To summarize our discussion of the morpheme so far, we have seen that it is a useful unit in the analysis of complex words, but not without theoretical problems. These problems can, however, be solved in various ways by redefining the morpheme appropriately.

**2. Allomorphy**

So far we have assumed that morphemes have invariable realizations; one meaning is expressed by a certain morph or a certain string of morphs and not by variable morphs whose exact shape differs according to the context in which they occur.

Such different morphs representing the same morpheme are called **allomorphs**, and the phenomenon that different morphs realize one and the same morpheme is known as **allomorphy**. It is the sound structure that **conditions** the **distribution** of the allomorphs, i.e. determines which allomorph has to be used in a given linguistic context (as in the case of a/an, for example). This is called **phonological conditioning**.

Allomorphy is also rather frequent in English derivation, and both bases and affixes can be affected by it.





Pronunciation of the base EXPLAIN varies according to the kind of suffix attached to it. Let us start with the attachment of *-ation*, which causes three different effects. First, stress is shifted from the second syllable of the base *plain* to the first syllable of the suffix. Second, the first syllable of the base is pronounced [Ek] instead of [Ik], and, third, the first syllable of the base receives secondary stress.

In all cases involving affixes, there is more than one base allomorph, and the appropriate allomorph is dependent on the kind of suffix attached to it. We can thus state that the allomorphy in these cases is **morphologically conditioned**, because it is the following morpheme that is responsible for the realization of the base. Furthermore, we see that there are not only **obligatorily bound morphemes**, i.e. affixes, but also **obligatorily bound morphs**, i.e. specific realizations of a morpheme that only occur in contexts where the morpheme is combined with another morpheme. *Explain* has thus a free allomorph, the morph [Ik"spleIn], and several bound allomorphs, [®Ekspl«"n] and [Ik"splÏn].

Let us turn to suffix allomorphy. The data in (12) show some adjectives derived from nouns by the suffixation of *-al*/*-ar*. Both suffixes mean the same thing and their phonetic resemblance strongly suggests that they are allomorphs of one morpheme.



Obviously, all derivatives ending in *-ar* are based on words ending in [l], whereas the derivatives ending in *-al* are based on words ending in sounds other than [l]. This is a case of the phonological conditioning of a suffix, with the final segment of the base triggering a **dissimilation** of the final sound of the suffix. The opposite process, **assimilation** can also be observed, for example with the regular English past tense ending, which is realized as [d] after voiced sounds (*vowed, pinned*) and [t] after unvoiced sounds (*kissed, kicked*).

Such a state of affairs, where one variant (*-ar*) is exclusively found in one environment, whereas the other variant (*-al*) is exclusively found in a different environment, is called **complementary distribution** (allomorphs of the same morpheme). On the underlying level, there is one element from which the elements on the second level, the surface level, can be systematically derived (e.g. by phonological rules).

In the case of the above suffix an analysis makes sense that assumes an underlying form /«l/, which surfaces as [«r] after base-final [l] and as [«l] in all other cases.



Such predictable changes in the realization of a morpheme are called **morpho-phonological alternations**. Such rules imply the existence of two levels of representation, with underlying representations being systematically related to and transformed into surface forms.

Having clarified the most important problems raised by the smallest morphological units, we can now turn to the question how these minimal signs are combined to form larger units.

**3. Establishing word-formation rules**

The ultimate aim of such investigations is of course to determine the rules that underlie the make-up of complex words in English.



*un-* attaches to adjectives (*available, broken,* and *aware* are all adjectives), but not to nouns or verbs (see (14a) and (14c)). Furthermore, *un-* can only attach to words, not to bound morphemes (see (14d)).

After all, it is only based on the very limited data set given in (14). We can verify the accuracy of the rule by testing it against further data. Among the very many well-behaved de-adjectival *un-* derivatives we can find apparent exceptions such as those in (16). While the vast majority of *un-* derivatives behaves according to our word formation rule, there are a number of words that go against it:



Two kinds of exceptions can be noted, the nouns in (16a) and the verbs in (16b). Not all abstract nouns can take *un-*, which suggests that the words in (16) are perhaps individual exceptions to our rule. However, the meaning of *un-* in all three forms can be paraphrased as ‘lack of’, which is a clear generalization. This meaning is slightly different, though, from the meaning of *un-* as given in (15) as ‘not’. The fact that the interpretation ‘lack of X’ occurs with nouns and the interpretation ‘not X’ with adjectives might however be taken as hint that the two cases can be unified into one, with slightly different interpretations following from the difference in the part-of-speech of the base.

The second set of derivatives apparently violating the rule as formulated in (15) are the verbs in (16b). It seems that it is even possible to create new forms (see (17). The verb *undo* does not mean ‘not do’, the verb *unfold* does not mean ‘not fold’, the verb *unfasten* does not mean ‘not fasten’. They denote reversal or deprivation. Given the systematicity of the data, one is tempted to postulate another word-formation rule for *un-*, this time deverbal, with a reversative and deprivative meaning.



These examples show that not all adjectives can take *un-*.



The rule in (15) needs to be further restricted, excluding certain semantically definable classes of adjectives such as color adjectives.

*un-* attachment mostly creates derivatives that express a contrary contrast on a bi-dimensional scale of ‘more or less’, i.e. a contrast between gradable adjectives and their respective opposites, as in *happy* - *unhappy, clear - unclear, comfortable - uncomfortable*. Thus there are two other kinds of opposites that are usually not expressable through *un-* prefixation, namely contradictories and complementaries. Contradictory expressions exclude one another, and there is no room in between. For example, something is either *artificial* or *genuine*, either *unique* or *multiple*. Complementarity is a semantic relation in which one expression stands in a complementary contrast to a whole set of other, related expression. Thus, if something is *green*, it is *not red*, *not blue*, *not brown*, *not white*, etc.; One important caveat needs to mentioned. The said restriction seems to hold only for *un-* adjectives that are based on simplex bases. Derived adjectives such as *publicized, available,* or *married* may take *un-* regardless of the semantic nature of the oppositeness expressed.

Another problem with the semantic restriction to contraries is that adjectives often have more than one meaning; American (qualitative meaning (un-American, غیرآمریکایی)), 2) classifying meaning (non-American غیراهل آمریکا)).

There are probably three *un-* prefixes. The first is deadjectival and has the meaning ‘not’, the second is denominal and has the meaning ‘lack of’, and the third is deverbal and has reversative or privative meaning. We arrived at this conclusion by testing our initial hypothesis against further data, collected from dictionaries and by introspection.

The postulation of only one *un-* suffix does not solve the problem of the part-of-speech-specific restrictions we have detected.

To summarize our discussion of how to establish a word-formation rule, we have seen that this is not an easy task, even with affixes that look relatively straightforward. Complex restrictions are at work that need to be incorporated in the rules. The revised - but still tentative - word-formation rules for *un-* are given in



Before finishing our discussion of word-formation rules, we should address the fact that sometimes new complex words are derived without an existing word formation rule, but formed on the basis of a single (or very few) model words. The process by which these words came into being is called **analogy**, which can be modeled as proportional relation between words. Quite often, words are analogically derived by deleting a suffix (or supposed suffix), a process called **backformation**. An example of such a back-formation is the verb *edit* which was derived from the word *editor* by deleting *-or* on the basis of a proportional analogy with word pairs such as *actor - act*.