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Chapter 12. Principles of word formation

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Abstract

Word formation in Germanic languages takes mainly place by means of compounding and affixation. Compounds are usually right-headed, and there is often a linking element in NN-compounds that derives historically from a case ending. In addition to endocentric compounds there are also copulative compounds. Compounding also takes place with roots of Greek and Latin origin that do not occur as words by themselves. Some compound constituents have developed into affixoids.

Affixation is used to derive words of major categories: nouns, verbs, adjectives, and adverbs. Some of these affixes behave phonologically similar to compound constituents. Many non-native affixes, identified on the basis of sets of borrowed non-native complex words, are being used in word formation as well. Other mechanisms of word formation are affix substitution, conversion, reduplication, prosodic morphology, abbreviation, and blending. For the construction of numerals above 20, syntactic coordination may be used.

The word formation patterns of Germanic languages have been strongly influenced by contact with Greek Latin, and French. In addition, they have been influenced by contact with English. Individual languages have borrowed some of their morphology and complex words from another Germanic language, and Yiddish has been strongly influenced by various non-Germanic languages.

1. Introduction

Germanic languages share their main principles of word formation. The two most important processes of word formation that are used are compounding and affixation. In addition, new words can also be formed by means of conversion, the transposition of a word to another syntactic category without overt morphological marking. Apophony or vowel alternation, traditionally referred to as Ablaut in Indo-European linguistics, only occurs in closed sets of related established words, and is unproductive: it cannot be used productively for word formation anymore. However, established words of this type can be used as constituents of compounds. Reduplication, the copying of words or parts thereof, is cross-linguistically a very common mechanism of word formation, but plays a minor role in Germanic languages. Finally, there are various ways of abbreviating words into shorter ones, for instance in order to express endearment, and blending of words also occurs in Germanic. These various word formation processes will be discussed in the following sections.

Word formation processes are mainly used to create new words of lexical categories: nouns, verbs, adjectives, and adverbs. Words of grammatical categories such as prepositions and conjunctions may be complex as well, but this is due to the diachronic process of univerbation, word sequences becoming words. An examples of univerbation is the English preposition *notwithstanding*.

The similarities between Germanic languages in the domain of word formation originate mainly from their having a common ancestor. In addition, language contact between the individual languages also boosted similarity. For instance, Danish and Norwegian (through Danish) have borrowed lots of complex words from Middle Low German and High German, Frisian is heavily influenced by Dutch, Faroese by Danish, and recently all (other) Germanic languages borrowed words

from English. Most Germanic languages were also influenced by French. Yiddish is a language with a German base, but with extensive influence of Hebrew-Aramaic, Romance, and Slavic languages. Finally, Germanic languages borrowed words and word formation patterns from Greek and Latin, in some cases through French.

2. Compounding

Compounding is the process in which two or more words are combined into a compound. The dominant pattern in Germanic is that of the right-headed compound: the rightmost constituent functions as the semantic and formal head, and the left constituent functions as a modifier. The general schema for Germanic compounds is therefore the following (Booij 2010: Chapter 3):

- (1) form: $[[a]_X [b]_Y]_Y$
 meaning: $[b]_Y$ with some relation R to $[a]_X$

In this schema a and b are variables for the phonological contents of words, and X and Y are variables for the syntactic category of the word constituents. Y is a variable for the major word classes Noun, Adjective, Adverb, and Verb. In the modifier position with the variable X we may find other word categories such as prepositions and numerals as well. As the schema indicates, the syntactic category of the whole compound word is the same as that of the rightmost constituent, the head. The relation R is unspecified, and is determined for each individual compound by the semantics of the two components and general knowledge.

Compounds in which the syntactic category of one of the constituents determines the category of the compound as a whole, such as the right-headed compounds of Germanic, are called endocentric compounds. Exocentric compounds are rare in Germanic languages. An example is English *cut-throat*, which does not denote a throat but a person who cuts throats, a murderer.

The most productive category of compounds is formed by N+N compounds. Here is an example of the compound for ‘blood pressure’ in a number of the Germanic languages:

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| (2) | Danish | blod-tryk |
| | Dutch | bloed-druk |
| | English | blood-pressure |
| | Frisian | bloed-druk |
| | German | Blut-druck |
| | Icelandic | blóð-þrýstingur |
| | Norwegian | blod-trukk |
| | Swedish | blod-tryck |

When we compare these compounds, we will see that English is exceptional in that its word for ‘pressure’ is not of Germanic but of Romance origin. This reflects the fact that English has been influenced much earlier and more profoundly by French than the other Germanic languages, an effect of the Norman conquest in 1066.

The morpho-syntactic properties of the head of a compound are transferred to the compound as a whole. For instance, when the head is a noun, the compound as a whole is a noun as well. In languages with gender, the gender of the head noun is identical to the gender of the compound. For instance, German distinguishes three genders for nouns, neuter, masculine, and feminine, and thus we see the following pattern of gender transfer, with the same choice of definite singular article:

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|-----|--------------------------------------|--|
| (3) | das Recht ‘the right’ (neuter) | das Menschenrecht ‘the human right’ |
| | der Mann ‘the man’ (masculine) | der Hauptmann ‘the head-man, captain’ |
| | die Heizung ‘the heating’ (feminine) | die Zentralheizung ‘the central heating’ |

The N+N compound schema is very productive because the N constituents can also be compounds themselves. Hence, we get recursivity in this type of compounding. German is famous for its richness of recursive compounds (Gaeta & Schlücker eds. 2012). Here are some examples:

- (3) Lebens-mittel-farb-stoff-zulassungs-verordnung ‘lit. life-means-color-stuff-approval-regulation, food coloring approval regulation’
 Straßen-ausbau-beitrags-gesetz ‘lit. street-improvement-contribution-law, law that requires a financial contribution for the street in which one lives’

Such long compounds may also occur in other Germanic languages such as Danish and Dutch.

The left constituent of Germanic compounds, in particular nominal compounds, can also be a phrase, and even a sentence:

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|-----|---------|---|
| (4) | English | all-you-can eat buffet, first-in-first-out policy, a let-it-happen-attitude, the eat-your-spinach-approach to education |
| | Dutch | buiten-de-deur-eters ‘lit. outside-the-door-eaters, restaurant visitors’ |
| | Faroese | gamla-manna-dansur ‘old men’s dance’ |
| | German | Bitte-greifen-Sie-zu-Schüssel ‘lit. please-take-you-to-bowl, please help yourself bowl’ |

Adjectival compounding is also a productive process in Germanic languages, as illustrated by the compound word for ‘environment-friendly’:

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| (5) | Afrikaans | omgevings-vriendelik |
| | Danish | miljø-venlige |
| | Dutch | milieu-vriendelijk |
| | Frisian | miljeu-freonlik |
| | German | umwelt-freundlich |
| | Norwegian | miljø-vennlig |
| | Swedish | miljö-vänlig |

However, not all types of compounding are productive. A notable exception is that in Germanic languages verbal compounding, that is, compounding with a verbal head tends to be marginal. Such verbal compounds do exist, but mainly arise through back formation. A textbook example is the English verb *to babysit* that was formed from the N+N compound *babysitter* by omitting the suffix *-er* of the deverbal nominal head. A similar Dutch example is the verb *beeld-houwen* ‘to sculpture’ coined on the basis of the N+N compound *beeld-houw-er* ‘lit. image hewer, sculptor’. Frisian has a remarkable number of such N+V compounds, for instance *syk-helje* ‘to breath-take’, which are used without being split in main clauses, as in *Hy sykhelle amper* ‘lit. He breath-takes hardly, he hardly breathes’.

Instead of verbal compounds, Germanic languages prefer another options, phrasal combinations of a verb with another word. A dominant type is that of the particle verb, in which a particle (often related to a preposition or an adverb) combines with a verb (Los et al. 2012):

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|-----|---------|---|
| (6) | Danish | af-vise ‘to reject’ |
| | Dutch | op-bellen ‘to phone up’ |
| | German | an-rufen ‘to phone up’ |
| | English | to phone up |
| | Frisian | op-skriuwe ‘to write down’ |
| | Swedish | stiga upp ‘to rise up’ |
| | Yiddish | ahinter loyfn ‘lit. back walk. to run back’ |

In English and the Scandinavian languages the particle follows the verb, in Afrikaans, Dutch, Frisian, German, and Yiddish the particle precedes the verb. The phrasal nature of the lexical expressions can be deduced from the fact that verb and particle can be separated:

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| (7) | Dutch: | Jan belde zijn moeder op ‘Jan phoned his mother up’ |
| | German: | Der Johann rief seine Mutter an ‘Johann phoned his mother up’ |
| | English: | John phoned her up |
| | Norwegian: | Mann-en har drikket vinn-en opp ‘lit. Man-DEF.SG has drunk wine-DEF.SG up,
the man has drunken the wine’ |

In the case of N+V and A+V combinations Germanic languages may use so-called quasi-incorporation (Booij 2010: Chapter 4):

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| (8) | Dutch | koffie zetten ‘lit. coffee make, to make coffee’
schoon maken ‘lit. clean make, to clean’ |
| | German | Kino gehen ‘lit. cinema go, go to the cinema’
Not landen ‘lit. emergency land, to emergency land’ |
| | Frisian | klear komme ‘lit. ready become, to become ready’ |
| | Norwegian | spille piano ‘lit. play piano, to play the piano’ |

These (phrasal) expressions are qualified as cases of quasi-incorporation because they still consist of two words, and are split in main clauses, as in Dutch *Hij speelt piano* ‘He plays the piano’. yet, they behave like close syntactic units, for instance in verb clusters, as in the following Dutch sentence:

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|-----|---|
| (9) | Ik hoorde dat Jan {kan piano spelen / piano kan spelen} |
| | I heard that John {can piano play / piano can play} |
| | ‘I heard that John can play the piano’ |

In the first variant of this sentence the modal verb *kan* precedes the cluster *piano spelen*. Both variants are grammatical.

Germanic languages also have copulative compounds of the type *blue-green*. The compound adjectives qualifies entities that are both blue and green, and hence, there is no semantic relationship of modification between the left and the right constituent. Instead, the compound *blue-green* means ‘blue and green’. Yet, from a formal point of view the leftmost constituent may still be considered as the head of such compounds, when this is the only part that carries inflectional endings. This can be observed in German *ein blau-grün-er Stuhl* ‘a blue-green chair’, where only *grün* carries the proper inflectional ending *-er*. On the other hand, in Swedish both adjectival parts agree with the head noun, at least when the head noun is neuter singular, as in *ett Engelsk-t-Svensk-t lexicon* ‘an English-Swedish lexicon’. There are also nominal and verbal copulative compounds such as German *Fürst-Bischof* ‘prince-bishop’ and Dutch *roer-bakken* ‘to stir-fry’ respectively.

In addition to compounds that consists of two words, in most Germanic languages we also find compounds with one or two nonnative bound roots. For instance, the Greek bound root *bio* ‘life’ appears in German *Bio-loog* ‘biologist’, *Bio-laden* ‘bio-shop’, in *bio-aktiv* ‘bio-active’, and in Dutch *bio-scoop* ‘cinema’, *bio-industry* ‘bio-industry; and *bio-akker* ‘organic garden’ There are hundreds of such roots, and thus we get many parallel words of this type in Germanic languages. These roots are also called confixes or combining forms: they are bound forms, like affixes, but are similar to words in the kind of meaning they carry, which is more lexical than grammatical in nature.

Germanic languages may share a certain word formation process but differ in the degree to which they make use of it. A well known case is that both Dutch and German can make [A+N]_N compound such as German *Gelbsucht* and Dutch *geelzucht*, both meaning ‘jaundice’. Yet, German often has an [A+N]_N compound where Dutch uses an A+N phrase. Compare, for example German *Rot-wein* ‘red wine’ and *Weiß-wein* ‘white wine’ with the Dutch phrases *rode wijn* and *witte wijn*, with the same meanings. As the English glosses indicate, Dutch is more similar to English in this respect than to German.

In Germanic compounds, words of different origin can be combined. For instance, many English loanwords appear in Dutch compounds, as in Dutch *brood-shop* ‘bread-shop’ and *zomer-sale* ‘summer sale’. In addition, we find lots of loan translations. Frisian has a high number of loan translations of Dutch words, due to the intensive contact between these two languages. For instance, Frisian *sondes-skoalle* is a loan translation of Dutch *zondags-school* ‘Sunday school’ and *foetbalje* ‘to play football’ is a loan translation of the Dutch verb *voetballen* ‘to play football’; compare Frisian *fuotbalje* (Dutch *voet* = Frisian *fuot*). In Yiddish we find compounds with a Hebrew component, and the Hebrew left-headed compound structure, as in *sof-wokh* ‘lit. end-week, weekend’, consisting of Hebrew *sof* ‘end’ and Yiddish *wokh* ‘week’, hence a loan translation of German *Wochenende* ‘weekend’.

2.1. Linking elements

As stated above, compounds are combinations of two or more words. In most Germanic languages (with the exception of English), compounds may have a linking element between the two constituents of a Germanic compound. These linking element often have the form /ə/, /ər/, /ən/, or /s/. This is a reflection of the fact that these elements derive historically from case endings. For instance, the Dutch compound *koning-s-zoon* ‘king’s son’, has a linking element /s/ between the constituent words *koning* and *zoon*. This compound derived from the phrase *koning-s zoon* ‘king’s son’, in which *-s* is a genitive case ending. The reinterpretation of these endings as linking elements can be concluded from their distribution. For instance, the /s/, originally a genitive case ending for singular masculine and neuter German nouns, now also appears with feminine nouns, as in *Schönheit-sideal* ‘beauty ideal’. It also appears after verb stems, as in Dutch *scheid-s-rechter* ‘referee’ with the verbal stem *scheid* ‘to sort out’. Here are some examples of NN compounds with linking elements from German, which has the largest range of such linking elements of all Germanic languages:

- (10) Bad-e-tuch ‘bath towel’
- Schönheit-s-ideal ‘beauty ideal’
- Tag-es-form ‘day form’
- Decke-n-leuchte ‘ceiling light’
- President-en-wahl ‘president electon’
- Kind-er-dorf ‘children village’
- Herz-ens-wunsch ‘heart wish’

Phonologically, the linking elements form one phonological word with the preceding word stem, and hence these stem + linking element combinations might be considered as compound-bound allomorphs of left constituent words.

In some cases, these morphemes may still have a morphological function, the marking of plurality, as plural nouns can function as left constituents of compounds:

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| (11) | Dutch stad-s-raad ‘city council’ | sted-en-raad ‘cities’ council’ |
| | German Lande-s-konferenz ‘conference of a state’ | Länd-er-konferenz ‘conference of states’ |

This shows that inflected forms of words can feed word formation, in particular compounding (Booij 1993). This applies in particular to plural forms of nouns, participles and infinitives.

2.2. Affixoids

Constituents of compounds may acquire specific meanings that are more abstract than the meaning of the corresponding word when used on its own. As left constituents they often express an evaluative or intensive meaning. For instance, the following compounds express ‘action as fast as lightning, very fast action’, and ‘very big’ respectively:

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|------|---|
| (12) | Dutch bliksem-actie, German Blitz-aktion, Swedish blix-action |
| | Dutch reuze-groot, German riesen-groß, Swedish jätte-stor |

The words for *lightning* and *giant* have acquired a more general abstract meaning of large speed and size in these languages.

Words used as right constituents may also have meanings that differ from their meaning when used as separate words. Some of these compound constituents have developed a more general meaning of denoting persons of a certain type.

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| (13) | German Papst ‘pope’ | Literatur-papst ‘lit. literature pope, literature authority’ |
| | Dutch boer ‘farmer’ | kranten-boer ‘lit. newspaper farmer, newspaper seller’ |

Adjectives may also have acquired a more specific meaning. For instance, the adjective for ‘free’ has acquired the meaning ‘without’ in adjectival compounds such as the following:

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|------|--|
| (14) | Dutch vet-vrij, English fat-free, German fett-frei, Swedish fett-fri |
|------|--|

In this use, these constituents are referred to as affixoids, because they are similar to affixes in that they have a meaning that is bound to their occurrence in complex words (Hüning & Booij 2014). These affixoids are also the diachronic source of affixes. An example is the English suffix *-wise*, originally an English word with the meaning ‘manner’, and now used in words like *money-wise* with the meaning ‘from the point of view’, and with the meaning ‘in the manner of’ in *frog-wise*.

Germanic languages have a number of intensifier affixoids. Here are some examples from Frisian:

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|------|-----------------|--|
| (15) | dea ‘death’ | dea-bang ‘very afraid’, dea-gewoon ‘very common’ |
| | poer ‘pure’ | poer-lilk ‘very ugly’, poer-verlegen ‘very shy’ |
| | troch ‘through’ | troch-kâld ‘very cold’, troch-waarm ‘very warm’ |

Like in Dutch, the intensifier affixoid can be repeated in Frisian by means of coordination with the conjunction *en* ‘and’, or the older form of this conjunction, *ende*:

- (16) poer-en(de)-poer-swart ‘pure-and-pure-black, very, very black’
 troch-en(de)-troch-kâld ‘through-and-through cold, very, very cold’

Such compounds with an intensifier left constituent are also referred to as elative compounds (Hoeksema 2012).

3. Derivation

In Germanic languages affixation, both prefixation and suffixation, is used predominantly for the derivation of new words. These processes are used for the derivation of all major categories: nouns, verbs, adjectives, and adverbs. Examples of derived words from these categories in English are *un-rest*, *be-little*, *un-able* (prefixation), and *bak-er*, *stabil-ize*, *beauti-ful* and *nice-ly* (suffixation). The input words are usually also words of major categories (except adverbs), but in some cases they can also be words of minor lexical categories such as prepositions and numerals. Phrases also occur as bases of derivation. This is illustrated here by the derivation of Dutch diminutives; the last two examples have a phrase as their base:

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|------|------------------------|-----------------------------|
| (17) | huis ‘house’ | huis-je ‘smalle house’ |
| | blond ‘blond’ | blond-je ‘blond woman’ |
| | speel ‘to play’ | speel-tje ‘toy’ |
| | tien ‘ten’ | tien-tje ‘ten-guilder-note’ |
| | onder ons ‘between us’ | onderons-je ‘private chat’ |
| | twalf uur ‘12 o’clock’ | twalfuur-tje ‘lunch packet’ |

Very often, an affix in one Germanic language will have a cognate in a number of others. This is illustrated here for a number of prefixes and suffixes. For instance, the prefix *be-* is used in various Germanic languages to create verbs. Another illustration is that the following Danish suffixes all have a cognate in Dutch and German, and some of the English glosses are also cognates:

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|------|---------------|--------------|---------------|----------------------|
| (18) | <i>Danish</i> | <i>Dutch</i> | <i>German</i> | <i>English gloss</i> |
| | -bar | -baar | -bar | ‘-able’ |
| | -er | -er | -er | ‘-er’ |
| | -ing | -ing | -ung | ‘-ing’ |
| | -hed | -heid | -heit | ‘-ness’ |
| | -lig | -lijk | -lich | ‘-ly’ |
| | -som | -zaam | -sam | ‘-some’ |

The prefix of prefixed verbs often derives from a particle, and Germanic languages may therefore differ in that a particle morpheme in one language has a prefix cognate in another one. For instance, the Dutch particle verb *over-laten* ‘to leave to’ (a separable complex verb) has the prefixed (inseparable) verb *über-lassen* ‘to leave to’ as its cognate. In the Dutch particle verbs, main stress is on the particle, but in the German prefixed verb main stress is on the verb stem: *óver-laten* versus *überlássen*. The change from particle to prefix illustrated here is a case of grammaticalization, the

diachronic process in which lexical morphemes become grammatical morphemes, and grammatical morphemes become even more grammatical (Hopper & Traugott 1993).

Besides prefixes and suffixes, we find a few circumfixes, combinations of a prefix and a suffix. Example are the Dutch affix combination *ge...te* and German *Ge-...-e* that served to create nouns that denote collectives and nominalizations, as in:

(19)	Dutch	boom ‘tree’	ge-boom-te ‘collection of trees’
		boef ‘crook’	ge-boef-te ‘collection of crooks’
	German:	Berg ‘mountain’	Ge-birg-e ‘mountains’
		lach(en) ‘to laugh’	Ge-lach-e ‘laughter’

Such circumfixes emerged due to the co-occurrence of an affix combination in a set of complex words. The prefix *be-* and the suffix *-ig* co-occur in a number of Dutch and German words (there are no adjectives or verbal stems *edig* and *schönig*):

(20)	Dutch	eed ‘oath’	be-ed-ig(en) ‘to swear in’
	German	schön ‘beautiful’	be-schön-ig(en) ‘to make more beautiful’

Thus, these affixes are not only used separately, but also in combination, to derive verbs from nouns and adjectives.

Suffixes tend to determine the syntactic category of the derived words that they create. For instance, German *-ung* creates nouns from verbs, and hence, *-ung* determines that the resulting complex word is a noun (e.g. *bemerk(en)* ‘to remark’ – *Bemerkung* ‘remark’). Moreover, nominalizing suffixes also determine nominal gender: all words in *-ung* such as *Bemerkung* are feminine. Prefixes vary in this respect: most prefixes are category-neutral, and do not change the category of the base word. For instance, both *pleasant* and *un-pleasant* are adjectives. This suggested the generalization for Germanic compounds and affixed words that the rightmost constituent determines the category of the complex word as a whole: the so-called Right-hand Head Rule (Williams 1981). However, there are exceptions to this rule: verbalizing prefixes often do change the category of their base word, as can be seen in the English verbs *be-jewel* and *en-large*, with a nominal and an adjectival base respectively.

The phonological form of Germanic affixes with a proto-Germanic origin may betray their status of bound morpheme. Whereas words of lexical categories must have at least one full vowel (i.e. no schwa), grammatical morphemes, including prefixes, do not have to comply with this requirement. For instance, the prefix *be-* /bə/ has schwa as its only vowel, just like the suffix *-er* /ər/. Germanic suffixes divide into two classes: some of them form one domain of syllabification with the stem, whereas others form a phonological word of their own, and are syllabified separately. The first type is referred to as ‘cohering suffix’, the second type as ‘non-cohering suffix’. A minimal pair to illustrate this comes from Dutch (the dot in the phonetic transcription denotes a syllable boundary).

(21)	rod-ig ‘redd-ish’ [ro.dəx]	vs	rood-achtig ‘redd-ish’ [rot.ɑx.təx]
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Non-cohering suffixes, just like the constituents of compounds, are phonological words by themselves, even though they are not independent grammatical words. This shows that there might be an asymmetry between the morphological structure and the phonological structure of Germanic compound words. This asymmetry can also be observed in the phenomenon of word-internal gapping: parts of complex words may be omitted as a kind of ellipsis provided that the deleted part is a phonological word of its own. This is illustrated here by data from German which illustrate that in this respect derived words with a non-cohering suffix behave just like compounds:

- (22) derived words: frucht- und freudlos ‘fruit- and joyless’
 compounds Arbeits- und Sozialverhalten ‘labour and social behaviour’
 Nicht nur im Schul,- sondern auch im Berufsleben ‘not only in school- but
 also in professional life’

Complex words may also have been formed by means of apophony, i.e. vowel alternations, usually referred to as Ablaut. This system is an old Indo-European system, and gradually disappeared from Germanic. Many deverbal nouns have once been formed by means of Ablaut, sometimes in combination with suffixation:

(23)		<i>verb</i>	<i>noun</i>
	Dutch	bind ‘to bind’	band ‘book volume’
		vind ‘to find’	vond-st ‘finding’
	German	bind ‘to bind’	Bund ‘union’
			Band ‘book volume’

These Ablaut patterns which are also well known from the past tense and past participle forms of the so-called strong verbs, can no longer be used productively. However, when a new particle verb is formed with a verb with a corresponding ablauting noun, this noun can also be used for the nominalization of such particle verbs (Booij 2015):

(24)	Dutch	komen ‘to come’ - komst	aan-komen ‘to arrive’ - aan-komst
	German	sehen ‘to see’ – Sicht	an-sehen ‘to look at’ - An-sicht

These ablauting nouns must be stored lexically, and can be used as the head of compounds with a particle as modifier. Thus, such compounds can function as the nominalization of particle verbs.

3.1. Non-native affixation

The word formation system of Germanic languages has been influenced strongly by contact with the classical languages Greek and Latin, and by French. The influence of Latin was due to its role as lingua franca in Europe in the domains of science and religion. The specific influence of French on English dates back to the 11th century when the Normans conquered England. For centuries, French was a dominant language in European culture and politics, and thus affected all Germanic languages. Hence, we see many non-native affixes in Germanic languages as the effect of borrowing. Borrowing did not take place of affixes in isolation: complex words were borrowed, and once a sufficient number of words with a certain affix had been borrowed, the affix could be identified on the basis of a systematic form-meaning correspondence in a set of similar words, and also used productively in the borrowing languages. For instance, French deadjectival nouns ending in *-ité* such as *liberté* ‘freedom’ were borrowed in Dutch, English, and German, and subsequently, new nouns of this type were coined. The suffix itself was slightly adapted as to phonological form: *-iteit* in Dutch, *-ity* in English, *-ität* in German, and *-itet* in Norwegian:

(25)	actief	activiteit
	active	activity
	aktiv	Aktivität
	aktiv	aktivitet

These non-native suffixes are shared in some form or another by most Germanic languages, and often carry the main stress of the complex words that they created.

Germanic languages do not only feature a substantial number of non-native affixes, but also non-native prefixes, in particular of Greek and Latin origin, such as:

- (26) anti-, co-, contra-, de-, ex-, hyper-, infra-, meta-, neo-, non-, pre-, pro-, sub-, super-, turbo-, ultra-

A remarkable property of many of these affixes is that they do not combine with all kinds of base words, but only with words of non-native origin. For instance, the Dutch suffix *-iteit* is mainly combined with non-native adjectives, and the same applies to its English counterpart *-ity* witness the ungrammaticality of *greenity*:

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|------|------------------|---------------------------|
| (27) | absurd ‘absurd’ | absurd-iteit ‘absurd-ity’ |
| | stabiel ‘stable’ | stabil-iteit ‘stabil-ity’ |
| | groen ‘green’ | *groen-iteit ‘green-ity’ |

The effect of this constraint on non-native suffixation is that in complex words with more than one suffix, native suffixes will appear peripherally to non-native suffixes. So we can coin a word like *absurd-iteits-loos* ‘absurdity-less’ in Dutch, but *einde-loos-iteit* ‘end-less-ity’ is ill formed. However, this constraint on non-native affixes does not apply to the same extent to non-native pan-Germanic prefixes such as *ex-* and *super-* that are also easily attached to words of Germanic origin:

- | | | | |
|------|-------|-------------------|--------------|
| (28) | Dutch | <i>ex-vrouw</i> | ‘ex-wife’ |
| | | <i>super-rijk</i> | ‘super-rich’ |

A more recent borrowing in English is the German prefix *über-* with the meaning ‘to an excessive degree’ as in *über-*. Subsequently, this prefix was borrowed in Dutch from English:

- | | | |
|------|----------|--|
| (29) | English: | <i>über-cool</i> , <i>über-gay</i> , <i>über-nerd</i> , <i>über-parent</i> , <i>über-hacker</i> |
| | Dutch: | <i>über-nicht</i> ‘excessive homosexual’, <i>über-ouder</i> ‘über-parent’, <i>über-lijp</i> ‘very smart’ |

This type of borrowing reflects the fact that English has taken over from French as the main source language for borrowings in Germanic languages, and world-wide.

3.2. Affix substitution

Derivation of words in which affixes are involved may also take place by means of affix substitution instead of by affix addition. For instance, nominalization of Dutch verbs of which the stem ends in the suffix *-iseer* can be performed by replacing the part *-eer* by the suffix *-atie*:

- | | | |
|------|--------------------------------------|---------------------------------------|
| (30) | <i>kanal-is-eeer</i> ‘to canalize’ | <i>kanal-is-atie</i> ‘canalisation |
| | <i>organ-is-eeer</i> ‘to organize’ | <i>organ-is-atie</i> ‘organisaton’ |
| | <i>stabil-is-eeer</i> ‘to stabilize’ | <i>stabil-is-atie</i> ‘stabilisation’ |

Consider also the following nouns in English, where a noun in *-ism* that denotes an ideology or disposition correlates with a noun in *-ist* denoting a person related to that ideology or disposition:

postulated a zero-suffix that is assigned category-changing power. Another solution is to consider this kind of word formation as being paradigmatic in nature. For instance the verb *to skype* is paradigmatically related to its base noun *skype*. This can be expressed by a schema that specifies this paradigmatic relationship:

- (35) form: [x]_{Ni} ≈ [x]_{Vj}
 meaning SEM_i [Event with SEM_i involved]_{SEM_j}

where *x* stands for the phonological string of the related words, SEM_i for the meaning of the noun, and SEM_j for the meaning of the verb.

The non-finite forms of Germanic verbs, participles and infinitives, can be used systematically as adjectives and nouns respectively. The participles in prenominal position are inflected as prenominal adjectives.

- (36) German: Die verkauft-e Braut
 The.FEM.NOM.SG sold-FEM.NOM.SG bride.FEM.SG
 ‘The sold bride’
- Das sing-end-es Mädchen.NEUT.SG
 The.NEUT.NOM.SG sing-ing-NEUT.NOM.SG. girl
 ‘The singing girl’
- Dutch: Het eten staat op tafel
 The.NEUT.SG eat-INF.NEUT.SG stands on table
 ‘The food is on the table’

In German, present participles can also be used as nouns, and even then they are inflected as adjectives, as illustrated by the phrases *ein Vorsitz-end-er* ‘a chairman’ and *eine Vorsitz-end-e* ‘a chairwoman’, in which the present participle *Vorsitz-end-* ‘chairing’ is used as a noun, but inflected as a prenominal adjective. Prenominal adjectives can be used as nouns in elliptic contexts, as in Danish *de gamle (mennesker)* ‘the old (people)’, and *en bærbar (computer)* ‘a portable (computer)’ (Götzsche 2016). Specific syntactic contexts may coerce words into another word class (Audring & Booij 2016), as shown by the following example from Dutch:

- (37) Nederland van smerig tot schoon
 Netherlands from dirty to clean
 ‘Netherlands from being dirty to being clean’

Here the adjectives *smerig* and *schoon* are coerced into nouns, as they are the complements of prepositions.

The particle verb construction may also have the effect of converting a noun or an adjective into a verb, as in English *to buckle up* and *to pretty up*, derived from the noun *buckle* and the adjective *pretty* respectively. This illustrates once more that conversion may be dependent on specific syntactic or morphological constructions.

5. Reduplication

Reduplication is a wide-spread process of word formation in the languages of the world. In its simplest form reduplication is total reduplication, in which a word is copied completely. In other words, this type of word formation consists of the doubling of a word. The copying configuration often evokes semantic notions such as intensity, high degree, and repetition. In Germanic languages reduplication is a marginal phenomenon. Repetition to express intensity or repetition does occur on the syntactic level (as in *He walked, and walked, and walked*), but not so much on the word level. However, there are two classes of exceptions. The first type is the doubling of nouns in order to express the notion ‘real, very good specimen of’ (Gomesi et al. 2004):

- (38) English: salad-salad ‘very good salad, salad as it should be’
 coffee-coffee ‘very good coffee, real coffee’
 Dutch: meisje-meisje ‘a very girlish type of girl, a real girl’
 vakantie-vakantie ‘a real holiday without work’

An exceptional language in this respect is Afrikaans. This sister-language of present-day Dutch was heavily influenced by Malay, the language of the servants/slaves in South-Africa, an Austronesian language. Austronesian languages exhibit a lot of reduplication. In Afrikaans, reduplication has become a very productive word formation process and applies to all kinds of base words. Here is a sample:

- (39) knip ‘to cut’ knip-knip ‘to cut continuously’
 klop ‘to knock’ klop-klop ‘to knock continuously’
 bal ‘ball’ bal-bal ‘ball game’
 brul ‘to roar’ brul-brul ‘roaring’
 dik ‘thick’ dik-dik ‘very thick’
 tien ‘ten’ tien-tien ‘ten by ten’

A second Germanic language with reduplication is Yiddish. Examples are *kukn-kukn* ‘to look’ and *loyf-loyf* ‘to run’. In Yiddish, reduplication can be combined with insertion of an emphatic infix, as in *mayster-shebe-mayster* ‘master’ and *vunder-shebe-vunder* ‘miracle’. In stead of full reduplication, the second word can also be adapted by replacement of its initial consonants by *shm-*, thus evoking a disparaging interpretation, as in *gold-shmold* ‘sort of gold’ and *kidnep-shidnep* ‘sort of kidnapping’. This process of creating words with a disparaging flavor has also been borrowed in American English.

The second type of reduplication is exemplified by the following compounds:

- (40) German Wirr-warr ‘tangle’
 Tick-tack ‘clock’
 tag-täglich ‘daily’
 Bla-bla ‘empty talk’
 Dutch dag-dagelijks ‘daily’
 hotel-de-botel ‘madly’
 holder-de-bolder ‘helter-skelter’
 wisse-wasje ‘trifle’

In these words there is some form of repetition in form, but no complete doubling. These kinds of words are used as expressive language, or by children (example *Ticktack*).

6. Prosodic morphology

Besides the formal mechanisms discussed so far, there is another way of coining new words, in which the base word is reduced to one or two syllables. This is used for coining endearment forms of first names. Here are some examples from Dutch:

- (41)
- | | |
|---------|------|
| Albert | Al |
| Emmy | Em |
| Herry | Her |
| Suzanne | Suus |

This type of morphology is called prosodic morphology because a prosodic template determines the shape of the endearment form: it consists of one syllable, closed by a consonant. The consonant is taken from the first syllable of the base word, if available, and otherwise from the onset of the second syllable. Like in the case of conversion, we can express this regularity by means of a schema with a paradigmatic relationship between the base word and the shortened word:

- (42)
- | | | | |
|----------|-------------------|-----------|---|
| form: | $[xVCy]_{Ni}$ | \approx | $[XVC]_{Nj}$ |
| meaning: | Name _i | | [Name _i with Endearment] _{SEMj} |

For instance, the name *Albert* /albɛrt/ conforms to schema $xVCy$ ($x = \emptyset$, $V = /a/$, $C = /l/$, and $y = /bɛrt/$). Hence we get $xVC = Al /al/$ as the endearment form.

In English the truncated hypocoristic XCV output may be affixed with $-y$, as in *Patty* and *Tristy*, and *daffy* for *daffodil* (Lappe 2007), and in German with $-i$, as in *Ossi* ‘former inhabitant of East-Germany’ and *Wessi* ‘former inhabitant of West-Germany’. In Dutch, $-o$ is used for this purpose: *Brab-o* ‘inhabitant of Brabant’.

Prosodic morphology with monosyllabic outputs is also applied to common nouns, as in Dutch *mees* < *meester* ‘teacher’ and *bieb* < *bibliotheek* ‘library’.

7. Abbreviation and blending

Prosodic morphology is one way of creating shorter words from longer ones, that is, it is a form of abbreviation. Abbreviation is a common process of word formation in Germanic languages. The effect is that long words become much shorter, which will give processing advantages. On the other hand, they may create difficulties because the meaning of an abbreviated word cannot be deduced from its form. That is, its meaning can only be recovered on the basis of its paradigmatic relation to another word or phrase. In Germanic languages we find lots of abbreviations of common nouns such as:

- (43)
- | | |
|--------------|--|
| Dutch: | fysio-therapie ‘fysiotherapy’ > fysio |
| | doctoraal-examen ‘MA exam’ > doctoraal |
| | kandidaats-examen ‘bachelor exam’ > kandidaats |
| | scheids-rechter ‘referee’ > scheids |
| German | Abitur ‘high school final exam’ > Abi |
| | Demonstration ‘demonstration’ > Demo |
| | Tachometer ‘id.’ > Tacho |
| | Universität ‘university’ > Uni |
| English | celebrity > celeb |
| | microphone > mike |
| | pre-fabricated > prefab |
| Scandinavian | automobil ‘car’ > bil |

Names of institutions lend themselves very well for abbreviation in the form of acronyms, such as Frisian *FNP* standing for *Fryske Nasjonale Party* ‘Frisian National Party’. This name has the form of a phrase, but as an acronym it behaves as a noun. Examples of very common and widely used German abbreviations are the following:

- (44) Kinder-tages-stätte ‘children-day-centre’ > Kita
 Aus-zu-bildend-er ‘trainee’ > Azubi
 Vereinigte Dienstleistungs-gewerkschaft ‘united service union’ > Verdi

Again, it is obvious that these abbreviations make the expression of such meanings much shorter. In blending two words are blended by combining the first part of one word with the second part of another. A classic example is English *smog* from *smoke* and *fog*. *Brunch* < *breakfast* + *lunch* is another well established one.

8. Numerals

Germanic languages construct numerals in a number of ways. Cardinal numerals above 20 show systematic properties. Consider the following numerals of Dutch, English and German:

(45)	<i>Dutch</i>	<i>English</i>	<i>German</i>
6	zes	six	sechs
16	zes-tien	six-teen	sech-zehn
60	zes-tig	six-ty	sech-zig
61	een-en-zestig	sixty-one	ein-und-sechzig
106	honderd (en) zes	hundred (and) six’	hundert-(und)-sechs

Most numerals of Dutch and English, and of all Germanic languages are complex linguistic expressions, formed by a recursive system of rules that enables the language user to form an in principle infinite set of numerals. In Dutch, as in English and German, all numerals above the number 12 are complex expressions. The numerals for 16 in (45) have the shape of a compound consisting of two lexeme constituents, whereas the words for 60 have the shape of a derived word with a suffix. The words for 61 and 106 have the appearance of phrases, formed by means of coordination with a conjunction. As to the expression of cardinal numbers from 21-99, the Germanic languages can be divided into two groups. Afrikaans, Danish, Dutch, Faroese, Frisian, and German place the lower digit before the higher one, whereas in English and Swedish, the order is reversed. Before 1951, Norwegian complex numerals like ‘sixty-one’ etc. followed the pattern with the lower number before the ten, for instance *to-og-femti* ‘52’. In 1951, a reform was carried through, prescribing the opposite, Swedish and English order, hence *femti-to* (Askedal 2016).

Even though the words for 61 and 106 have the form of phrases, they can function as bases of word formation, for the formation of ordinal numerals by means of suffixation:

- (46) Dutch een-en-zes-tig-ste, German ein-und-sechzig-ste ‘one-and-sixty-th, sixty-first’
 Dutch honderd (-en) zes-de, German hundert-und-sechste ‘hundred (and) six-th’

The formation of words for numerals is a complicated subsystem of its own for the various Germanic languages, and for details, the reader is referred to the literature at the end of this chapter.

9. Sources of information

A general study of the Germanic lexicon including its morphology is Harbert (2007: Chapter 2).

There is a chapter on word formation for each of the Germanic languages German, English, Dutch, Frisian, Yiddish, Faroese, Danish, Norwegian, Swedish and Icelandic, as spoken in Europe, in Peter O. Müller, Ingeborg Ohnheiser, Susan Olsen, and Franz Rainer (eds.). *Word formation. An international handbook of the languages of Europe*. Vol. 4. Berlin / New York: De Gruyter, Chapters 134-143, p. 2387-2599.

For Dutch, Afrikaans and Frisian, there is a website called Taalportaal, with detailed information in English on the morphology of these languages, and further references: <http://www.taalportaal.org>. For German, see the website of the Institut für deutsche Sprache, <http://www1.ids-mannheim.de/onlineangebote/>, with a section Grammis with extensive information on morphology, and further references.

The best reference work for English word formation is Bauer, Lieber & Plag (2013). The *Duden* volume on *Grammatik* is the main handbook on the grammar of German, with extensive information on word formation. Hentschel (2016) is a volume on various aspects of German word formation. The reference work for Afrikaans is Carstens & Bosman (2014), for Dutch it is Booij (2002), and for Frisian Hoekstra (1998). Josefsson (1997) is a theoretical study of Swedish word formation. Bandle et al. (eds., 2002/2005) contains chapters on various synchronic and diachronic aspects of word formation in Nordic languages. Thráinsson et al. (2004) is a reference grammar of Faroese with information on its word formation. Jacobs (2005) is a good introduction to the grammar of Yiddish.

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