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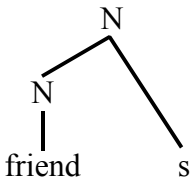
Morphology is the study of the internal structure of words. The list of all the words of a language is called the **lexicon**, so morphology can be thought of as the study of the lexicon.

As we have seen, the word *friends* is composed of two parts:



These parts, the minimal units of grammatical analysis, are called **morphemes**.

The two morphemes that make up *friends* have different statuses. The first part, *friend*, is a word by itself, as indicated by the lower N node in the tree. A morpheme which is itself a word is called a **free morpheme**. The second part, *s*, can only be a piece of a word: a **bound morpheme**. In the word *friends*, *friend* is the **stem** (or **base**) and *s* is the **affix**. An affix which is added after the stem is called a **suffix** and one that is added before the stem is called a **prefix**. In English, most affixes are suffixes (including the *s* in *friends*), but there are also a few prefixes (such as the *un-* in *unfriendly*). Some languages also have affixes that go in the middle of a stem, called an **infix**, and affixes that go around the stem, called **circumfixes**. Standard English does not have infixes, although in some dialects it is possible to take a word like *bloomin'* and infix it in an adjective or adverb, as in *absobloominlutely*. English has no circumfixes.

The words *friend* and *friends* are in a certain relation with each other: *friend* is the singular form and *friends* is the plural form of the **lexeme** FRIEND. (Almost) every noun has both of these forms. We say that noun lexemes have a list of forms in which they occur; such a list is called a **paradigm**. Some nouns have **gaps** in the paradigm: for example, there is no singular version of the plural noun *pants*. In English, one element of the paradigm is always the lexeme itself, with no affixes. In nouns, the singular takes no affix. This is not necessarily true in other languages. For example, in languages like Latin, Russian and Greek every noun has a suffix marking Case. Here are some examples of paradigms in languages with more complicated systems than English:

	Latin	
lexeme:	INSULA 'island'	
	singular	plural
nominative	insula	insulae
accusative	insulam	insulas
genitive	insulae	insularum
dative	insulae	insulis
ablative	insula	insulis

	Modern Greek	
lexeme:	AÐELFOS 'brother'	
	singular	plural
nominative	aðelfós	aðelfí
accusative	aðelfó	aðelfús
genitive	aðelfú	aðelfón

	Latvian	
lexeme:	GOVS 'cow'	
	singular	plural
nominative	guɔvs	guɔvis
accusative	guɔvi	guɔvis
genitive	guɔvs	guɔvyu
dative	guɔviy	guɔvi:m
locative	guɔvi:	guɔvi:s

The suffix *-s* is the **regular** plural suffix in English; the one which people will use if a new noun is created. But some nouns have an **irregular** plural. Some irregular plurals use a different affix, such as *oxen* and

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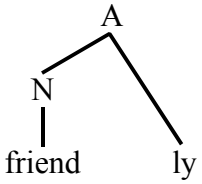
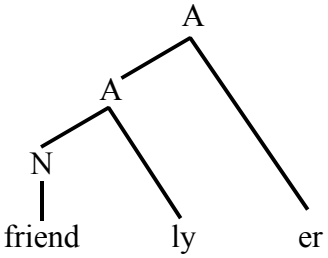
children. In others, the vowel changes and no affix is added, as in *mice*; a change of vowel like this is called **ablaut** (pronounced [æblawt]). In the most irregular cases, the entire stem is replaced with a completely different form, as in the plural of *person*, which is *people*. This replacement of the stem is called **suppletion**.

Now consider the word *friendly*. It, too, is composed of two morphemes, a free morpheme which is the stem and a bound morpheme which is the affix (suffix).



Unlike *friends*, *friendly* is not a form in the paradigm of the lexeme FRIEND. Instead, the addition of the suffix *-ly* has changed the noun lexeme FRIEND into the adjective lexeme FRIENDLY. The lexeme FRIENDLY has the same inflectional paradigm as other adjectives: the absolute form is the lexeme without affixes, *friendly*, and the comparative and superlative forms *friendlier* and *friendliest* have *friendly* as the stem and add the suffixes *-er* and *-est*.



This is a different type of morphology. The paradigmatic type of morphology is called **inflection**; the non-paradigmatic new-lexeme-creating type of morphology is called **derivation**.

Often, a language will have more than one affix that it can use to derive a particular kind of word. For example, there are several suffixes in English that can form a noun referring to an action based on a verb:

kiss+ing
decorat+ion ; organiz+ation
agree+ment
approv+al

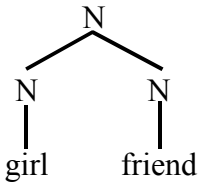
But these suffixes are not created equal. They differ in how **productive** they are. The suffixes *-ment* and *-al* are not productive: they appear on certain words, but speakers of English would not use them to create new words. The suffix *-ion* (sometimes *-ation*) is productive with a certain subset of the English vocabulary: roughly that part which has its origin in Latin. Many verbs of this class end with *-ate*, and if someone were to create a new verb ending in *-ate*, it would add *-ion* for the noun. The only Latin-origin verbs which do

not add *-(at)ion* are ones which add *-ment* or *-al*, a fact we will discuss in the next paragraph. The suffix *-ing* is the most productive of these suffixes.

As noted in the previous paragraph, the use of an unproductive suffix prevents the use of a more productive suffix. More precisely, the existence of a word with a particular meaning prevents the creation, through the use of productive morphology, of another word with the same meaning. This phenomenon is called **blocking**: a word like *arrival* blocks the creation of a potential word like **arrivation*. A good example of blocking is the adverb-creating suffix *-ly*. It productively forms adverbs out of adjectives (except for adjectives that themselves end with *-ly*, so, for example, there is no such word as **sillily*). The only exceptions are *good* and *fast*, which cannot form an adverb in this way. But this is because the adverbial equivalent of *good* is *well*, and *fast* is both an adjective and an adverb. The existing adverbs *well* and *fast* block the potential adverbs **goodly* and **fastly*. (There is an adjective *goodly*, but that is beside the point.) Sometimes, blocking works slightly differently: instead of preventing the formation of a particular word, it restricts its meaning. For example, the most productive way of taking a verb and making out of it a noun that means 'person or thing that does the action expressed by the verb' is to add the suffix *-er*. However, related to the verb *cook* is the noun *cook*, which means 'person who cooks'. For this reason, *cooker* can only refer to a thing that cooks, and not a person; the 'person' meaning of *cooker* is blocked by the existence of the noun *cook*.

An interesting example of the productive use of morphology is the phenomenon of **nonce words**, words which are invented on the spot for one-time-only use. Only very productive affixes are used in nonce formations.

Derivation is one kind of **word-formation** (which perhaps should be called "lexeme formation"). Another kind of word-formation is **compounding**, in which two words are combined to form a new lexeme. An example of a **compound** is the word *girlfriend*.



GIRLFRIEND is a lexeme in its own right, with the singular form *girlfriend* and the plural form *girlfriends*.

It should be clear from the above that the stem to which an affix is attached is not necessarily a free morpheme. We have seen cases where derived forms (i.e. forms which are themselves made up of more than one morpheme) serve as stems. We have seen the addition of inflectional affixes to derived words and compounds (as in *friendlier* and *girlfriends*). It is also possible to add a derivational affix to a derived form, as in *unfriendly*.

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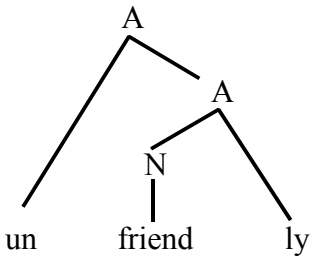

It is also possible for the stem to be an alternative version of a word. Sometimes this is just a different spelling, because of the spelling rules of English; for example, the *y* of *friendly* changes into an *i* in *friendlier*. Sometimes, as we will see more clearly later in the course, the stem is pronounced differently because of the rules of English pronunciation (phonology); for example, the [k] at the end of *public* becomes an [s] in *publicize* because of the vowel [ay] after it. Frequently, adding a suffix causes the stress pattern of the word to change. But sometimes the variant is not motivated by independent considerations: it is just an arbitrary alternative form of the morpheme. For example, when the suffix *-ity* is added to the adjective *simple*, the stem takes the form *simplic* [sɪmplɪs] (*simplicity*). This is just an arbitrary fact about this word, unrelated to rules of English pronunciation. An alternative form of a morpheme is called an **allomorph** of the morpheme. *Simplic* is an allomorph of *simple*.

It is even possible for the stem to simply not be a word. For example, the word *vertical* has the adjective-forming suffix *-al* (*pivotal*, *musical*, etc.), but there is no such noun as **vertic*. More strikingly, the words *cognition* and *cognitive* exist, but there is no word **cognit*. Sometimes such a stem, over time, starts being used as a word. This is called **back-formation**. For example, the verb *edit* is a back-formation from *editor*., and *air-condition* is a back-formation from *air-conditioner* An example which exists for some people but not others is *aggress*, back-formed from *aggressive*, *aggressor*, and *aggression*; for most speakers of English there is no such word, but some people have back-formed it.