, and relational (2001: 87): Their rationality is reflected in their argument structure. In comparison with adjectives, they typically describe transitory states rather than permanent states. In Givón's (1979) sense they are not time-stable. Hopper & Traugott (1984) assume that their primary discourse function is event-reporting. Consequently, verb categoriality is roughly anti-proportional to the degree with which verbs are actually used to report events.

Stative verbs in English are an example of less prototypical verbs since they usually do not have all the morphosyntactic means available. Most importantly, they fail to occur in progressive constructions (*\*I am knowing*). Hopper & Thompson also list irrealis forms like the imperative, the subjunctive and future. However, there are no inflections available for *-ing*, so I will not elaborate on these situations (see Hopper & Traugott 1984: 731ff.). There are many other situations in which *-ing* is used as non-reporting verb. Most nominalizations fail to report an event. *Reading is fun* does not presuppose an actual event of reading. Furthermore, *-ing* and other verb forms can be used to express background events or secondary events. Consider (40) and (41):

(40) I stopped fancying him. (BNC: KNY)

(41) I fancied him.

In (40) it is the event of stopping that is construed as the salient discourse event, rather than the event of fancying. Across languages, there is a tendency for decategorialization of such backgrounded events (Hopper & Thompson 1985). The less prominent an event is in discourse, the more it loses its category status. This phenomenon was described by Givón (1980). In English, this hierarchy manifests itself in the opposition between verbs taking another verb as complement and verbs taking a prepositional complement.

So far, I have only discussed nouns and verbs, which are categories normally considered universal. Although adjectives have shown up in the discussion above, they have to be looked at more thoroughly since adjective-like uses are very common with *-ing*.

### 5.3 The Position of Adjectives

Adjectives are one of the major open word classes of English and usually treated as if on a par with verbs and nouns. From a strictly English or European point of view, this seems to be reasonable. However, this view is heavily biased. Among the languages of the world, there are some with a small, closed adjective class (e.g. Niger-Congo Languages, Welmers 1973: 230, see also Dixon 1982, 2004). Other languages do not at all or only marginally differentiate between adjectives and nouns or between adjectives and verbs. Chinese Mandarin is claimed to have no class of adjectives or at least they can be described as a subclass of verbs (McCawley 1992). On the other hand, German is an example of a language with noun-like adjectives. German adjectives are inflected for gender, number and case, and they can also be used as noun without further derivational coding. Partially, this is also true in English. For example, many nouns describing materials can be used as attributive adjectives without any further measures being taken (*stone walls, table lamp*) and vice versa (*dressed in red, explosives*).

Several arguments have been made that place adjectives between verbs and nouns on a continuum. Adjectives are claimed to be intermediate on the basis of morphophonological (Berg 2000), syntactic, (Ross 1972, Comrie 1975), semantic (Givón 1984), and functional properties (Hopper & Thompson 1984, Croft 1991)<sup>2</sup>. While from an Indo-European perspective, a model with a class of adjectives outside the verb-noun continuum does seem to make sense at first glance, there is no clear evidence for it among the languages of the world. Even for English, Ross (1972) argues that adjectives are between verbs and nouns, even though he admits that a triangular model is feasible. Croft suggests that “[t]he structure of prototype categories is hierarchical: the adjective prototype is at a lower level than the noun and verb prototypes and can be partly if not completely assimilated to the higher two prototypes” (Croft 1991: 130). Once more, one of the reasons

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<sup>2</sup> cf. Wunderlich (1996) for an argument against the intermediacy of adjectives

for that is markedness. Adjectives are often structurally marked, e.g. with a copula (predicative adjective) or by high syntactic dependency (attributive adjective).

Property concepts share the predicating function with verbs and the referent-inducing function with nouns (Thompson 1988). The only exclusive property of adjectives that makes them different from verbs and nouns is that they are usually gradable (see also Croft 2001). Hopper & Thompson (1984) show that adjectives can be either noun-like or verb-like with respect to their time-stability. Moreover, Givón (1970) argues that the majority of adjectives in English are at least historically derived from nouns or verbs. Berg (2000) shows that phonological characteristics of adjectives in English imply a higher affinity to nouns than verbs. It has to be noted, however, that *-ing* adjectives are only a minor part of adjectives in English, and do not necessarily contribute to that tendency. The claim of Hopper & Thompson (1984) that the behaviour of adjectives is comparable to that of nouns and verbs is also true for participial adjectives and depends on their syntactic distribution. In attributive position, they are more noun-like, and in predicative position more verb-like. *-ing* in predicative position covers the verb-like side of modificational structures in English (cf. Croft 2001).

## 6. How many *-ings*?

Essentially, there are two extreme ways to deal with *-ing* as a category. On the top-most level of abstraction, all the uses of *-ing* can be included. All category members have in common that they are attached to verb stems (with only few exceptions like *outing* or *bedding*) and that they have the same phonological form in standard varieties of British and American English. The advantage of such an approach is that it agrees with the semiological principle of Cognitive Linguistics that phonological sequences are symbolizations of cognitive concepts (Langacker 1991). A single category implies that every category member, i.e. every use of *-ing*, is connected by similarity of some sort, other than phonological form. I will turn to this view in section 6.3.

Another possible approach is to define cut-off points, i.e. treat *-ing* as multiple distinct categories or lexical entries related to each other only by homonymy. Usually, these cut-off points are made based on the resemblance to the major word-classes, hence the common labels *participle* and *gerund*. As the data in section 2 suggests, it is true that *-ing*

occurs in constructions that are typical for nouns, verbs and adjectives. The question is whether this justifies the differentiation. The distributional differences need to be broad enough and the similarities among the supposed homonyms need to be minimal in order to justify distinct categories.

Reaching a high degree of differentiation, one arrives at the same sub-categorizing problem mentioned above. An overly detailed categorization of *-ing* based on all possible uses may not be the most useful one. There have been several categorization approaches that aim to answer the question of what is the most basic set of categories describing *-ing*. I will briefly discuss the most common differentiating approaches in the next section, before I turn back to a usage-based approach to *-ing*.

## 6.1 The Gerund-participle

The first distinction which has been discussed many times is the distinction between participles and gerunds. As mentioned above, the traditional distinction originates in the analysis of Classical Latin and is also motivated by the etymology of *-ing*. In present day English, however, there are no straightforward differences between gerunds and participles. Even for the verb *be*, which has retained the highest number of inflectional forms in comparison with other verbs, there are no separate forms for gerunds or participles. Gerunds and participles also share similarities in their syntactic distribution and arguably in their meaning and discourse function. In this paper I will not attempt to summarize the extensive literature on the question whether gerunds and participles are one or two (or more) categories. I will rather point out tendencies that can be observed in different theoretical and practical descriptions.

More recent standard grammars of English account for the problem of gerunds and participles. Quirk et al. (1985: 1290ff.) reject the differentiation between the two categories. They show that the traditional distinction produces inconsistencies. The analogue category of *to*-infinitives, for example, is not differentiated although being paradigmatically interchangeable with both gerunds and participles in many of the cases. They instead classify both uses of the suffix in favour of participles. Biber et al. (1999) also give the verbal side of gerunds more weight and treat verbal uses as more basic. They are aware of the problem that in neutralized contexts, i.e. with the *V+ing* as the only component in the phrase, the

gerund and the participle are indistinguishable. Similarly, Huddleston (2002b) collapses the traditional gerund and participle uses under one category both on word and on clause level (ibid: 1222). The ‘gerund-participle’ and the associated ‘gerund-participial’ clauses are homogenous in their form. In Huddleston’s (2002b) approach, meaning categories are separate from formal categories. This assumption explains how the gerund-participle can generate such a variety of meanings, and hence is one important prerequisite to justify the reduction of the two traditional categories.

Aarts (2006) treats verbs and nouns as intersecting categories. Gerunds in his view are both nouns and verbs at the same time rather than a category in their own right. This approach fits well with a continuum model of word classes. The reduction of participles and gerunds into one category can be interpreted within Cognitive Grammar or Construction Grammar as instance of high-level schematicity. The same is true for Huddleston’s (2002b) approach although the meaning and form division contradicts one of the basic tenets of Cognitive Grammar. Aarts (2006) and Huddleston (2002b) both follow a similar reductionist approach, but with different motivations (cf. De Smet 2010 for a detailed comparison).

## 6.2 The status of derivational *-ing*

Even though there seems to be consensus in standard grammatical descriptions about the identity of gerunds and participle, this is clearly not the case with very nominal and very adjectival/verbal uses of *-ing*. The relationship between the inflectional *-ing* and the two derivational *-ing* forms is typically described as homophony. Quirk et al. (1989: 1292) distinguish three lexical entries of *-ing*. Deverbal nouns and adjectives are considered separate from participles (gerunds included). Huddleston (2002b) also considers a threefold distinction, separating gerundial nouns and participial adjectives, from the gerund-participle. He assumes that on word level *-ing* forms can be identified as belonging to one word class or another. This conclusion is based on the rather pragmatically oriented principle that “[b]y generalisation, we regard any difference in primary category as sufficient to establish the difference between one word and another, (...)” (Bauer & Huddleston 2002: 1640).

The homophony analysis is also common in more recent studies. Lee (2007) also distinguishes 3, Pinker (1999) even 4 homonymic categories. The methods for identifying the number of lexical entries and their actual numbers vary, but are essentially similar. Given the

substantially reduced form of most morphemes in English, there are arguably clear cases of true homophony. Assuming plural  $-s^1$  and 3<sup>rd</sup> person singular  $-s^2$  have the same form<sup>3</sup>, they are homophonous since there are no meaning relations. Although they both relate to a category of number, the distribution is mutually exclusive. The first only co-occurs with nouns and the second only with verbs. On the other hand, *-ing* almost exclusively attaches to verbs. Most importantly, there is no gradience between the two *-s* morphemes. There is no example that shows a plural-like interpretation of a 3<sup>rd</sup> person singular verb even if it is a converted noun (*he emails*); neither is a plural *-s* ever in any way related to the 3<sup>rd</sup> person singular.

The question of homonymy or polysemy is approached differently in Cognitive Linguistics. Among others, Langacker (1991: 268) points out that two members of the same category need not be directly related, but can also be related via a chain of related category members. The network model can be applied on the different usages of *-ing*. As pointed out in section 2, there are similarities between deverbal nouns in *-ing* and nominal gerunds; between nominal gerunds and verbal gerunds; and so forth. A nominal gerund is clearly not directly related to an *-ing* in progressive construction, but the relationship can be traced through the network of related usages. As an example for the usage-network of *-ing* consider the following examples of *writing*.

- (42) The most difficult part was the writing of the essay.
- (43) The most difficult part was writing the essay.
- (44) He had a lot of work with writing the essay.
- (45) He was proud of himself after writing the essay.
- (46) He was sitting in a corner, writing an essay.
- (47) He was sitting in a corner, writing.

The differences between each pair of subsequent examples are minor and a relationship can be felt. At the same time, (42) and (47) are considerably different, and the first can be described as nominal gerund and the last as participle very close to post-positive adjectives. Both nominal gerunds and deverbal adjectives are non-prototypical instances of nouns or adjectives, except in some very specialized and highly lexicalized uses. In a verb-noun-

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<sup>3</sup> I will return to the issue of 'true homophony' in §9.

continuum model with adjectives as already intermediate category, atypical nouns and atypical adjectives are possibly both close together in their semantic conceptualization. Considering the fine-grained differences between individual *-ing* construction types, it is necessary to treat *-ing* as one category, and attempts have been made to conflate nominal gerunds and deverbal adjectives.

### 6.3 A unified *-ing* category

As is typical for morphemes, *-ing* is semantically highly abstract. Even in specific sub-groups of its uses, *-ing* behaves inconsistently. The progressive construction, for example, can evoke both perfective and imperfective interpretations. The inconsistencies of the progressive are a frequently discussed topic. De Wit & Brisard (2014) offer a semantic map for the more central uses of the progressive and show that also those constructions that produce perfective or modal senses are connected to the typical imperfective senses. On a higher level this semantic map can be extended. Duffley (2006) offers a particularly rigorous analysis of *-ing* forms on virtually every level.

He provides a notional characterization of *-ing* forms that is based on application of image schemas (Lakoff 1987, Langacker 1999). *-ing* has an extremely large range of possible uses and meanings. It is then not surprising that “the content of the schema is very abstract: it corresponds to the simple notion of interiority” (Duffley 2006: 19). He argues that all uses of *-ing* can be explained by this general schema, and even the derivational uses can be connected. In the progressive construction, e.g. the beginning and the end of an action lies outside the scope. In (48) the interiority of the event *cooking* produces the effect of an on-going process.

(48) What’s he cooking. (BNC: KBF)

The same type of construal can be observed in adjectival uses, such as adjuncts or relative clauses, the difference being that the interiority of the event is additionally moved to the background. The event-originator is salient in discourse, but not the event itself. Duffley (2006) comprehensively describes numerous *-ing* constructions on the basis of the interiority schema.

Nominalizations are argued to be metaphorical extensions (Duffley 2006: 162ff.). Nominalization as a kind of metaphor was already discussed by Lakoff & Johnson (1980): "We use ontological metaphors to comprehend events, actions, activities and states. Events and actions are conceptualized metaphorically as objects." According to Duffley, the interiority of events is generally homogenous, which makes it possible to be perceived as a whole. The basis for this is the gestalt mechanism of reification (cf. Langacker 1999: 86), i.e. the cognitive ability to perceive a cohesive structure in the percept where there is not necessarily one. Moreover, from these metaphorical extensions, there have been further extensions based on metonymy (Duffley 2006: 164f). In words like *building*, e.g. the result of an action is perceived instead of the action. Such nominal forms have become partially or fully lexicalized. Grammars usually do not consider *-ing* on nouns like *painting*, *ceiling training* as suffix, but rather as fully integrated in the base form (e.g. Biber et al. 1999, Huddleston 2002a). However, in the case of many *-ing* nominals, the apparent base form (e.g. *paint/painting*) is still relatable and they retain the appearance of compositional forms. The relatively high semantic transparency of items like *building* (something that has been built) are important for priming (e.g. Marslen-Wilson et al. 1994, Longtin et al. 2003). Thus, they potentially play a role in analogy-based processes and in categorization in general. In conclusion, the literature, especially Duffley (2006), suggests that it might be useful to analyse *-ing* as one phenomenon because it has one form and one network of functions.

## **7. Linguistic Data and Categorization**

### **7.1 Frequency Effects and Lexical Specificity**

In order to investigate the function of *-ing* in actual language data, some final remarks have to be made on the relationship between categories and frequency. Frequency plays a major role in the historical development of a language and in language acquisition (cf. Bybee 2007, Tomasello 2003). As a result, frequency patterns correlate with formal patterns in a language. Croft (1991: 87) lists text frequency as a major criterion for markedness patterns. The rarer form is the marked relative to the more frequent one. That means, even if two expressions do not differ in syntax or morphology, the frequency-based attraction or repulsion towards certain constructions may set them apart. High-frequency



constructions with bound morphemes are stored in the lexicon while those with low frequency are analogically derived (Bybee 2006: 188). What is implied in this observation, is that constructions are heavily biased towards specific lexical items (cf. Diessel to appear). Lexical specificity skews the overall frequencies observed in a data.

## 7.2 Towards an *-ing* Prototype

Cognitive Linguistics and Radical Construction Grammar offer analytical tools that make it possible to deal with expressions like *-ing* and their highly problematic formal properties. At the same time, the question remains unanswered how a single form like *-ing* manages to creep into so many grammatical domains and yet stay the same form. Some general hypotheses can be derived from the theoretical discussion above. If the semiological principle holds, i.e. linguistic signs are a form-meaning pairing, *-ing* as a construction should be expected to have a prototypical centre. A very bold, but tempting hypothesis for explaining the historical development is that the merging of the phonetic forms was driven by the similarities between participles and verbal nouns. Both suffixes were used for decategorialization. In the model of a linear verb-noun continuum, this makes them approach each other. The similarities may have been close enough to trigger reanalysis.

Before I turn to the corpus data I will briefly summarize the theoretical assumptions discussed in the previous sections. First and foremost, the idea that verbs and nouns form a continuum is most important for the analysis of *-ing* in this paper. The hypothesis put forth by Peter's (2013) that different uses can be mapped onto the verb-noun continuum is the basic guideline. Secondly, the cross-linguistic observations mainly by Hopper & Thompson (1984, 1985) and Croft (1991, 2001) will build the basis for assessing categoriality status of individual pieces of data. The assumption underlying is best described by Hopper & Thompson's Iconicity of Lexical Categories Principle:

Iconicity of Lexical Categories Principle:

“The more a form refers to a discrete discourse entity or reports a discrete discourse event, the more distinct will be its linguistic form from neighboring forms, both paradigmatically and syntagmatically.” (Hopper & Thompson 1985: 151)

In contrast, I will only consider structural coding that is actually present in the data rather than the potential since potential coding is not quantifiable. The notion of similarity lies at the heart of the cognitive approach to categorization. In prototype theory (cf. Tversky 1977), similarity of stimuli is a prime criterion for the formation of experience-based categories. Therefore, the focus in this study is on the actual form rather than potential structurally coded properties of the data. The iconicity of lexical categories principle at least indirectly implies the connection between frequency and categorization. Moreover, it implies a direct relationship between actual use of constructions and their conceptual nature. Frequent patterns contribute to prototypical structure, which in turn lead to frequency patterns.

The next hypothesis that is vastly important for the data analysis is lexical specificity. Individual verb stems influence the probability with which an *-ing* construction acquires nominal or verbal features. Hopper & Thompson's observation that some roots are more likely to be realized as nouns, whereas other roots are more likely to be realized as verbs (1985: 176) can be abstracted onto the constructional level of *-ing*. Given the spread of *-ing* constructions over the verb-noun continuum, this leads to the question how much specific lexical items account for that. Intuitively, *training* should be more likely to appear in noun-like constructions, while *going* should be more likely to appear in verb-like constructions. It is not impossible, however, that they appear in constructions typical for the other:

(49) (...) he was **training** you to take over from him (BNC: JYA)

(50) [T]hey had shared in the **coming** of life and the going of death (BNC: HGE)

There is evidence for lexical specificity in the productivity of *-ing* to form gerundial nouns. While for some verb stems it is the only way to form a noun, *-ing* contrasts with other nominalizing suffixes such as *-ation* or *-ment* on other verb stems, sometimes with a difference in meaning, but often just with a difference in idiomaticity (Bauer & Huddleston: 2002: 1702). In general, I assume that high frequency lexemes should be more robust in their verb-like meaning and function since they are more frequent with them.

## 8. Corpus Study

### 8.1 Operationalization

Quantitative data plays a key role in approaching the question of what the basic properties of *-ing* are. In the following corpus study, I try to isolate *-ing* properties. The first question is, which *-ing* uses should be considered. Duffley (2006) proposes a way to combine all uses of *-ing* theoretically. In this paper I focus on the form, especially overt morphosyntactical coding in relation to discourse function. Capability of displaying certain possible oppositions is not a feature of an instantiation of a construction. The capability of *apple* to be marked for number, case etc., is not a feature of the instantiation of *apple* in a context. The usefulness of transformation tests is limited since they basically generate new discourse material. In addition, the success of transformation is also probabilistic rather than definite and highly context dependent.

It is extremely difficult to quantify semantic or functional properties. Speaker-intentions, common knowledge of speaker and addressee and the discourse setting influence both the choice of construal and its interpretation. In the following sections, I attempt to link quantifiable formal properties to their discourse function. The most important theoretical assumption underlying this method is the Iconicity of Lexical Categories Principle put forth by Hopper & Thompson (1985). Prototypical discourse functions shape structure in language, and cross-linguistic tendencies also reflect on language-individual level.

As pointed out by De Smet (2010), there seem to be contradictory generalization for *V+ing* constructions. The verb-noun continuum can be seen as multidimensional continuum, so it is possible that individual *-ing* forms potentially resemble both nouns and verbs at the same time. Therefore, I have devised two independent scales for measuring categoricity. The advantage of the two independent scales is that the difference between a nominal gerund with direct object or without object shows on the V-scale rating, but it does not affect the N-scale rating. This allows for high categoricity ratings on both scales and reflects the existence of mixed structures. Consider (51):

(51) Our seeking a dispensation

This case is a mixed example of *-ing* which could not be coded sensibly on a single verb-noun scale. The *V+ing* form takes an object, but is, at the same time, preceded by an object. In this case, the N-Scale score is high, because of the genitive, but also the V-Scale rank is moderate since it takes an overt direct object.

### 8.1.1 Noun Ranking Scale

I will first discuss the indicator matrix used to derive the degree of categoriality of nouns. The indicator matrix is designed with the aim to combine the form/function correlations attested in the literature. I tried to maximize the number of ranks without creating contradictions. The indicators for high categoriality were given a higher priority over those for low categoriality. Table 1 sums up the indicators used for obtaining the rankings for the scale measuring nominal categoriality (N-Scale). In general, I aimed to give the bound morphemes the highest priority in determining the categoriality rating. However, because of the significantly reduced morphology in English, it is difficult to judge whether nominal inflectional morphemes signal a higher categoriality than periphrastic elements such as determiners, especially since they often co-occur.

N-Rank	Indicators	<i>-ing</i> example	Noun example
<b>1 highest</b>	PL, DET	<i>buildings,</i> <i>that warming up</i>	<i>trains, the train</i>
<b>2 high</b>	GEN ,ADJ	<i>unsatisfyable longing</i>	<i>good education</i>
<b>3 moderate</b>	Object of PP, used as ATTR	<i>get round to eating</i>	<i>By train, stone tile</i>
<b>4 low</b>	COP	<i>It was amazing</i>	<i>I am home</i>
<b>5 lowest</b>	n/a	<i>those wishing to vote</i>	<i>n/a</i>

Table 1: N-scale Indicator Matrix

Consequently, in the N-scale plural *-(e)s* and possessive *-(e)s* were not distinguished with determiners like *the*. Instead I defined a group of morphosyntactic indicators including both. The only determiners combining with *-ing* forms in the sample were the articles *the/a(n)* and the demonstratives *this/that*.

To operationalize the 3<sup>rd</sup> rank, I used Hopper & Thompson’s (1985) cross-linguistic observation that incorporated nominals show less nominal features. An example for that is the use as attributive adjective. The position of it relatively high on the scale reflects the idea discussed in section 5.3 that attributive adjectives are more nominal than predicative ones. On the same level, I inserted prepositions as an indicator. In both attributive position and as a prepositional object, a noun is degraded (cf. Hopper & Thompson 1984). This is also in line with Talmy’s (2007) hierarchy exemplified in (52):

(52) subject > object > oblique

Talmy argues that there is a “cline from greater to lesser prominence” (2007: 275). The second lowest indicator is the copula *be*. This is again motivated by Hopper & Thompson (1984). Predicate nominals are described as less prototypical. Another candidate for a low noun ranking would be negation, but in the corpus all *-ing* forms with negation were in the progressive construction, so low in categoriality already.

The coding procedure was as follows: If an *-ing* form occurred with a copula, it was at least given rank 4; if it was used as attributive adjective or object of a preposition it was given at least rank 3, and so forth.

### 8.1.2 Verb Ranking Scale

The same idea was applied to derive a scale for the ‘verbiness’ of individual uses.

V-Rank	Indicators	<i>-ing</i> example	Verb example
<b>0 n/a</b>	PST, 3PL	n/a	<i>he went home</i>
<b>1 highest</b>	with subject and object	<i>He was taking it</i>	<i>I love her</i>
<b>2 high</b>	with subject	<i>I saw him leaving</i>	<i>I don’t smoke</i>
<b>3 moderate</b>	with object	<i>Eating this is a bad idea</i>	<i>don’t drink and drive</i>
<b>4 low</b>	with PP	<i>He wasn’t interested in reading</i>	n/a
<b>5 lowest</b>	n/a	<i>He was sitting there smoking</i>	n/a

Table 2: V-Scale Indicator Matrix

Stative verbs are less prototypical, therefore, show less category features of verbs. In fact, stativeness or imperfectivity is one of the major functions of the progressive construction. As mentioned above, the verb carrying *-ing* in this context loses number and tense/aspect marking. Instead, it is an empty copula that takes this function (Hopper & Thompson: 1984). This opposition is trivial for the treatment of *-ing* since it does not take inflection. Tense and aspect marking on the copula were ignored, because there is no evidence that the whole construction predicts the category status.

Nominalizations typically only take one of the possible arguments (Hopper & Thompson 1984: 738). Therefore, uses with both subject and object were contrasted with uses that only have either an overt object or subject. However, I inserted an intermediate rank by further distinguishing overt subjects with overt objects. This reflects the progressive as a major use of *-ing* and the progressive can safely be considered more verbal than the subject less counter parts. *-ing* forms that lack the dynamic relation of a conditioning or conditioned discourse participant (Duffley 2006: 163) are taken to be less verb-like. Additionally this category implies the inclusion of predicative adjectives. Predicative adjectives and stative verbs bear a strong resemblance and I argued above that those adjectives are the verbal counter-parts of attributive adjectives. In addition, the second rank also includes *-ing* in relative clauses, which reflects the similar function of both constructions. *-ing* in relative clauses is very similar to adjectives in post-positive position.

(53) We need someone strong here!

Similar to nouns, verbs degrade when they lose their syntactic flexibility. Analogically, a verb following a preposition was assigned a lower rank. Most gerunds are included in this group. Arguments of an *-ing* form marked by prepositions were not considered subject or object. Finally, the most dependent variant of *-ing* is in attributive position. This reflects a very high degree of stativity (Hopper & Thompson 1984: 728), which is untypical for verbs.

A problem in identifying direct objects lies in phrasal verbs (decision between rank 3 and 4). It is a matter of agree how independent a preposition following a verb is. Preposition dangling in questions was seen as indicator for a complex verb, thus considered having a direct object rather than a prepositional object. In contrast, phrasal prepositional verbs with

two successive prepositions (*get on with*) were interpreted as having a prepositional object rather than a direct object. In ambiguous cases the decision was taken in favour of the prepositional phrase interpretation.

Adverbials, which can combine with both nouns and verbs, were not as useful an indicator although they can arguably modify verbs and adjectives in the same way as adjectives modify nouns. Croft (1991) views other categories, such as adverbs and prepositions, also as transitory, i.e. intermediate to verbs and nouns (ibid. 142ff.). These uses will score low on both the V-scale and the N-scale.

## 8.2 Sampling

The data was drawn from the BNC corpus using the CQPweb interface (Hardie 2012). I only used data from the spoken part of the corpus. Especially participial adjuncts and gerunds are extremely over-represented in the formal and written registers and likely to skew the image of *-ing* as a category. The spoken part of the BNC offers a balanced and large enough corpus, which is both necessary for the methodology, applied in this paper.

For the two analyses I took two different sets of data both using the same query strategy. I aimed to get all instances of *-ing* no matter the word class, so the POS-tagging of the corpus was not reliable in this case. In order to avoid orthographic artefacts, I determined the most frequent words ending in <ing> which are not related to the suffix (e.g. *something*) and excluded them<sup>4</sup>. A special case of artefacts were etymological nominalizations, i.e. nominalizations that have no apparent relationship to the verb they are derived from anymore. Those items have also lost their morphological transparency completely. Some notable examples are the very frequent preposition *during* and the nouns *morning* and *evening*. The verbs *dure*, *morn* and *even* have fallen out of use entirely.

The similarity of form of the *-ing* constructions is a main focus in this paper. For that reason, I did not exclude lexicalized nominal forms of *-ing* such as *building*. It can be argued that the semantic difference between the noun *building* and the verb *build* is large enough to consider them separate lexemes. However, the identical phonetic form of *-ing* forms is relevant for perceptual priming mechanisms. However, opaque words, i.e. words that are

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<sup>4</sup> The search query used was `?+in[g,'] [s,'s,ly,]`, i.e. all words ending in <ing>, <in'>, <ings>, <ing's> and <ingly> with at least 2 characters preceding.

fully lexicalized today and their meaning is not composed of the root and the affix any longer, still play a role in perceptual priming mechanisms (e.g. Longtin et al. 2003). The exposure to one instance of a linguistic form influences the perception of another instance of the same form. Longtin et al. (2003) show that even affixes of opaque words, seem to be treated like affixes of morphologically transparent words. On the other hand, simply orthographical similarity alone does not trigger priming effects. Therefore, I excluded etymological nominalizations, but not opaque words such as *clothing* or *building*. As a general rule, I excluded all words where the corresponding stem has no equivalent as a verb in present day English.

Finally, *-ing* in BE *going to* when part of the periphrastic future construction was also excluded from the study. It is very frequently reduced, and it even contrasts with progressive of the full verb (*I'm going to bed* / *\*I'm gonna bed*) (cf. Bybee 2006). As a result of grammaticalization, *going to* is has become an autonomous lexical item.

One of the first things that can be observed in the data is that some of the constructions frequently discussed in the literature are extremely rare. The construction typically associated with nominal gerunds, *DET V+ing of*, only occurs 3 times in the sample. A cross-check with the whole corpus reveals that only about 5 of 1000 *-ing* forms (0,005%) occur in this construction, 25% of which are *the beginning of*, and the 5 most frequent types constitute almost one third of all occurrences. This is in accord with De Smet's (2008) observation that definite nominal gerunds have mainly survived in specialized uses, i.e. show high lexical specificity. There was only one real mixed form (54).

(54) Nor is it a question of our seeking a dispensation from the holy see (...) (BNC: F86)

The affixed variants of *-ing* were infrequent as well. There was one instance of *-ly*, and only 7 plural forms. The progressive was most frequent (~33%). Otherwise, the spread over the categories was rather even.



## 9. Analysis

### 9.1 Hypothesis

The general hypothesis was put forward that the functional prototype corresponds to that of deverbalization. This hypothesis cannot be tested directly, but the following analyses can at least provide indirect evidence pointing towards this prototype. In (55), I repeat Bybee's observation that is used to derive the main hypothesis of the following Corpus study.

(55) High-frequency constructions with bound morphemes are stored in the lexicon while those with low frequency are analogically derived (Bybee 2006: 188).

One of the central claims derived from (54) is that the behaviour of low frequency verb stems in combination with *-ing* should show general tendencies of *-ing* since they are analogically derived in this construction, thus less specific.

### 9.2 Constructional Specificity of Individual Verbs

To approach the hypotheses, it is necessary to eliminate the idiosyncratic effects of the different verb stems. Those effects are, however, also just hypothetical. Therefore, in a first step, I tested this hypothesis in a case study on a selection of individual verb stems. To keep the number of stems relatively low, was a result of the nature of word frequencies, and the limitations of the chi-squared test.

In a sample of all *-ing* occurrences, there is a large proportion of very infrequent verb stems. The sample size is not sufficient for investigating the relationship between the stems and the construction. In fact, low frequency tokens would skew the image no matter the sample size due to the nature of word frequencies (Zipf's Law). For that reason, I compiled a stratified sample of 7 verb stems. I obtained a frequency list of the relevant constructions and subtracted the frequencies of the most frequent artefacts. The stems were ordered by frequency and then sub-divided into 7 groups. Each of the 7 stratum represents one 7-quantile of the distribution of stem frequencies. For example, the 1<sup>st</sup> group consists of the 8 most frequent types, which makes up about 10% of the overall occurrences, and the 10<sup>th</sup>

group consists of the 1837 least frequent types, which also makes up about 10%. If the stems were drawn randomly without stratification, the probability would be very high to obtain only low frequency stems. From each stratum, I randomly selected one stem and drew a random sample ( $n_i=70$ ) of *-ing* occurrences.

A coding for construction type was done for every sub-sample roughly based on the ranking scales. The 5 constructions distinguished were: (1, GRND) *V+ing* with nominal morphosyntax or after prepositions; (2, PTCPL) bare gerunds and participles, (3, COM) *-ing* as complement other than of prepositions, (4, PROG) *-ing* as subject complement or progressive, (5, ADJ) adjectives and other uses. Note that the labels are chosen only for convenience and do not indicate that all group members are, for instance, gerunds in group 2. The category adjectives occurred rarely and inconsistently and was excluded from the analysis. Figure 11 shows the overall frequencies of the individual constructions:

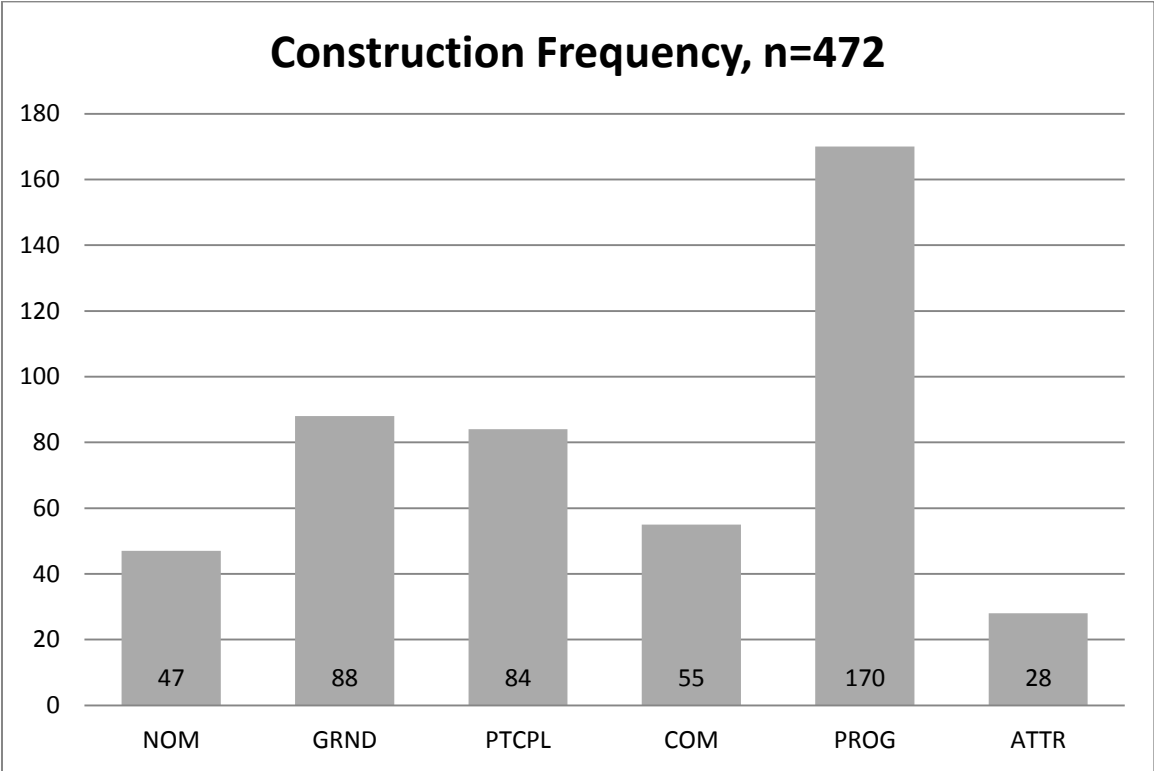


Figure 1: Construction Frequency in Stratified Sample

Next, I tested the contingency using a chi-squared test and computed Cramér’s V as effect size<sup>5</sup>. The hypotheses tested were:

<sup>5</sup> I used the lsr and vcd packages for R.

- a.  $H_0$ : The frequency of the constructions *-ing* occurs in is independent from the stem.
- b.  $H_1$ : The frequency of the constructions *-ing* occurs in is dependent on the stem.

The result showed a significant association between stem and construction ( $\chi^2=93.59$ ,  $p<0.001$ , Cramér's  $V=0.27$ ). The effect size is solid. The construction types were grouped quite generally. I assume that a more fine-grained categorization of construction types would increase the effect significantly. With increasing the number of distinguished construction types, however, the sample size needed grows extremely quickly, the reason being that every possible combination of *V+ing* and construction type needs to be observed sufficiently often. However, some logical combinations do not occur at all, or only very rarely (for instance the nominal use of *doing*).

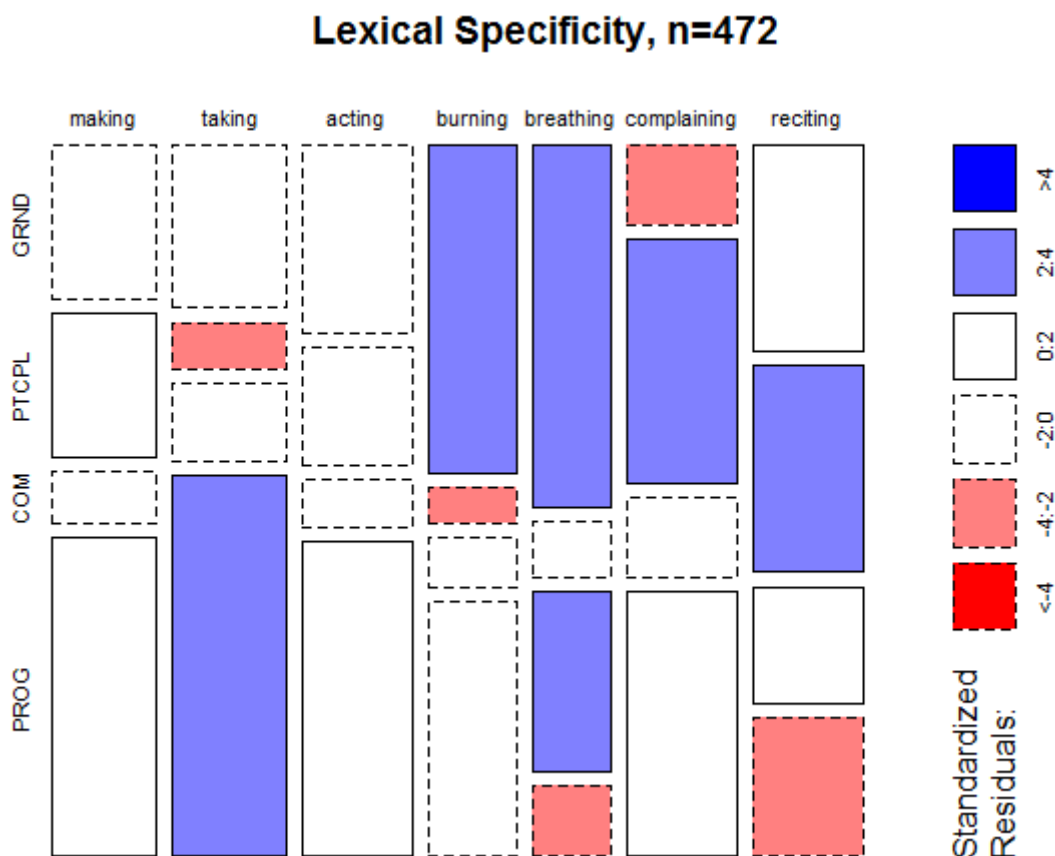


Figure 2: Lexical Specificity in Stratified Sample

A look at a mosaic plot displaying residual based shadings shows that there is no obvious pattern. For example, *taking* is significantly overrepresented in the group *PROG*, while being underrepresented in *PTCPL*. *reciting* shows the exact opposite behaviour. While the group

containing progressives is overall quite frequent, this is not equally the case for all stems, *reciting* and *breathing*, and also marginally *burning* reach relatively low frequencies. There is also no construction that behaves the same with all stems. *acting* and *making* are the only to verbs that behave similarly. The potential for error is relatively large due to the small selection of verbs; but in general, the theoretical assumption of lexical specificity is not violated.

### 9.3 Ordinal Regression Analysis

The second analysis aims to answer the question whether frequency influences the categorical status of *-ing* forms. Since the theoretical literature and the analysis above suggest that individual lexemes are strongly associated to specific constructions, I tried to control for this fact by making sure that the sample used only contained one token per type. The original sample size was 750. Orthographical artefacts, opaque words and also *going-to*-future constructions were excluded. During the coding, I excluded another group of data points consisting of defective concordances, false starts or other examples that could not be properly interpreted (repeats, repairs, etc.). The resulting sample contained 224 data points.

These were coded for ‘nouniness’ and ‘verbiness’ on the basis of the ranking scales introduced above. As a predictor, I used the lemma frequency of the stem when used as verb<sup>6</sup> minus the frequency of the stem used as V+*ing*. The frequencies were ordered and evenly grouped into 3 groups. The frequency range of the high-frequency verb stems is roughly 58,000 to 1000; for the middle group 1,100 to 150; the low frequency stems range below 150. The two morphosyntactical categories on the N-Scale had to be conflated due to low frequencies.

Figures 3 and 4 visualize the outcome. What is shown are the cumulative percentages of the rankings starting from the highest rank. Only about 35% of the high-frequency verbs reached the high or the highest value on the N-scale, compared to 60% of the low-frequency verbs. There is a considerable gap between high and low frequency verb stems.

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<sup>6</sup> based on the BNC's tagging system

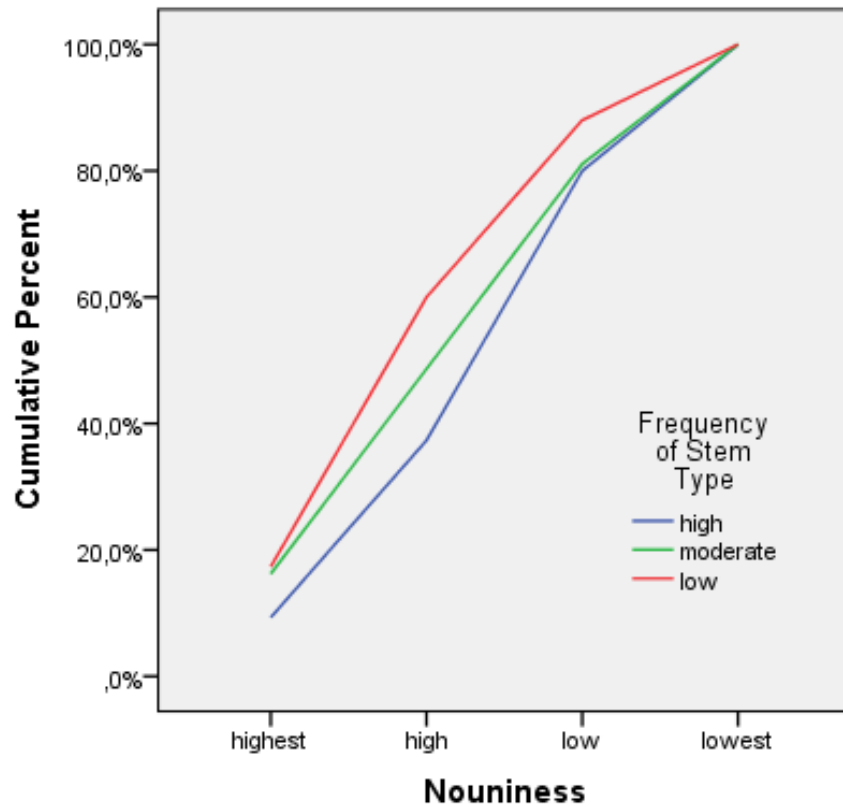


Figure 3: Stem Frequency and N-Scale

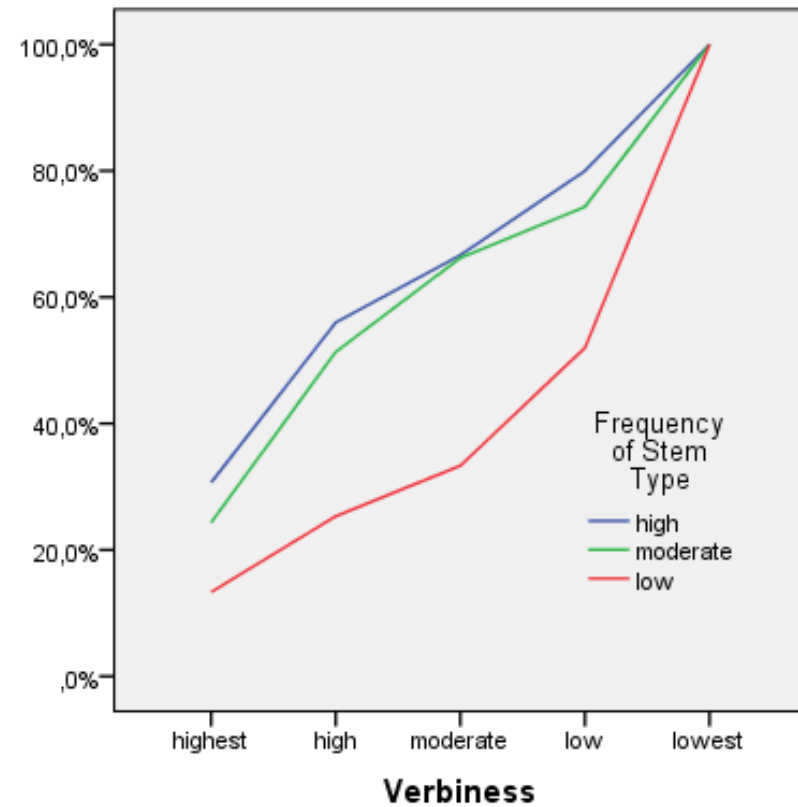


Figure 4: Frequency and V-Scale

Model	-2 Log Likelihood			
	Likelihood	Chi-Square	df	Sig.
Intercept Only	46.356			
Final	39.539	6.823	2	.033

Table 3: Ordinal Regression Model for N-Scale Prediction

Model	-2 Log Likelihood			
	Likelihood	Chi-Square	df	Sig.
Intercept Only	73.431			
Final	52.611	20.820	2	.000

4 Table: Ordinal Regression Model for V-Scale Prediction

The effect is more pronounced for the verb categoriality ranks. Only 50% of the low frequency verbs scored at least 'low' on the V-scale, which means that half of them were maximally decategorialized cases. In contrast, about 55% of the high-frequency verbs scored at least 'high'.

The middle group does not seem to differ much from the highest group, but it is useful as a diagnostic for the validity of the ranking scales. The line representing the middle category, lies between the other two and does not cross them. This indicates a consistent association and does not violate the validity of the indicator matrices.

In order to test whether the effect that is visible in the graphs is significant, I fitted an ordinal regression model using the respective function in SPSS. Tables (3) and (4) show the test coefficients. Both models are significant at the 5% level. Moreover, a test of parallel lines indicated that the assumptions of the model were not violated (1<sup>st</sup> model:  $p=.75$ , 2<sup>nd</sup> model  $p=.06$ ).

## 12. Discussion

The first analysis had the purpose to test the lexical specificity assumption. Since the test did not violate this assumption, the frequency effect on *-ing* constructions was tested in the second analysis. The hypothesis was that the frequency of the verb stem correlates with the categoriality of the *-ing* construction. The data supported the hypothesis and showed that the decategorializing effect of *-ing* with low-frequency verbs is especially strong. High frequency verbs do not tend to lose their verb status as much. A possible interpretation of this is that they are more prominently memorized as lexemes functioning as event or action. While low frequency verbs are more likely to be decategorialized as nouns. The difference on the N-scale, however, was not as large as on the V-scale. The implication of this outcome supports the speculation that a basic function of *-ing* is simply deverbalization. Under the assumption that low-frequency verbs are more strongly subjected to being analogically derived, the patterns in the data possibly allude to a functional prototype of *-ing*. Furthermore, the slightly stronger degree of nominalization might also be a result of the deverbalization. This is supported by the claim that in non-prototypical environments, "(...) the contrast between nouns and verbs tends to become neutralized" (Hopper & Thompson 1985: 158).

However, there are also other possible explanations. Most notably the observations of De Smet (2008) suggest that nominal gerunds are retreating towards few specialized uses. It was observed that *the building of* accounted for 30% of the construction pattern typically associated with the nominal gerund. It is hard to control for such cases of high lexicalization. Statistical frequency is not the only factor in emergent categories. Processing mechanisms, automatization, in particular, play an important role. Lexical prefabs and idioms are very likely to play a significant role in the formation structure of the category *-ing* (cf. Diessel, to appear). It is possible, that the extreme syncretism in Duffley (2006) is an overgeneralization.

There is another pattern in the data that I have not focused on. The progressive construction is the most frequent. There is a significant problem with the progressive concerning their form. It was assumed that *-ing* occurrences in the data shared the same phonological form. However, it has been shown that verbal uses are more likely to show the reduction of [ɪŋ] to [ɪn] (Pullum & Zwicky 1988, Houston 1991). The orthographic variant <in'> occurred only 806 times in the whole corpus and the version without apostrophe <in> was even rarer with 61 occurrences<sup>7</sup>. The occurrences of <in(')> in the BNC is far from representative of the phonetic alternation neither do they reflect pronunciation since they are dependent on the orthographic conventions of the texts and transcripts. The *in'*-alternation can be expected to be extremely underrepresented in the corpus. If there are two different phonetic forms of *-ing*, the line of argumentation used in this paper breaks down. However, even if the progressive skewed the data, the fact remains that low-frequency verbs are more strongly decategorialized, i.e. they do not occur in the progressive as frequently as do high frequency verbs. The error resulting from separate forms should be systematic. However, a recent study on the English plural morpheme (Plag et al. 2015) has shown that morphemes that appear to be homophonic show significant systematic differences.

## 11. Conclusion

I have investigated the behaviour of *-ing* relative to the major word class categories nouns and verbs. I attempted to combine the framework of Cognitive Linguistics in conjunction with typological insights and apply it in an analysis of the *-ing*. On the basis of

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<sup>7</sup> only those tagged as V+ing

universal markedness patterns, I devised two ranking scales for the assessment of category status of verbs. I have claimed that *-ing* has the basic function of deverbalization and tried to identify this prototype by testing the association of high and low frequency verb stems with the categoriality status of *V+ing* in actual language data. I also tested the lexical specificity hypothesis and tried to control for the effect during my analysis. The results are significant and support the hypotheses, but the outcome is difficult to interpret because of the numerous assumptions that had to be made a priori.

The paper was partly a methodological exploration. I tried to measure the gradience of linguistic phenomena. Many corpus studies focus on nominal data, which offer very restricted means of analysis and interpretation. Of course, the indicators and their rankings need refining. There is also much more potential for defining more fine-grained scales. In the vast literature on markedness patterns and decategorialization, there are some other oppositions and hierarchies that are good candidates for a more fine-grained ranking. One good example is the binding-hierarchy proposed by Givón (1980). For example, I did not consider anaphoric targeting. *-ing* forms that are anaphorically targeted could possibly reach higher scores on the N-scale. On the other hand, those *-ing* forms that would be affected are only those equivalent to verbal gerunds, i.e. lacking nominal morphosyntax. The tendency reported in Fonteyn et al. (2015) suggests that verbal gerunds are becoming less likely to be targeted by anaphora. Therefore, the robustness of the scale is not expected to be strongly confounded by ignoring anaphora.

Most importantly, this paper was focused on linguistic form and its relation to meaning and function. *-ing* was treated as one phenomenon, motivated by Duffley (2006). Duffley's hypothesis about the homogeneous conceptualization of *-ing* is extremely rigorous. Of course, at such a high level of abstraction the question whether the association between *-ing* functions is really meaningful is legitimate. In words like *building*, or *interesting* the relationship to other *-ing* forms has lost salience due to the high degree of conventionalization (cf. Langacker 1991: 268). After all, there can be made a strong argument against a strictly form-focused approach as it was followed in this paper. However, taking into account lexically independent constructions, idioms and prefabs evokes a similar array of methodological problems. There is again no objective way to determine which structure is independent and which is not. The same question repeats here. Where to draw the line?



Even though the method is susceptible to potential errors, I have shown that it is essentially possible to measure quasi-continuous phenomena such as the verb-noun opposition with quasi-continuous variables. It might not be easy to retrieve continuous predictors to account for continuous phenomena, but based on the wealth of attested hierarchies in typological research, it is still possible to operationalize natural orders. There are statistic techniques available to analyse ranked data, however, they are not well documented and underused. Especially complemented with experimental data, analogical methods as used in this paper are promising for identifying categorical prototypes.

## List of Abbreviations

A	adjective
ATTR	attributive adjective
BNC	British National Corpus
COM	complement
DET	determiner
GRND	gerund
N	noun
NP	noun phrase
OED	Oxford English Dictionary
PL	plural
PROG	progressive
PST	past
PTCPL	participle
V	verb

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