

CHAPTER FIFTEEN

Morphology, Part 2

In the last chapter we looked at the notions *morpheme* and *allomorph of a morpheme*. In this chapter we will look at the ways in which morphemes can be combined to form words and at some German morphology. *Word* is not easily defined. For convenience we will use the following definition: "A German word is something which, when written in standard German orthography, is preceded by a space and followed by a space." Most speakers of a language like English or German know what a word is, even though a definition is difficult. The same is true of sentences. Given a succession of words, we can say whether or not it is a sentence. Given a succession of phonemes and/or morphemes, we can say whether they constitute a word (or more than one word) or not. This intuition is captured in the writing systems of languages like English and German by writing words as separate units, hence our reliance on the obviously inadequate but nevertheless intuitively accurate definition above.

Every word will contain at least one morpheme. Some words consist of only one morpheme. Some contain more than one. Those which contain more than one morpheme are of three main types: 1) inflected words, 2) compound words, 3) derived words.

Inflected words are words which contain inflections. Most inflections in German are suffixes. German inflections include:

- 1) plurals of nouns
- 2) genitive singulars of masculine and neuter nouns
- 3) dative plurals of nouns
- 4) dative singulars of some one-syllable masculine and neuter nouns
- 5) 1st person singular of verbs
- 6) 2nd person singular of verbs
- 7) 3rd person singular of verbs
- 8) 1st person plural of verbs
- 9) 2nd person plural of verbs
- 10) 3rd person plural of verbs
- 11) past tense of verbs
- 12) past participle of verbs
- 13) present participle of verbs
- 14) infinitive ending of verbs
- 15) imperative singular of verbs

- 16) imperative plural of verbs
- 17) subjunctive I of verbs
- 18) subjunctive II of verbs
- 19) a variety of adjective (including article) endings, blending gender, number and case
- 20) the comparative of adjectives and adverbs
- 21) the superlative of adjectives and adverbs
- 22) case forms of personal pronouns (*ich, mir, mich* etc.)

Inflections typically give purely grammatical information such as gender, number, person, tense and grammatical case. As can be seen from the list above, German has a great many inflections. English, on the other hand, has very few - only eight, in fact. All of the German inflections listed above have at least one allomorph which is a suffix and only a suffix. Some have replacive allomorphs as well, sometimes in combination with suffixes. The past participle inflection has allomorphs which include a prefix /gə-/ as well as a suffix. Occasionally one inflection can be added to another, e.g. in a word like *machtest*, where the verb stem /max-/ is followed by the past tense /-t-/, which in turn is followed by /-əst/, which is second person singular. **All German inflections are bound morphemes.** We will return to inflection in more detail later in this chapter.

Compound and Derived Words

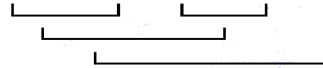
Compound words typically consist of two (or more) stems which are put together to form a larger word. German is famous for its ability to compound. Usually, although not always, the stems which are joined together are able to exist as separate words themselves. Thus a word like *Pechvogel* "a person who is always having bad luck" is composed of the separate words *Pech* "bad luck" and *Vogel* "bird". On the other hand, *Brombeere* "blackberry" consists of *Brom-* /brɔm/, which does not occur independently, and *Beere*, "berry", which does. Most compounds are so-called *determinative* compounds, where one member, usually the first, determines or defines (restricts) the second. A *Brombeere*, for instance, is a particular type of *Beere*. A *Seeadler* is a particular type of *Adler*. Also typical of determinative compounds is the fact that it is the determining member which is stressed. Since the determining member is usually the first member, the first member of compounds is therefore usually the member which bears the primary stress. One exceptional determinative compound in which the *second* member is the determiner (and stressed) is *die Muttergottes*, a name for the Virgin Mary.

Derived words are, as the name implies, words which are derived from other words. In German this is ordinarily accomplished by prefixation or suffixation. Often derivational affixes will change the word **class** of a word. *Gesund*, for instance, is an adjective. The derivational suffix *-heit* changes adjectives into nouns, resulting, in this instance, in the noun *Gesundheit*. Other noun-forming derivational affixes are *-ung*, *-keit*, *-ling*, *-nis*, *-schaft*, and *-tum*, although the latter two create nouns from nouns. Adjective forming affixes include *-ig* and *-lich*. Verbs are frequently formed from other parts of speech by using prefixes like *er-*, *be-* and *ver-*. **All derivational affixes in German are bound morphemes.**

Derived words are themselves candidates for compounding, as are compound words. Let us look at a typical German compound word - *Kreislaufstörungen* "circulatory disorders". This is an inflected noun - note the plural ending *-en*. Leaving aside the inflectional ending we are left with *Kreislaufstörung*, a compound noun which has as its two immediate parts *Kreislauf* and *Störung*,

both nouns. *Kreislauf* is itself a compound noun, consisting of the two nouns *Kreis* and *Lauf*¹. *Störung* is a derived noun, derived from the verb stem {STÖR-} plus the noun-forming derivational ending *-ung*. The structure of the word is thus:

Kreis | lauf | stör | ung | en



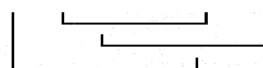
where the vertical lines indicate morpheme breaks and the lines under the word represent the hierarchical structure of the word. The hierarchical structure is intended to represent the facts that *Kreis* and *lauf* function together as a unit, although they are separate morphemes, and that *stör* and *ung*, although separate morphemes, also function together as a unit. That is the meaning of the two sets of brackets in the first line under the word. Then *Kreislauf* and *Störung* are compounded, giving *Kreislaufstörung*, which then functions as a single unit. That is the meaning of the bracket in the second line under the word. Finally *-en* is suffixed to *Kreislaufstörung*, giving *Kreislaufstörungen*. The fact that the suffix is added to the entire word *Kreislaufstörung* is indicated by the bracket in the third line under the word.

The structure can also be described in words, e.g.:

<i>Kreis-</i>	root and stem (noun)
<i>Lauf-</i>	root and stem (noun)
<i>Kreislauf-</i>	stem (compound noun)
<i>stör-</i>	root and stem (verb)
<i>-ung</i>	derivational suffix (noun-forming)
<i>Störung-</i>	stem (derived noun)
<i>Kreislaufstörung-</i>	stem (compound noun)
<i>-en</i>	inflectional suffix (noun plural)

Sometimes a complex word can have more than one possible analysis. For instance the German word *Unfreundlichkeit* could be analysed in either of the following ways:

Un | freund | lich | keit



Un | freund | lich | keit



In the first analysis *Unfreundlichkeit* is formed by adding the negative prefix *un-* to the derived noun *Freundlichkeit*. In the second analysis the word is formed by adding the noun-forming derivational suffix *-keit* to the derived adjective *unfreundlich*. Both analyses seem to be equally valid since the words *Freundlichkeit* and *unfreundlich* both exist independently in German.

Inflections

Let us now return to inflections and look briefly at some typical German inflectional morphology, taking the past tense morpheme as an example. We will begin by examining a few present indicative forms and comparing them with their corresponding past tense forms. We will use 3rd

¹*Lauf* is probably a noun derived from the verb stem {LAUF-} "run". In the interests of simplicity it will not be so analysed here.

person plural forms. Therefore each of the verb forms in the following list is to be thought of as preceded by *sie* "they". The choice of 3rd person plural is arbitrary - any other verb form would do as well.

Present

Past

1) machen /'maxən/	machten /'maxtən/
2) leben /'lebən/	lebten /'leptən/
3) raufen /'raufən/	rauften /'rauftən/
4) brummen /'brʊmən/	brummten /'brʊmtən/
5) reisen /'raizən/	reisten /'raistən/
6) ahnen /'anən/	ahnten /'antən/
7) bellen /'bɛlən/	bellten /'bɛltən/
8) mischen /'mɪʃən/	mischten /'mɪʃtən/
9) hacken /'hakən/	hackten /'haktən/
10) sagen /zɑgən/	sagten /zɑktən/
11) bangen /'baŋən/	bangten /'baŋtən/
12) führen /'fʏrən/	führten /'fʏrtən/
13) mähen /'meən/	mähten /'metən/
14) bluten /'blutən/	bluteten /'blutətən/
15) atmen /'atmən/	atmeten /'atmətən/
16) öffnen /'œfnən/	öffneten /'œfnətən/
17) neiden /'naɪdən/	neideten /'naɪdətən/
18) greifen /'graɪfən/	griffen /'grɪfən/
19) heißen /'haɪsən/	hießen /'hisən/
20) schließen /'ʃlisən/	schlossen /'ʃlɔsən/
21) bieten /'bitən/	boten /'botən/
22) helfen /'hɛlfən/	halfen /'halfən/
23) binden /'bɪndən/	banden /'bandən/
24) werden /'verdən/	wurden /'vʊrdən/
25) nehmen /'nemən/	nahmen /'namən/
26) heben /'hebən/	hoben /'hobən/
27) fahren /'fʌrən/	fuhren /'furən/
28) lassen /'lasən/	ließen /'lisən/
29) schlafen /'ʃlafən/	schliefen /'ʃlifən/
30) stoßen /'ʃtosən/	stießen /'ʃtisən/
31) ziehen /'tsiən/	zogen /'tsogən/
32) gehen /'geən/	gingen /'gɪŋən/
33) stehen /'ʃteən/	standen /'ʃtandən/
34) leiden /'laɪdən/	litten /'lɪtən/
35) müssen /'mʏsən/	mussten /'mʊstən/
36) können /'kœnən/	konnten /'kɔntən/
37) brennen /'brɛnən/	brannten /'brantən/
38) bringen /'brɪŋən/	brachten /'braxtən/

These are not all of the possibilities, but they are more than enough to go on with. If we apply the principles discussed in the previous chapter, it is simple to isolate the recurrent partial /-ən/ as the 3rd person plural morpheme. It occurs in the same form in both present and past tenses. It should also be clear that all of the allomorphs of the past tense beginning with 18) and continuing through

to the end are morphologically conditioned, i.e. their irregularity is determined by the verb in question. We will therefore begin with the first seventeen forms.

The first seventeen past tenses are formed in a similar way. A suffix is added to the verb stem and then /-ən/ is added to that. Comparison of the forms in the *present* column with those in the *past* column allows us to identify two allomorphs of the past tense morpheme: /-t-/ and /-ət-/. What we now have to determine is their distribution. /-t-/ seems to occur very widely, after both consonants and vowels. In these examples it occurs after stems ending in /p,f,m,n,l,f,k,x,ŋ,r/ and /e/. /-ət-/ occurs after stems ending in /t,d,n,m/. There is one bit of overlapping here. Both /-t-/ and /-ət-/ occur after /n,m/ [compare examples 4) and 6) with examples 15) and 16)]. Aside from these examples /-t-/ and /-ət-/ are in **complementary distribution**. Complementary distribution is a criterion for classification into morphemes, just as it is a criterion for phonemes. In fact, /-t-/ and /-ət-/ are in complementary distribution. /-ət-/ occurs after stems ending in /t,d/ and after stems ending in a combination of an obstruent and a nasal, e.g. /fn, tm/. /-t-/ occurs elsewhere. In other words, the choice between /-t-/ and /-ət-/ is determined by the immediate phonological environment and is therefore *phonologically conditioned*.

The allomorphs of the past tense to be found in examples 18) - 34) are replacives. Usually it is the vowel which is replaced, while the rest of the stem remains intact, e.g. examples 18) - 30). In examples 31) - 34) the rest of the stem is altered in some way in addition to the vowel change. In 31) - 33) stems which end in vowels are replaced by stems which end in consonants and which have different vowels. In 34) the vowel and the stem final consonant are replaced by a different vowel and a different consonant respectively. Finally we have examples 35) - 38). In 35) - 37) we have both a replacement of the vowel of the verb stem and also the addition of /-t-/. And in 38) we have a replacement of the vowel of the verb stem and of the final consonant of the verb stem, plus the addition of the suffix /-t-/.

Replacives can be indicated in this fashion: /Y <-- (X)/. This is intended to mean that the element X of the morpheme is replaced by Y, i.e. as "Y replaces X". One allomorph of the past tense in German could therefore be represented /i <-- (a)/, e.g. *lassen, ließen. Leiden, litten* would be indicated /it <-- (aid)/.

As should be clear from examples 2), 5) and 10) above, some "regular" verbs have two different allomorphs. The distribution of these allomorphs is phonologically conditioned. The allomorph ending in a **voiced** obstruent (/b,z,g/ in these examples) alternates with an allomorph ending in the corresponding **voiceless** obstruent. The allomorphs ending in voiced obstruents occur before **vowels**, the allomorphs ending in voiceless obstruents occur before **consonants**, e.g. /-t-/. The voiced-voiceless pair /d,t/ does not participate in this particular alternation since stem-final /d/ in regular verbs is always followed by the vowel /ə/. Since the alternation of verb stem allomorphs ending in voiced and voiceless stem-final obstruents is phonologically conditioned, we are not dealing with replacive allomorphs. Replacives are always morphologically conditioned, i.e. not predictable from the phonological shape of the morpheme in question and its immediate phonological environment. The choice between allomorphs ending in a voiced obstruent or in a voiceless obstruent is phonologically conditioned by the nature of the following sound.

The allomorphs of the past tense which we have isolated (and remember that these are not all of them) are, then:

1) /-t-/	e.g. machen, machten
2) /-ət-/	e.g. bluten, bluteten
3) /ɪ <-- (aɪ)/	e.g. greifen, griffen
4) /i <-- (aɪ)/	e.g. heißen, hießen
5) /ɔ <-- (i)/	e.g. schließen, schlossen
6) /o <-- (i)/	e.g. bieten, boten
7) /a <-- (ɛ)/	e.g. helfen, halfen
8) /a <-- (ɪ)/	e.g. binden, banden
9) /ʊ <-- (e)/	e.g. werden, wurden
10) /ɑ <-- (e)/	e.g. nehmen, nahmen
11) /o <-- (e)/	e.g. heben, hoben
12) /u <-- (a)/	e.g. fahren, fuhren
13) /i <-- (a)/	e.g. schlafen, schliefen
14) /i <-- (a)/	e.g. lassen, ließen
15) /i <-- (o)/	e.g. stoßen, stießen
16) /og <-- (i)/	e.g. ziehen, zogen
17) /ɪŋ <-- (e)/	e.g. gehen, gingen
18) /and <-- (e)/	e.g. stehen, standen
19) /ɪt <-- (aɪd)/	e.g. leiden, litten
20) /ʊ <-- (y)/ + /-t-/	e.g. müssen, mussten
21) /ɔ <-- (œ)/ + /-t-/	e.g. können, konnten
22) /a <-- (ɛ)/ + /-t-/	e.g. brennen, brannten
23) /ax <-- (ɪŋ)/ + /-t-/	e.g. bringen, brachten

A complete description of German morphology would have to contain a list of the allomorphs of the past tense in German along with a list of the verbs which occur with each allomorph, insofar as the allomorphs are morphologically conditioned, i.e. not predictable. Once that list is complete, the description would state that for all other verbs either /-t-/ or /-ət-/ is added to the stem, the choice being phonologically conditioned by the final sound sequence of the stem, in that /-ət-/ occurs after stem final /t,d/ and after stem final clusters of obstruent and nasal, and /-t-/ occurs elsewhere.

We can represent the past tense morpheme as {-T-}. {-T-} serves as a cover term for *all* allomorphs of the past tense. Thus we can speak of the allomorph /i <-- (a)/ of {-T-}, or of the allomorph /-t-/ of {-T-}.

Let us reiterate that the allomorphs of the past tense are in complementary distribution, in that no two allomorphs occur in the same environment. When we were dealing with phonology and attempting to group sounds together as allophones of a phoneme we looked for phonetic similarity and complementary distribution. For instance, [x] and [ç] are phonetically similar in that they are both voiceless fricatives articulated in the back of the mouth, and they are in complementary distribution in that [x] occurs only after the back vowels /a,ɑ,ɔ,o,ʊ,u,au/ and [ç] occurs everywhere else. With morphology we look for sequences which have the *same meaning* and which are in complementary distribution. All 23 of the listed allomorphs of {-T-} mean the same thing, and no two of them occur in the same environment, in our examples. Sometimes we do, however, get two possible past tense forms for the same verb. For instance the verb *senden* "send" has two possible past tenses, *sendeten* and *sandten*. The former is allomorph 2), the latter is allomorph 22). *Sieden*

"boil" has two past tense forms, *siedeten* and *sotten*. Obviously these forms are not in complementary distribution. They are in **free variation**, just as the allophones [p^h], [p] and [p'] of /p/ are in free variation at the end of the word *ab*. It is clear what is happening when we get two past tense forms like these. Forms like *sandten* or like *sotten* place a greater burden on the memory than forms like *sendeten* and *siedeten*. There is and has been over the centuries a trend towards regularisation, towards predictability, towards phonological rather than morphological conditioning of the choice of allomorphs of a morpheme. When this happens two alternative forms will co-exist in free variation for a time until eventually (usually) the regular, predictable form replaces the irregular, unpredictable form. This has happened in both English and German, although to a lesser extent in German than in English. A glance at a list of principal parts of irregular verbs in German will show that there are quite a few verbs where the regularisation process is all but complete, others where it is well underway.

Free variation and complementary distribution are the two types of **non-contrastive distribution**. We will therefore revise our definition of morpheme to read as follows: "A morpheme is a sequence of phonemes with a meaning. Allomorphs of a given morpheme have the same meaning and occur in non-contrastive distribution."

In this chapter we have further defined the notions **morpheme** and **allomorph** and have looked briefly at a fragment of the system of verbal inflectional morphology in German. It was pointed out that German makes much greater use of inflection than does English. It should also be clear that German makes greater use of morphological conditioning of the choice of allomorphs than does English, which relies to a greater extent on phonological conditioning. We have also looked very briefly at compounding and derivation as ways of forming new words in German. Both morphology and word formation are interesting and rewarding fields which deserve more attention than we can grant them here.

In the next chapter we will look briefly at syntax (how words are put together to form sentences) and at differences in types of languages, so-called **language typology**.