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Paradigmatic relations in Construction Morphology: the case of Dutch Noun+Verb compounds*

Abstract: The formal and semantic properties of Noun+Verb compounds in Dutch can be accounted for by means of paradigmatically related word-constructional schemas. We can form verbal compounds with an infinitival head from nominal compounds with a deverbal head noun, for instance *boekbespreken* 'to book-review', derived from *boekbespreking* 'book review' through substitution of *-ing* by *-en*. The paradigmatically related constructions of verbal compounds with an infinitival head and nominal compounds with a deverbal head thus constitute a paradigm for word formation. The paradigmatic origin of verbal compounds makes the rare use of finite forms of these compounds understandable. The form of nominalizations for Noun+Verb compounds provides additional evidence for the paradigmatic origin of these verbal compounds. The analysis proposed lends support to morphological frameworks in which paradigmatic relations between words play a crucial role, such as Construction Morphology.

Keywords: Construction Morphology, conversion, Dutch, paradigmatic relations, verbal compounds, separable complex verbs

1. Introduction: the importance of paradigmatic relations in morphology

It is a truth acknowledged by many that an adequate theory of morphology has to account for the paradigmatic relations between words. General awareness of the importance of such relations in morphology, not only for inflection, but also for word formation, can be found in many recent morphological studies, such as Štekauer (2014), Booij (2019b), Diessel (2019), Fernández-Domínguez et al. (eds., 2020), Hathout & Namer (eds., 2019), Hathout & Namer (2022), Bonami & Strnadová (2019), Diewald & Politt (eds., 2022), and Ruz et al. (eds., 2022).

Non-concatenative morphology and prosodic morphology require specification of systematic paradigmatic relations between words (Booij 2019a). Non-derivational corre-

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sponddences between phrases and complex words need to be accounted for (Booij 2015), as do systematic asymmetries between form and meaning in complex words (Booij & Masini 2015). We therefore need paradigmatically related constructional schemas as specifications of such correspondences and asymmetries.

Paradigmatic relations are presupposed in the competition between word formation processes (Van Marle 1985, Dammel & Kempf 2018, Rainer et al. eds. 2019), and in the competition between morphological and phrasal constructions (Booij 2018, Masini 2019).

Their role can also be observed in language change. A classic example is that of paradigm leveling, in which the phonological form of a word is adapted to that of another morphologically related word or word form. For example, the past tense sg. form *band* of the Middle Dutch verb *binden* 'to tie' changed into present-day Dutch *bond*, with the same vowel as the past tense plural form *bonden* and the past participle *gebonden*.

Various types of evidence for the decisive role of paradigmatic relations in computing the phonological form of words are presented in Downing et al. (2005). Variation in the phonological form of constituent morphemes of complex words (allomorphy) may be determined by paradigmatic relations (Booij 1997), and may have to be specified for individual paradigmatically related word pairs (Raffelsiefen 2016).

Paradigmatic relations play a role in word processing as well. The comprehension and production of a word form can be affected by its morphological relations with other word forms (Arndt-Lappe & Ernestus (2020), Zee et al. (2021)). Speech errors may also reveal paradigmatic relations between words (Berg 2020).

In this paper I will focus on the role of paradigmatic relations in the formation of Noun+Verb compounds in Dutch such as *hongerstaken* 'to hunger-strike'. As we will see, their formation is made possible by systematic paradigmatic relations with other types of complex word. In Construction Morphology (CxM) such relations between different word formation types are expressed by means of 'second order schemas' (Booij 2010, Booij & Masini 2015) in which corresponding parts of related words and morphological schemas are co-indexed.[1] Similarly, in Relational Morphology, a sister theory of CxM (Audring 2019, Jackendoff & Audring 2020), paradigmatic relations are represented by means of co-indexation of parts of constructional schemas that are thus marked as 'sister schemas'.

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[1] Another term used for 'second order schema' is 'hyperconstruction' (Diewald 2020).

I will provide evidence for the role of paradigmatic relationships in the formation of Dutch Noun+Verb compounds, and discuss how they can be represented in CxM (section 2). In particular, the role of suffix substitution is highlighted (section 2.4.). In section 3, I show that suffix substitution also plays a role in coining nominal compounds with deverbal nouns as heads. Section 4 discusses why verbal compounds are rarely used with finite forms. In section 5, I argue that the nominalization of Noun+Verb compounds provides additional evidence for the paradigmatic origin of these verbal compounds. Section 6 summarizes my findings.

2. The formation of verbal compounds in Dutch

The formation of verbal compounds in Germanic languages such as Dutch, English and German is often qualified as an unproductive process (see Booij (1989) for Dutch, Lamberty & Schmid (2013) for English, and Eisenberg (2006: 232-235) for German). However, as argued by Bagasheva & Fernández-Domínguez (2022), the formation of such compounds in English occurs more often than traditionally thought. We will see that this also applies to the formation of Noun+Verb compounds in Dutch.

We can distinguish four different ways of creating Noun+Verb combination in Dutch: conversion (section 2.1), quasi-incorporation (section 2.2), compounding (section 2.3), and suffix substitution (section 2.4). For some of these words, more than one type of formation may have been involved, which results in words being multiply motivated (2.5). Verbal compounds can also appear with a participial head (section 2.6).

2.1 Conversion

Dutch verbs consisting of a noun and a verb can be formed by means of conversion of nominal compounds, for example:

(1) *nominal compound*   *conversion into a verb stem*

brand-merk 'burn-mark, stigma'   brandmerk 'to brand, to stigmatize'

stroom-lijn 'stream-line'   stroomlijn 'to streamline'

tafel-tennis 'table-tennis'   tafeltennis 'to play table-tennis'

The converted verbs occur both as finite and non-finite forms, For instance, the past tense plural form *brandmerkten* is used in the sentence *Cowboys en boeren brandmerkten hun veestapel* 'Cowboys and farmers branded their livestock'.

2.2 Quasi-incorporation

Besides verbs that are converted nominal compounds such as *brandmerken*, Dutch features Noun+Verb combinations that are separable complex verbs. They function as lexical units, but do not behave as morphological units, and can be qualified as cases of quasi-incorporation (Booij 2010: Chapter 4). An example is Dutch *deelnemen* 'lit. part-take, to take part' (compare its German equivalent *teilnehmen*), with the meaning 'to participate'. The traditional term in Dutch grammars for such constructions is *scheidbaar samengesteld werkwoord* 'separable complex verb'. These Noun+Verb combinations are split in main clauses. Hence, they are not morphological compounds, because words cannot be split by a syntactic rule, the principle of Lexical Integrity (Booij 2009; 2010: Chapter 4). On the other hand, they can form a unit in verbal clusters in an embedded clause. This is illustrated here for the Dutch separable complex verb *deelnemen*:

(2) a.   Jan {nam deel / *deel-nam} aan de wedstrijd.

    John {took part / *part-took} in the match

    'John took part in the match.'

  b.   dat Jan {deel wilde nemen / wilde deel-nemen} aan de wedstrijd.

    that John {part wanted take / wanted part-take}in the match

    'that John wanted to take part in the match.'

Example (2b) shows that the bare noun *deel* 'part' in such combinations can function as a separate NP, not incorporated in the verb (*deel wilde nemen*), or be quasi-incorporated into the verb (*wilde deelnemen*). In the latter case, *deelnemen* can be qualified as a syntactic compound (Booij 2010: Chapter 4). A syntactic compound is a close syntactic unit of two words without being one word in the morphological sense. Therefore, they cannot occupy the second position in main clauses, as shown in (2a).

2.3 Compounding

Besides verbs created through conversion of nominal compounds, and quasi-incorporating verbs, Dutch also has real verbal compounds, such as *stijldansen* 'to style-dance, inf.', concatenations of a noun and a verb. Many of these compounds are used mainly or exclusively as non-finite forms (infinitives or participles). When used as finite forms, they may be restricted to being used in embedded clauses.[2] There is hesitation and variation among language users about the use of finite forms of such verbs in main clauses[3], but they do occur, as shown here for the verb stijldansen 'to style-dance' (Booij 2019c: 166):

(3) a. Mijn zuster zal morgen gaan stijl-dans-en.

My sister will tomorrow go style-dance-INF

'My sister will go style-dancing tomorrow.'

b. Ik vind dat mijn zuster goed stijl-dans-t.

I think that my sister well style-dance-s

'I think that my sister style-dances well.'

c. Mijn zuster probeert {*stijl te dansen / te stijl-dansen}.

My sister tries {style to dance / to style-dance}

'My sister tries to style-dance'

d. *Mijn zuster danst uitstekend stijl.

My sister dances excellently style

'My sister style-dances very well'

For this verb, we find occasional use of a finite form in a main clause, as in the following example:

(4) Een koppel stijldanst op een wolkenkrabber op 200 meter hoogte.

'A couple style-dances on a skyscraper at 200 meters height'

(https://www.europeana.eu/en/item/92034/GVNRC_SFA03_SFA022007703)

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[2] In generative grammar, these verbs are called immobile verbs (Vikner 1990), because they cannot be moved to the Verb Second position in main clauses.

[3] This hesitation or uncertainty can also be observed in the fact that Eisenberg (2006) gives different judgements of grammaticality for the use of finite forms of German *bausparen*. On p. 235 he qualifies the clause *weil sie bauspart* as ungrammatical, but on p. 341 the clause *weil er bauspart* is considered grammatical.

A similar distributional pattern can be observed for the compound verb *kettingroken* 'to chain-smoke'. This verb cannot be split, and is mainly used in its infinitival form. However, we can find finite forms such as *kettingrookte* 'chain-smoked, past.sg.', and *kettingrookt* 'pres.3sg.' as in:

(5)   a.   *in a main clause:*

       Hij *kettingrookte* Caballero. (Onze Taal 68, 1999)

       'He chain-smoked Caballero.'

   b.   *in an embedded clause:*

       Ze heeft een eigen stoeltje […], waarop ze *kettingrookt.*

       'She has her an own chair [...] on which she chain-smokes.'

               (https://kijkzuidfrankrijk.com/2021/04/16/een-courrier-bij-de-tabac/)

The words *stijldansen* and *kettingroken* may have been formed as compounds with the infinitive *dansen* and *roken* as heads. Since infinitives can be used as nouns, and nominal compounding is a productive process, infinitives can be used as heads of compounds. These infinitives have apparently been reinterpreted as the infinitives of verbal compounds, because they have finite forms as well, as illustrated in (4) and (5).

2.4 Suffix substitution

Verbal compounds can not only be formed by compounding with an infinitive as head, but also by suffix substitution applied to compounds with a head noun that is deverbal, nouns ending in the suffix *-er* or the suffix *-ing*. For example, the verb *stijldansen* can also be derived from the nominal compound *stijldanser* 'style-dancer' by means of suffix substitution. Similarly, the verb *kettingroken* 'to chain-smoke' may have been derived from the nominal compound *kettingroker* 'chain-smoker'. This option is also relevant for the analysis of the verbal compound *modebloggen* 'to fashion-blog' that corresponds with the nominal compound *modeblogger* 'fashion-blogger'. The verbal compound may have been derived from this nominal compound by means of suffix substitution. The head noun *blogger* of the nominal compound can be considered as derived from the verb *bloggen* 'to

blog'.[4] Thus, for Noun+Verb compounds there is more than one way in which they may have been formed: compounding with an infinitival head, as discussed in section 2.3., or suffix substitution. Hence, they are multiply motivated (section 2.5).

2.4.1 Substitution of *-er*

The formation of Noun+Noun compounds with deverbal heads ending in *-er* is very productive in Dutch (as in English and German). Corresponding verbal compounds can be made by replacing the suffix *-er* in the deverbal head of these nominal compounds with the infinitival suffix *-en*. This means that suffix substitution functions here as a process that produces a specific form of a verb, the infinitive. When one consults the Algemeen Nederlands Woordenboek, an on-line dictionary of present-day Dutch (https://anw.ivdnt.org/), one is struck by the large number of words that show this correspondence, for instance for words related to the verb *bloggen* 'to blog':

(6) *verbal compound ending in -en* *nominal compound ending in -er*
kookbloggen 'to cook-blog' kookblogger 'cook blogger'
lifebloggen 'to life-blog' lifeblogger 'life blogger'
modebloggen 'to fashion-blog' modeblogger 'fashion blogger'
muziekbloggen 'to music-blog' muziekblogger 'music blogger'
nieuwsbloggen 'to news-blog' nieuwsblogger 'news blogger'
stadsbloggen 'to city-blog' stadsblogger 'city blogger'
voedselbloggen 'to food-blog' voedselblogger 'food blogger'

These verbal compounds, with the form of an infinitive, are mainly used as the head of a noun phrase (7a,c), and in the progressive *aan het–infinitive*-construction (7b) (Booij 2010: 150–158):

(7) a. Scott Schuman […] is de man die het *mode-blogg-en* heeft gemaakt tot wat het nu is.
Scott Schuman is the man who the fashion-blog-INF has made into what it now is
'Scott Schuman is the man who made fashion-blogging into what it is now.'

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[4] The noun *blogger* can also be denominal, that is, derived from the noun *blog*. However, in relation to the infinitive *modebloggen* it appears to be interpreted as deverbal.

    b.   RT @cancia […] is nu lekker aan het *muziek-blogg-en*.

         RT @cancia is now pleasantly at the music-blog-INF

         'RT @cancia is now enjoying herself with music-blogging.'

    c.   Kleine les in *nieuws-blogg-en*. (https://anw.ivdnt.org/)

         Small lesson in news-blog-INF

         'Small lesson in news-blogging.'

The correspondence between verbal compounds and nominal compounds with a deverbal head in *-er* is also illustrated by the following quotation, in which the compound *laad-paal-klever* 'charging-point-sticker' corresponds with the verb *laad-paal-klev-en* 'charging-point-stick-INF' in the next sentence.

(8)   De Volkskrant publiceerde op 13 januari een artikel "Handen ineen tegen de *laadpaalklever*" waarin verschillende maatregelen tegen de onnodige bezetting van oplaadpalen worden onderzocht. *Laadpaalkleven* is een steeds groter wordend probleem.

(https://anw.ivdnt.org/)

    'The Volkskrant published on January 13 an article "Joining forces against the charging point sticker" in which various measures against the unnecessary occupation of charging points [for electric cars] are investigated. Charging point sticking is a continuously growing problem.'

In some cases, the origin of the verbal compound from the corresponding nominal compound is also suggested by the presence of the linking element *-s-* that is typical for Noun+Noun compounds:

(9)   stad-s-blogg-er 'city blogger' / stad-s-blogg-en 'to write a city-blog'

    gewicht-s-heff-er 'weight raiser' / gewicht-s-heff-en 'to raise weight'

As mentioned above, the formation of verbal compounds with *bloggen* as head is quite productive. The *Algemeen Nederlands Woordenboek* lists 19 such compounds. The productivity of this word family suggests that there might be a second source of such compounds: analogy with other verbal compounds that end in *bloggen*.[5] This kind of analogy can be

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[5] The role of word families is also pointed out by Lamberty & Schmid (2013: 603, 619) for English. They suggest to assume low level schemas such as [*hand* V]$_V$ for word families like *to handwrite, to hand-pick, to hand-feed* etc.

represented in the grammar by assuming a subschema for verbal compounds in their infinitive form in which the infinitival head is specified as *bloggen*:

(10) form $[[x]_{Ni} [blogg_j\text{-}en]_{V\text{-}INF}]_{V\text{-}INF\text{-}k}$

  meaning $[BLOGGING_j \text{ related to } SEM_i]_k$

In Construction Morphology, subschemas can be used to specify productive niches within a more general pattern of word formation. The schema in (10) is a subschema of the schema for compounds of the type $[Noun+ [V\text{-}inf]_{V\text{-}INF}$.

2.4.2. Substitution of *-ing*

A second type of Dutch nominal compounds that can give rise to infinitives of verbal compounds is that with a deverbal head in *-ing* (compare German compounds in *-ung*, for instance *Notlandung* 'emergency landing' from which *notlanden* 'to make an emergency landing' has been derived, Eisenberg 2006: 235). Examples from Dutch are (Booij 2019c: 164):

(11) *verbal compound* *nominal compound source*

bloemlezen 'to make an anthology'	bloemlezing 'anthology'
codewisselen 'to switch code'	codewisseling 'code-switching'
buiklanden 'to land on one's belly'	buiklanding 'belly landing'
hersenschudden 'to brain-concuss'	*hersenschudding* 'brain concussion'

There are also verbal compounds that correspond both with a compound ending in the suffix *-er* and a compound ending in the suffix *-ing*, for instance:

(12)
boekbespreken 'to book-review'	boekbespreker 'book reviewer'
	boekbespreking 'book review'
dagsluiten 'to speak an epilogue'	dagsluiter 'epilogist'
	dagsluiting 'epilogue'
hongerstaken 'to go on hunger-strike'	hongerstaker 'hunger-striker'
	hongerstaking 'hunger-strike'
tijdwaarnemen 'to time-keep'	tijdwaarnemer 'time-keeper'
	tijdwaarneming 'time-keeping'
verkeersdeelnemen 'to traffic-participate'	verkeersdeelnemer 'traffic participant'
	verkeersdeelneming 'traffic-participation'

These verbal compounds can therefore be derived in two ways, by substitution of *-er* or of *-ing*. One of them may be the most probable one. For instance, in the Corpus Hedendaags Nederlands (https://ivdnt.org/corpora-lexica/corpus-hedendaags-nederlands/) the compound *boekbespreking* has 269 hits, and *boekbespreker* 28 hits. Therefore, *boekbespreking* is the most probable source for *boekbespreken*.

What we see here is that there are word families in which a word ending in *-er* and one in *-ing* corresponds with a verbal infinitive in *-en*. This correspondence can be represented by the following second order schema (consisting of three sister schemas) specifying that there are systematic relationships between complex words that can be captured in terms of suffix substitution:

(13) form $[Ni\ [V_j\text{-}er]_N]_{Nk}$

      meaning $[\text{Actor of SEM}_j \text{ related to SEM}_i]_k$

      $\approx$

      form $[N_i\ [V_j\text{-}ing]_N]_{Nm}$

      meaning $[\text{Event of SEM}_j \text{ related to SEM}_i]_m$

      $\approx$

      form $[N_i\ [V_j\text{-}en]_{V\text{-}INF}]_{V\text{-}INF\text{-}p}$

      meaning $[\text{SEM}_j \text{ related to SEM}_i]_p$

The symbol $\approx$ stands for 'paradigmatically related to'. The specific correspondences between parts of the schemas are expressed by co-indexation. The symbol $\approx$ has no formal role, but highlights the co-indexation of schemas.

This kind of word formation is not restricted to individual cases, but is a productive, systematic phenomenon. This is expressed by the second order schema (13), which is thus a word formation paradigm, with slots for three related semantic categories. Paradigmatic relations involved in word formation may thus be accounted for by word formation schemas linked through co-indexation, as proposed in Booij (2010) and Jackendoff & Audring (2020).

These schemas have two functions: they specify how new complex words can be coined, and they provide motivation for the formal and semantic properties of existing complex words of the relevant type.

2.5. Multiple motivation

As we saw in section 2.4.1., the compound *modebloggen* 'to fashion-blog' can be formed either by combining the noun *mode* with the infinitive *bloggen* 'to blog' (cf. subschema 10), or by replacing the suffix *-er* of *modeblogger* 'fashion-blogger' by the infinitival suffix *-en* (cf. second order schema 13). A third possibility that might be considered is conversion: the verb *modebloggen* might be seen as a conversion of the nominal compound *modeblog*. In Dutch, nouns that denote a form of communication or a game lend themselves easily to conversion to verbs (Hüning 2009). However, converted nominal compounds regularly occur with finite forms, whereas this is not the case for compound verbs with *bloggen* as their verbal head. Yet, a conversion analysis cannot be excluded, and we do find finite forms such as the pres. 3.sg. form *modeblogt* as in *Sinds kort modeblogt ze ook onder de naam Kimmiku* 'Recently she fashion-blogs under the name Kimmiku' (Google search).

All of these three analyses of the verbal compound *modebloggen* may be right, because a complex word can have more than one motivation, that is, may be related to two or more different word formation processes (cf. Booij & Audring (2018) on multiple motivation). By conceiving such verbal compounds as embedded in a paradigmatic network of related words, there is no need to choose one way of forming them as the only correct one. It is the network of schemas as a whole that provides motivation for the correspondence between form and meaning of such complex words.

2.6. Compounds with participial heads

Besides verbal compounds with a verbal infinitive as head, we find compounds with a participial head. Like compounds with infinitives as head, they can be formed directly, as Noun+Adjective compounds (because participles are hybrid categories and can be used as adjectives), or by suffix substitution. Here are some examples of adjectival compounds headed by a present participle, where substitution of the suffix *-er* (with allomorph *-aar*) or *-ing* by the suffix *-end* is the most probable way in which these participial adjectives have been formed, because the nominal compounds in *-er* are established words. The corresponding verbal compounds *fellowtravelen*, *kunsthandelen* do not occur, but could have been formed. The verbal compound *rolwisselen* does occur, and can have been derived from *rolwisseling* or through concatenation of *rol* and *wisselen*:

(14) fellowtraveler[6] 'fellow traveler'   fellowtravelend 'acting as a fellow traveler'

(K. van het Reve, *Afscheid van Leiden*, p. 120)

kunsthandelaar 'art dealer'   kunsthandelend 'dealing in art'

(*Trouw* 17.06.1984)

rolwisseling 'role switch'   rolwisselend 'role switching'

(https://www.nieuwsbegrip.nl/page/652/wat-is-rolwisselend-lezen)

For the compound *puberteitsremmend* 'puberty inhibiting' there are three possible sources: a nominal compound in *-er*, a nominal compound in *-ing*, or the combination of the noun *puberteit* with the participial adjective *remmend* 'inhibiting':

(15) puberteit-s-remm-er 'puberty inhibitor'
      puberteit-s-remm-ing 'puberty inhibition'
      puberteit-s-remm-end 'puberty inhibiting'

The formation of *puberteitsremmend* by suffix substitution from either the compound in *-ing* or the compound in *-er* looks like the most adequate analysis, because the appearance of the linking element *-s-* is characteristic of Noun+Noun compounds, and is very rare in Noun+Adjective compounds.[7]

The present participle may also be used in order to create a gender-neutral counterpart for personal names from nouns ending -in *-er* or *-ster* (a female suffix), some of which are compounds. In that case, the present participle created by substitution of *-er* or *-ster* by *-end* is subsequently turned into a personal noun by means of the suffix *-e*:

(16) *personal noun*   *gender-neutral personal noun*
      kraam-verzorg-er / kraam-verzorg-ster 'maternity nurse' kraamverzorg-end-e
      verpleg-er 'male nurse' / verpleeg-ster 'female nurse'   verpleg-end-e
      werk-er 'worker' / werk-ster 'female worker'   werk-end-e
      zieken-verzorg-er 'sick-carer, ward orderly'   zieken-verzorg-end-e
      zieken-verzorg-ster 'sick-carer (fem.), ward orderly'   zieken-verzorg-end-e

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[6] The compound noun *fellowtraveler* is a loanword from English.
[7] As observed by Jenny Audring (pers. communication, December 1, 2022).

The formation of such nouns is a common strategy in German in order to create gender-neutral nouns such as *Radfahrende* 'cyclists' instead of being forced to use *Radfahrer und Radfahrerinnen* to denote cyclists of both genders.

Language users may form past participles of compound verbs. For instance, the verb *hersenspoelen* 'to brain-wash', probably derived from *hersen-spoeling* 'brainwashing', is also used in the past participle form *gehersenspoeld* with a prefix *ge-* and a suffix *-d*.[8] Another example is *gecodewisseld*, the past participle of the compound verb *codewisselen* 'to switch code' that possibly originates from the nominal compound *codewisseling* 'code-switching'.

The second order schema in (13) should therefore be extended with a schema for present and past participles of compound verbs.

(17) form $[N_i \; V_j\text{-}end]_{\text{V-PRES.PTCP-q}}$

   meaning $[\text{doing SEM}_j \text{ related to SEM}_i]_q$

   form $[ge\text{-} \; N_i \; V_j\text{-}d]_{\text{V-PAST.PTCP-r}}$

   meaning $[\text{having done SEM}_j \text{ related to SEM}_i]_r$

This extended second order schema (13) + (17) defines a morphological paradigm in which five types of complex words, with as heads nouns in *-er* and *-ing*, infinitives, present participles and past participles, are systematically related, and that specifies how one can coin one of these types based on one of the other types.

3. Paradigmatic relations between deverbal compounds

Given second order schema (13), we expect cases where deverbal compounds in *-er* are derived from corresponding compounds in *-ing*, without a corresponding infinitive in *-en* being available. This is indeed the case, as the following examples illustrate, mainly from the Dutch newspapers *Trouw* and *NRC*. For these nouns we do not find corresponding infinitives in the *Corpus Hedendaags Nederlands* (https://ivdnt.org/corpora-lexica/corpus-hedendaags-nederlands/, search, December 8, 2022), but rare uses of such infinitives can be found in a Google search, for instance *belastingverlagen* en *jeugdbeschermen*. However,

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[8] *Gehersenspoeld* is by far the most frequent form. *Gehersenspoeld* and *gehersenspoelde* together are twice as frequent (ca. 3000 hits) as *hersenspoeling* (ca. 1500 hits) in the *nlTenTen20*-corpus (Jenny Audring, pers. communication, December 1, 2022).

these verbal compounds with a low frequency of use are probably derived from the frequently occurring words in *-ing* or *-er*, not vice versa.

(18) *noun in* -ing   *noun in* -er

avondsluiting 'evening epilogue'	avondsluiter	(*Trouw* 01.10.1986)
belastingverlaging 'tax reduction'	belastingverlager	(*NRC* 26.10.2002)
jeugdbescherming 'youth protection'	jeugdbeschermer 'youth protector'	(*Trouw* 27.10.2022)
morgenwijding 'morning service'	morgenwijder 'person who performs a morning service'	(*Trouw* 01.10.1986)
kanttekening 'marginal comment'	kanttekenaar 'marginal commentator'	(*Trouw* 03.09.1989)
taalbeheersing 'linguistic competence'	taalbeheerser 'teacher of linguistic competence'	
taalverwerving 'language acquisition'	taalverwerver 'researcher of language acquisition / language acquirer'	
zelfmoordpoging 'suicide attempt'	zelfmoordpoger 'one who attempts suicide'	(*Trouw* 18.12.1985)

The compounds in *-ing* mentioned in (18) are all established compounds with a conventional meaning that is not always completely predictable, and the meaning of the corresponding compounds in *-er* can be circumscribed as 'person involved in what is denoted by the compound in *-ing*'. For instance, a person who is an *avondsluiter* performs an *avondsluiting* 'lit. evening closure, epilogue at the end of a day'. The compound *kanttekening* 'lit. side drawing' has the meaning 'marginal comment', and this meaning recurs in *kanttekenaar* (with the predictable allomorph *-aar* of the suffix *-er*), with the meaning 'person who makes marginal comments'. The compound *jeugdbescherming* denotes an institution that takes care of youth with problems, and a *jeugdbeschermer* is not necessarily literally a youth protector, but can also be an officer of that institution. The examples *taalbeheerser* and *taalverwerver* in (18) are also interesting as to their meaning. Besides the expected compositional meanings 'one who commands / acquires a language' these words may also denote a teacher or researcher in the domain of linguistic competence or language

acquisition. Thus, a special meaning correlates with these words being derived paradig-matically.

4. Finite forms of verbal compounds

As observed in (3-4) for the verbal compound *stijldansen* 'to style-dance', some verbal com-pounds may occur with finite forms, such as the pres.3sg. form *stijldanst.* Other verbs for which finite forms can be found are the following (examples from the *Corpus Hedendaags Nederlands* (https://ivdnt.org/corpora-lexica/corpus-hedendaags-nederlands/) and the *NLTenTen20 corpus* (https://www.sketchengine.eu/nltenten-dutch-corpus/):

(19) buikspreken 'to ventriloquize'

Als het dier het uitraast van pijn, *buikspreekt* de knecht 'Ik wil niet!'

'When the animal screams through pain, ventriloquizes the servant 'I do not want!'.

hersenspoelen 'to brainwash'

Een sekteleider *hersenspoelt* volgelingen.

'A sect leader brainwashes followers.'

hongerstaken 'to hunger-strike'

Als Volkert niet snel weer gewoon mag slapen, *hongerstaak* ik met hem mee!

'If Volkert cannot sleep normally again soon, I will hunger-strike with him!'

kettingroken 'to chain-smoke'

terwijl hij *kettingrookt* 'while he chain-smokes'

parachutespringen 'to parachute-jump'

Nu ik niet meer *parachutespring* […] heb ik […] tijd om dit gebied eens goed te be-kijken. […].

'Now that I do not parachute-jump anymore, I have time to sea this area properly.'

tongzoenen 'to tongue-kiss, to do a French kiss'

Ze *tongzoent* met een skelet.

'She tongue-kisses with a skeleton.'

For other verbs, finite forms are very rare. This applies, for instance, to the verb *boekdrukken* 'to book-print', for which no finite form is found in the *Corpus Hedendaags Nederland* or in a Google search.

The relative lack of finite forms of these verbal compounds may be related to the way that finite forms for these verbs are formed. Using such finite forms presupposes the reinterpretation of compounds with an infinitival head as the infinitive forms of verbal compounds. This latter type of compounds, with a verbal stem as head, is rare, and this may cause hesitation to create finite forms of such compounds (Booij 1989: 27).

The origin of verbal compounds from nominal or infinitival compounds correlates with the fact that past tense forms of these verbs usually have the regular default form, even if the corresponding simplex verbs have past tense forms with Ablaut (Booij 1989); this also holds for verbs created through conversion of nominal compounds:

(20)   *derived from compound in -er or -ing*

houwen 'to chop' – hieuw (past.sg.)	beeldhouwen 'to sculpture' – beeldhouw-de
lezen 'to read' – las (past.sg.)	bloemlezen 'to make an anthology' – bloemlees-de
zuigen 'to suck' – zoog (past. sg.)	stofzuigen 'to vacuum-clean' – stofzuig-de

from compound with infinitival head

vechten 'to fight' – vocht (past.sg.)	bekvechten 'to dispute' – bekvecht-te

converted nominal compound

fluiten 'to whistle' – floot (past.sg.)	blokfluiten 'to play the recorder' – blokfluit-te

If these verbal compounds had been created syntagmatically, by combining a noun with a verbal head, we would expect the Ablaut property of the verbal head to be transferred to the compound as a whole.[9] In contrast, in separable complex verbs the use of Ablaut for past tense forms is systematically maintained. For instance, the past.sg. form of the separable complex verb *voorlezen* 'to read aloud' is *voorlas*, parallel to *lezen/las* (compare *bloemlezen/bloemleesde*).

The following impeding factors may also play a role in the relative rarity of these finite forms.

First, as argued by Lamberty & Schmid (2013) for English, a semantic factor may be involved. They point out that in nominal compounds, the semantic relation between the non-head and the head varies enormously. In verbal compounds formed directly by concatenation of a noun and a verb stem, on the other hand, one prefers the noun to be

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[9] An exceptional case of a verbal compound with a past tense form with Ablaut in the *Corpus Hedendaags Nederlands* is *schoolzwemmen* 'to school-swim', with the past tense form *schoolzwom* (2 hits).

interpretable as a semantic argument of the verb. In the paradigmatically derived verbal compounds we often get nouns that do not function as semantic arguments. For instance, in *stijldansen* 'to style-dance' the noun *stijl* is not a semantic argument of *dansen* 'to dance'. Similarly, in *kettingroken* 'to chain-smoke' the noun *ketting* is not a semantic argument of *roken*. This may lead to avoidance of reinterpreting such compound verbs as the potential stems of finite verbal forms.

Secondly, there is competition between this way of forming verbal compounds and the formation of separable complex verbs with a (bare) noun as non-head, the type of verbs of which *deelnemen* 'to take part' is an example. This class of separable complex verbs can be easily extended. The bare noun functions as a semantic argument of the verb, and receives a generic interpretation (Booij 2010: Chapter 4). Therefore, the formation of such separable complex verbs may impede that of verbal compounds.

5. Nominalizations of verbal compounds

The form of nominalizations for verbal compounds is predicted straightforwardly when these compounds derive from a nominal compound with a deverbal head in *-ing*. In that case, it is the nominal compound in *-ing* that is the proper nominalization. This is, for instance, the case for the verb *hersenspoelen* 'to brain-wash' with the corresponding nominal compound *hersenspoeling* 'brain washing' from which the verbal compound has been derived.

The situation is different for a verb like *modebloggen* 'to fashion-blog' which corresponds to the agent noun *modeblogger* 'fashion-blogger', but not to a compound in *-ing*, as **modeblogging* is ill-formed. The nominalization of Dutch verbs by means of *-ing* is rather rare for simplex verbs; this suffix is used preferably with derived verbs as bases. A similar restriction obtains for German *-ung* (Demske 2000, Dammel & Kempf 2018). However, it is not an absolute restriction, as there are simplex verbs that correspond with a deverbal noun in *-ing*. In those cases, nominalizations of verbal compounds with the suffix *-ing* are fine. Compare:

(21) a. drukken 'to print'/ *drukking   boekdrukken 'book-print' / *boekdrukking

         bloggen'to blog' / *blogging   modebloggen 'fashion-blog'/ *modeblogging

         roken 'to smoke'/ *roking   kettingroken 'chain-smoke'/ *kettingroking

         spreken 'to speak'/ *spreking   buikspreken 'ventriloquize'/ *buikspreking

         zoenen 'to kiss' / *zoening   tongzoenen 'tongue-kiss'/ *tongzoening

         versus

      b. sluiten 'to close'/ sluiting   dagsluiten 'day-close' / dagsluiting

         spoelen 'to wash' / spoeling   hersenspoelen 'brain-wash' / hersenspoeling

         staken 'to strike' / staking   hongerstaken 'hunger-strike' / hongerstaking

         wisselen 'to switch' / wisseling codewisselen 'code-switch' / codewisseling

The generalization is that a nominalization in *-ing* is available for a verbal compound if it is available for its verbal constituent. This is the case for the verbal compounds in (21b). The verbal compound is derived from the available corresponding nominal compound by substituting the infinitival suffix *-en* for the nominalizing suffx *-ing*, and this predicts this generalization.

Note that the absence of a nominalization in *-ing* for the verbs in (21a) is no problem for the language user, because the infinitive form can always be used as noun. For instance, since *blogging* is not possible as the nominalization of the verb *bloggen*, we do not get *modeblogging*, but *modebloggen*, the infinitive that can be used as a noun, is available as nominalization.

6. Conclusion

This case study of Dutch verbal compounds has shown that the formation and the morphological behaviour of these verbs should be accounted for in terms of a network of paradigmatically related word-constructional schemas. Verbal compounds in their infinitival form can be formed by the syntagmatic concatenation of a noun and an infinitive (which is partially nominal in character), but verbal compounds are not the product of a syntagmatic operation of concatenation of a noun and a verb stem. They can be formed by means of suffix substitution from corresponding nominal compounds with a deverbal head. Given these different options, a verbal compound may be multiply motivated.

Suffix substitution also appeared to apply a role in deriving compounds with a deverbal noun in *-er* as head from corresponding words in *-ing*, and vice versa.

The finite forms of these verbal compounds are not that frequent, as they presuppose reinterpretation of the infinitives as infinitives of verbal compound stems. Other factors involved are the non-argument status of the noun in the underlying nominal compound, and the competition with separable complex verbs of the Noun+Verb type, in which the verb can be freely inflected.

The possible forms of the nominalizations for verbal compounds support the claim that they may be derived from nominal compounds with a deverbal noun ending in *-ing*.

The overall conclusion of this paper is that paradigmatic relations play an important role in Dutch word formation. Because paradigmatically related word formation schemas and words that instantiate these schemas are essential ingredients of Construction Morphology, I consider these findings as empirical support for this framework and similar paradigmatically oriented theories of word formation.

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