

Polysemy and Construction Morphology

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1. Introduction

Word formation patterns can be seen as abstract schemas that generalize over sets of existing complex words with a systematic correlation between form and meaning. These schemas also specify how new complex words can be created. For instance, the word formation process for deverbal nouns in *-er* in English and Dutch can be represented as follows (Koenig 1999, Booij 2002a: 5):

(1) $[[x]_V \text{er}]_N$ ‘one who Vs’

A word formation pattern in which use is made of a particular affix can thus be conceived of as a morphological construction in which it is only the affix that is specified whereas the slot for the stem is variable. That is, each affixation pattern is a constructional idiom (in the sense of Jackendoff 2002).

Such affixation templates give direct expression to the fact that affixes are not lexical items by themselves: they only exist as parts of complex words, and as parts of abstract schemas for these complex words. Thus, this form of representation is in line with the basic idea of lexeme-based morphology that it is words that form the basis of morphological knowledge and productivity.

The traditional notion of construction and its importance for theories of linguistic structure have recently received renewed attention within the theoretical framework of Construction Grammar. The basic idea of Construction Grammar can be summarized as follows:

“In Construction Grammar, the grammar represents an inventory of form-meaning-function complexes, in which words are distinguished from grammatical constructions only with regard to their internal complexity. The inventory of constructions is not unstructured; it is more like a map than a shopping list. Elements in this inventory are related through inheritance hierarchies, containing more or less general patterns.”
(Michaelis and Lambrecht 1996: 216)

As suggested by this quotation, both syntactic patterns and word formation patterns might be seen as constructions. This idea has been developed in a number of publications (cf. Riehemann 1998, Koenig 1999, Booij 2002a, b; 2005). In this paper, I will argue that a constructional theory of word formation that makes use of the idea of a hierarchical lexicon with different levels of generalization enables us to give an insightful account of patterns of polysemy in complex words, a topic that is of central importance for lexicographers and lexicologists, and hence quite appropriate to honour an outstanding lexicographer of Dutch, Piet van Sterkenburg.

2. Polysemy and semantic fragmentation

The semantic variation in word formation processes has been a persistent topic of debate among morphologists. In this section we will see how the patterns of polysemy in word formation provide evidence for the importance of different levels of generalization and degrees of abstractness in a hierarchical lexicon.

A well-known example of polysemy in the realm of word formation is the set of deverbal nouns ending in *-er* in Dutch, English, and German. This polysemy has been discussed widely in the literature. Such deverbal nouns can have a range of interpretations, as illustrated by the following Dutch examples:

- | | | |
|-----|-------------------|--|
| (2) | Animate agent | bakk-er ‘baker’, schrijv-er ‘writer’ |
| | Non-animate agent | houd-er ‘container’, wijz-er ‘pointer’ |
| | Instrument | maaier ‘mower’, zoem-er ‘buzzer’, maanland-er ‘moon lander’ |
| | Object | voor-lader ‘front-loader’, rok-er-tje ‘lit. smoker, cigar/cigarette’ |

Similar patterns of interpretation obtain for such nouns in Dutch (Booij 1986, De Caluwe 1992; 1994), English (Booij and Lieber 2004), German (Meibauer et al. 2004), and Romance languages (Rainer 2005). Importantly, such deverbal nouns in *-er* often have more than one meaning. For instance, a *teller* ‘lit. counter’ may denote both an agent (someone who counts) and an instrument .

There are three approaches to the problem of polysemy in word formation. The most radical option is taken by so called separationist morphologists: there is no systematic form-meaning correspondence in morphology, and therefore form and meaning should be

accounted for by different modules of the grammar (Beard 1995). This, however, is an option that we should not take since it means that we give up the task of the linguist of accounting for the systematicity that we find in polysemy cross-linguistically.

If we do assume systematicity in the relation between form and meaning, there are two options that do not necessarily exclude each other: monosemy and polysemy. In the monosemy approach we assign a very general and vague meaning (*Gesamtbedeutung*) to a certain morphological pattern. This approach is a sensible first step in the analysis of compounds which exhibit a wide variety of meaning relations between their constituents. It also makes sense for the class of verbs derived from nouns through conversion (cf. Booij 1979).

Is the monosemy approach applicable to the interpretational variation observed for the de-verbal nouns listed in (2)? Indeed it has been argued that the different interpretations of at least a subset of these meanings might be reduced to a general meaning: the deverbal suffix *-er* derives subject names (Booij 1986 for Dutch, Rappaport Hovav and Levin 1992 for English). The subject (or external argument) of the base verb usually carries the semantic role of Agent, and hence we get deverbal *-er*-nouns with the corresponding semantic role. The notion Agent used here is a very general notion, and is meant to also encompass the semantic role of subjects of verbs of experience and belief. Thus we account for nouns such as *hearer* and *believer* derived from verbs where the degree of agentivity is pretty low. In Dutch, we find de-verbal nouns such as *stijger* 'riser' and *daler* 'dropper' both used for qualifying the behaviour of shares at the stock market, derived from verbs with a single argument with the semantic role of Theme, *stijgen* 'to rise', and *dalen* 'to drop'. These verbs are usually qualified as unaccusative verbs. By qualifying deverbal *-er*-nouns as subject names instead of Agent names we account for the existence of these nouns as well.

However, the monosemy approach cannot do justice to the whole range of interpretations, and we do need the notion of polysemy. The Agent role is prototypically assigned to human beings, but non-human agents and even non-animate agents can also function as subjects of verbs. A movie can be said to thrill people, and a container contains something. Therefore, nouns such as *computer* and *printer* can be seen as Agent nouns with a personified Agent because a computer computes something, and a printer prints something (Booij 1986, Heyvaert 2003: 163). The driving force behind this ramification of the conceptual category of Agent is that of metaphor: we can conceive of devices that are able to perform certain actions as agents. This metaphorical interpretation of the notion Agent may have been the source of the rise of the instrumental meaning, and hence of the polysemy of

lexemes. The non-animate meaning of *printer*, for instance, could also be described as ‘instrument for printing’, and such interpretations might have been the historical source for the development of an instrumental subschema. This kind of polysemy through metaphor is to be qualified as sense extension, the extension of the range of meanings of a word through conceptual mechanisms such as metaphor and metonymy. The conventionalised metaphorical interpretation of certain words leads to new senses of such words. Moreover, there are also instrument nouns for which the metaphorical interpretation ‘personified agent’ is not possible, as is illustrated by the following examples from Dutch:

- (3) klopper ‘knocker’
- krabber ‘scraper’
- kurkentrekker ‘cork screw’
- veger ‘brush’

You cannot say, for instance, that a *veger* sweeps the floor, only that one sweeps the floor with a *veger*. Therefore, we have to conclude that the instrumental interpretation is no longer necessarily connected to an agentive interpretation of the same word. This implies that it is not only individual words, but also the constructional schema for deverbal *-er*-nouns as such that has become polysemous: there is a separate subschema for instrumental deverbal nouns.

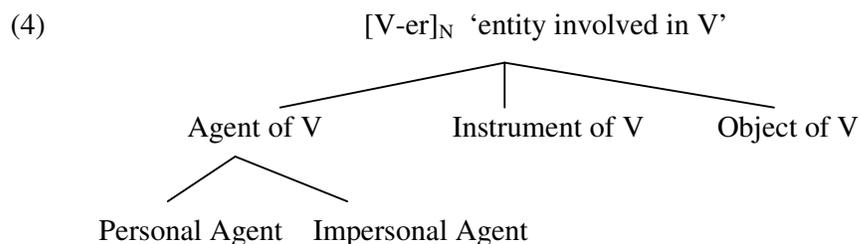
The rise of this instrumental subschema might also be interpreted as a case of metonymic sense extension. We need this latter explanation anyway because the object interpretation and the location interpretation cannot be related metaphorically to the Agent role of the subject either. Hence, as concluded in Booij (1986) for Dutch, and in Heyvaert (2003), Panther and Thornburg (2003), and Booij and Lieber (2004) for English, we need some other explanation for these non-agentive types of meaning (instrument, object, location) of deverbal *-er*-nouns. The basic generalization is that these nouns can also denote another entity that is a participant in the action denoted by the verb. These sense extensions can therefore be seen as resulting from metonymy (conceptual contiguity). Heyvaert (2003: 176) therefore qualifies the general meaning of the whole set of English de-verbal nouns as follows: “The entity either has a certain potential for carrying out the process or for letting others carry it out”. This is a good example of the use of a general, underspecified meaning for a morphological category. This general meaning is then to be supplemented with subschemas for the conventionalized semantic subclasses of this morphological category. Moreover, it has to be extended for other meanings such as that of Location. The existence of a

number of subschemas for a word formation process is also referred to as semantic fragmentation (Rainer 2003)

For each of the deverbal *-er*-nouns we have to specify their conventional interpretation or interpretations (as we saw above, many of these words can have more than one interpretation) in the lexicon. In a hierarchical lexicon we can assume subschemas for the different interpretations such as Agent, Instrument, Object, etc. (cf. Tældeman 1990 for general observations on the polysemy patterns of Dutch deverbal nouns). These subschemas express which of the options that are sanctioned by the general abstract schema are used (Langacker 1998, Heyvaert 2003: 43). These subschemas might be taken to function as the level at which new deverbal *-er*-nouns are coined. They specify in a direct fashion how, for instance, a new word for an instrument or an object involved in a certain type of action can be coined.

This interpretation of the role of subschemas as being directly involved in word formation is supported by historical evidence. As Rainer (2005) shows, there are a lot of Spanish deverbal nouns in *-dor* (the counterpart of English *-er*) for which either only instrumental interpretations are recorded, or for which the agentive use is recorded much later than the instrumental use.

A first approximation of the specification of Dutch deverbal *er*-nouns is given in (4):



Individual deverbal *-er*-nouns may be linked to more than one of these subschemas because we also find this polysemy at the level of the individual word. For instance, the Dutch word *inruiler* denotes both someone who replaces his car for another one (agent name) and the object of the transaction (object name).

This hierarchy thus specifies the different meanings of deverbal *er*-nouns, and their common properties. It does not give direct expression to the nature of the semantic relationships between the (prototypical) Agent interpretation and the other ones. The semantic-conceptual extension mechanisms are to be taken as the driving forces behind this polysemy pattern that is specifiable in a hierarchical lexicon. The hierarchy of general schema

and subschemas is a synchronic description of the relevant set of words, specifies the attested patterns, and the possibilities for coining new words of the different subtypes. It thus expresses how the conceptual extension mechanisms have been conventionalized in the lexicon of a particular language (Rainer 1993: 137, Copestake and Briscoe 1996).

The role of convention in establishing semantic subpatterns of a morphological category can also be seen if we compare different word formation schemas for nouns that denote persons. Both in English and Dutch, for example, the nominalizing suffix *-ist* that attaches to adjectives and nouns can only be used to denote human beings with a certain ideology (*Marxist*) or profession (*violinist*), and never appears in nouns that denote non-animate agents or instruments, unlike nouns in *-er*. This means that the extension pattern is specifically linked to the morphological schema for *-er*-nouns, and thus leads to subschemas for this morphological category.

The necessity of a distinction between the actual polysemy patterns in a language-specific lexicon and the driving forces behind polysemy (metaphor, metonymy, conceptual extension schemas) is also clear if we look at another well known case of polysemy in word formation, the different meanings of deverbal words that end in the English suffix *-ery* (Lieber 2004: 41) and its counterparts *-erij* in Dutch (Hüning 1999) and *-erei* in German (Hüning 1996). These suffixes derive from French loans with the deverbal suffix *-erie*. German deverbal nouns with *-erie* exhibit three basic meanings: event, result of the event, and location of the event. All of these three meanings may be found for one single word, as is the case for *Brauerei* 'brewery' (Hüning 1996: 220). The common driving force behind the polysemy of both types of deverbal nouns, those in *-er* and those in *-erie* is that the verbal base denotes an event with a number of entities involved. The deverbal noun therefore denotes one of the entities involved in the event. Yet, we have to specify the concomitant set of meanings for each morphological category because they may differ as to which of the set of potential meanings of a morphological category (as determined by general cognitive schemas) have become conventionalized. For instance, as Hüning (1996: 220) points out, the German nouns in *-erei* can never be used as instrument names, unlike *-er*-nouns, although instruments may be involved in the event denoted by the base verb of the *-erei*-noun.

Moreover, as pointed out by Rainer (2005), the polysemy of a morphological category may have other causes than conceptual extension schemas. Other factors that may be involved are ellipsis and homonymisation. In French, the instrumental interpretation of nouns in *-eur* and *-euse* can often be interpreted as the result of ellipsis of the patterns *appareil* + adjective in *-eur* and *machine* + adjective in *-euse*. In Romance languages the Latin locative suffix

-torium became, due to phonetic change, identical to the Latin agentive suffix *-torem*, as in Catalan *-dor* that appears in both agent and locative nouns (Rainer 2005). Hence, patterns of polysemy do not necessarily follow from cognitive extension schemas but may also be due to historical coincidence. Consequently, the actual hierarchy of the set of deverbal *-er*-nouns is not necessarily completely isomorphic to the conceptual networks and extension mechanisms that lie behind these patterns of polyssemy.

Another example of semantic fragmentation is the occurrence of a set of meanings for denominal *-er*-nouns in Dutch (Van Santen 1992: Chapter 7). With a few exceptions such nouns denotes persons. At least the following subclasses may be distinguished:

(5) (i) inhabitant names ‘inhabitant of N’

Amsterdam ‘id.’	Amsterdammer ‘inhabitant of Amsterdam’
Hoogeveen ‘id.’	Hoogeve(e)n-er ‘inhabitant of H.’

(ii) classificatory names (‘someone who belongs to / can be classified in relation to N’); used a lot with acronyms as bases:

VVD ‘liberal party’	VVD-er ‘member of the VVD party’
AOW ‘state pension’	AOW-er ‘pensioner’
20e eeuw ‘20th century’	20e-eeuw-er ‘20th century person’
apotheek ‘pharmacy’	apothek-er ‘pharmacist’
dertig ‘thirty’	dertiger ‘person in his thirties’

Denominal *-er*-nouns also denote inanimate objects with a property mentioned by the noun:

(6) tienponder ‘tenpounder’
 dubbeldekker ‘double decker’
 driewieler ‘tricycle’

As these examples illustrate, the first constituent of these names for non-animate entities is usually a quantifying expression.

How should we interpret the multiple use of these denominal *-er*-nouns? It is not sufficient to state that the meaning of such nouns is a *Gesamtbedeutung*, ‘entity with some relation R to its base noun’. For instance, the specific use of the suffix *-er* for the formation of inhabitative names has been conventionalized into a productive subschema. This comes as no

surprise given that the suffix *-er* in geographical names derives from the Germanic suffix *-warja*, whereas the agentive suffix *-er* derives historically from the Latin suffix *-arius* (Meibauer et al 2004: 157). There is also synchronic evidence for the relative autonomy of this inhabitative subschema of denominal *-er*-nouns. For instance, these words have specific paradigmatic relations with the class of nouns for female inhabitatives marked with the suffix *-se*, whereas other personal nouns in *-er* have a female counterpart that ends in *-ster* (Booij 1988):

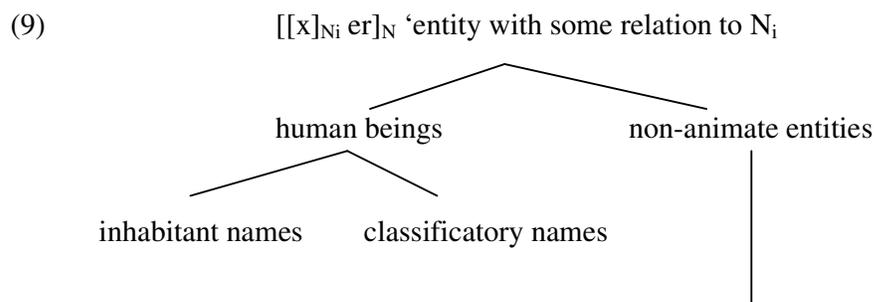
- (7) a. Amsterdamm-er Amsterdam-se
 Hoogeveen-er Hoogeveen-se
 b. VVD-er VVD-ster
 AOW-er AOW-ster
 wetenschap wetenschap-ster

The female suffix *-se* replaces the inhabitative *-er*, whereas the suffix *-ster* replaces *er* in other personal nouns. Words such as **Amsterdam-ster* or **VVD-se* are ill-formed. That is, the two subpatterns exhibit different paradigmatic relationships within the lexicon. A second observation is that only the inhabitative suffix *-er* has a competitor, the suffix *-enaar*, as in:

- (8) Utrecht Utrechtenaar / Utrechter
 Heiloo Heilooenaar / Heilooer

This option is not available in the case of the other type of personal noun: *VVD-enaar*, for instance, is completely out.

What we therefore observe here is another case of semantic fragmentation. The denominal suffix *-er* is used productively for the creation of (at least) two different kinds of denominal personal nouns in *-er*, inhabitatives, and classificatory names. The following schema hierarchy account for the observations made above:



<i>Amsterdam-er</i>	<i>wetenschapp-er</i>	<i>tienpond-er</i>

This analysis of denominal *er*-nouns of Dutch leads again to the conclusion that we need morphological subschemas in order to account for subregularities. In a hierarchical lexicon, such subtemplates can be specified without losing the possibility of expressing that these subschemas are instantiations of more general word formation schemas.

3. Conclusions

If we conceive of word formation patterns as constructional schemas that express the common properties of sets of complex words, we are able to give an insightful account of the cross-linguistically wide-spread phenomenon of polysemy in morphological categories. In particular, the idea of a hierarchical lexicon enables us to make generalizations at different levels of abstraction. Thus, polysemy phenomena support the idea of analyzing complex words as morphological constructions. They also lead to the conclusion that lexicology and morphology should be strongly intertwined disciplines, a conclusion that underscores the importance of the work done for so many years by the Instituut voor Nederlandse Lexicology under the inspiring directorship of Piet van Sterkenburg for the linguistic study of Dutch.

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