

Lecture 6: Morphological Change

Last week, after revising the natural classes of sounds and some basic concepts, such as phonemes/allophones, phonological adaptation in running speech, etc., we examined how changes occur on the most basic linguistic level - that of sounds.

Our discussions focused mainly on distinguishing between the **synchronic** and **diachronic** analyses of sound change, and on the *connection* between the two types of change:

- The **synchronic** view of sound change is concerned with describing how the neighbouring sounds affect the quality of sounds in connected speech is at any given time. We identified the most important reasons for sound change in connected speech (i.e., assimilation, neutralisation/elision, linking, etc.) to be
 - the physical limitations of our speech organs and
 - the existing stress patterns in running speech.
- The **diachronic** view of sound change looks at the accumulated effects of two factors:
 - the ‘natural tendencies’ and sound adaptation in running speech, and
 - language contact
 on language diversification over time. We distinguished two directions in which the loudness (sonority) of sounds may change: **Lenition** (weakening) and **Fortition** (strengthening); these simply express the direction of change in the hierarchy of sounds based on their perceived sonority (loudness):

a > e > o > i > u > rhotics > laterals > nasals > voiced fricatives > voiceless fricatives > voiced stops > voiceless stops

Tracing sound change in genetically related languages, the comparative method uses two important principles: the most natural development principle and the majority principle. We took a detailed look at the various types of **assimilation** and **dissimilation**, which result in profound sound change over time.

Among the various types of possible sound changes we discussed

Sound Deletion:

- **Aphaeresis** (> Greek *aphaeresis*, ‘taking off’ > *aphairein*, ‘to take away’): the loss of one or more sounds or letters at the beginning of a word, as in ‘round for around, ‘cause, ‘coz for because, coon for raccoon, etc.
- **Apocope** (> Late Latin > Greek ‘cutting off’ > *apo-*+ *koptein*, ‘to cut off’): the loss of sounds or letters at the end of a word, as *sing* from Old English *singan*, etc.
- **Syncope** (< Late Latin < Greek *syncope*, ‘cutting short’, < *syn-*+*koptein*, ‘to cut short’): the loss of one or more sounds or letters in the interior of a word, as in *fo’c’sle* for *forecastle*, etc.
- **Cluster Reduction**, or deletion of one or more of the consonants in a consonant cluster, as in *thumb*, *bomb*, *lamb*, *handkerchief*, *government*, etc.
- **Haplology**, contraction of a word by omission of one or more similar sounds or syllables, as in *mineralogy* for hypothetical *mineralology*, or *p’raps* for *perhaps*, [pɹɒbli] for ‘probably,’ etc.

and

Sound Addition:

- **Excrescence**, which means literally ‘a) a projection or outgrowth, esp. when abnormal, i.e. ‘warty excrescences in the colon’ or b) a disgusting, extraneous, unwanted mark or part [Merriam-Webster Collegiate Dictionary]. In this context it simply means the insertion of a consonant sound between two other consonants in a word: [sʌmpθɪŋ], æmtig → ɛmpti, θymle → θimbl, etc.
- **Epenthesis** (< Late Latin < Greek *epentithenai*, ‘to insert’ < *epi-*+*entithenai*, ‘to put in’ < *en-*+*tithenai*, ‘to put’): insertion of a vowel to break up two consonants in a cluster, as in [æθəli:t] for ‘athlete,’ [milək] for ‘milk,’ or [filəm] for ‘film.’
- **Prothesis** < Greek ‘addition’): the addition of a sound to the beginning of a word (as in Old French *estat* > English *estate* < Latin *status*).

Other types of sound change discussed included:

- **Metathesis**, the interchange in the order of sounds: relevant : revelant, ask : [aks], etc.
- **Fusion** of separate sounds into one: the resultant sound usually has the phonetic features of both of the original sounds
- **Unpacking**: the breaking up of a fused sound into the original components
- **Vowel Breaking**: a single vowel changes into a diphthong, as in [b&id], [b&@d] for *bad*, and [kjæt] for *cat*, etc.

Today we are going to focus on how phonological changes trigger off changes in the morphology (word structure) of language:

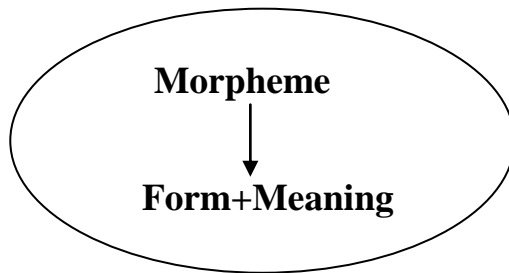
Morphological Change**Focus Points:**

- **A Review of Basic Terms & Concepts**
 - Morphemes: Their Types and Characteristics
- **Allomorphs**
- **Allomorphy: Predictable and Unpredictable**
- **Five Types of Unpredictable Allomorphy**
- **Predictable Allomorphy Rules**

6.1 A Review of Basic Terms & Concepts**6.1.1 Morpheme: Definition & Characteristics**

Language works because human beings can form relationships between **forms** and **meanings**. A form can be any kind of physical structure. It is easy to think of the letters on a page as shapes or forms, but what about spoken language? Think of the sounds of ‘cat’ and ‘bird.’ The two words sound different, just as they look different when written down. From the point of view of our ears, these two words have different physical structures, or auditory shapes / forms. Each different form evokes a different meaning.

Each form with a specific meaning makes up a single morpheme:



Morphemes have **four defining characteristics**:

- They cannot be subdivided
- They add meaning to a word
- They can appear in many different words
- They can have any number of syllables (syllable is a unit of sound, whereas a morpheme is a unit of *meaning*).

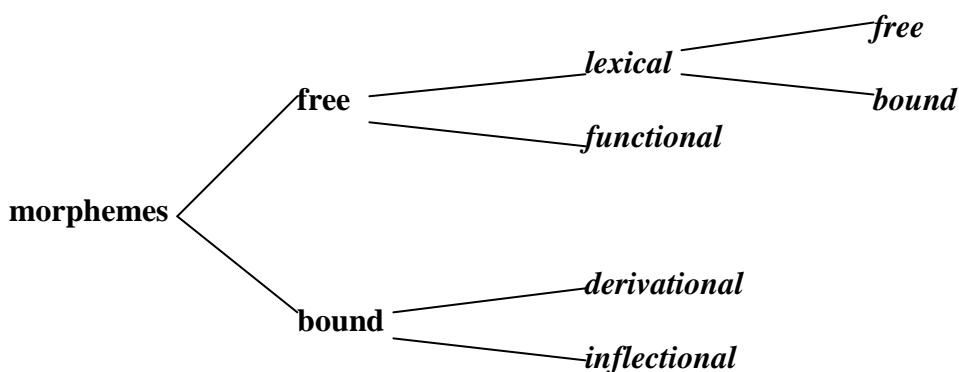
6.1.2 Classification of Morphemes

All morphemes, or ‘meaningful bits that words are made up of,’ fall into two main groups: **free** and **bound**.

Free morphemes can be *lexical* (those that by themselves represent independent concepts) and *functional* (function words, like conjunctions, prepositions, pronouns, and articles).

Bound morphemes occur only in combination with free morphemes (the independent ‘roots’), which can stand on their own. Bound morphemes may be *derivational* (prefixes and suffixes) or *inflectional*.

Look at the rough diagram of the different classes of morphemes:



Lexical morphemes make up content words, while functional morphemes make up function words (pronouns, auxiliaries, prepositions, conjunctions, etc.).

Derivational morphemes typically change the part of speech, particularly in highly inflected languages.

6.2 Allomorphs

One of the main discoveries of modern linguistics, according to Steven Pinker, the American linguist, is that

‘ ... phonological rules ‘see’ features, not phonemes, and they adjust features, not phonemes.’
(Steven Pinker, *The Language Instinct*, N.Y. 1994, p. 179)

Morphemes, therefore, may be stored in our mental dictionary in a different form from the one that is actually pronounced. How is that? Because morphemes are made up of phonemes! Since phonological rules adjust the features of phonemes (which make up morphemes), and not the phonemes, it stands to reason that while a morpheme may *sound* quite differently to our ear in different phonological environments, we still *perceive* these variant forms as *the same unit of meaning* (morpheme): [pleid̥], [pa:st̥], [wOtSiz̥], [si:ts̥], [sinz̥], etc.

Indeed, because language uses arbitrary sound symbols to signify different meanings, communication between us would have become impossible if we did not perceive variant forms of sound as the same phonemes (which, in turn, make up morphemes). Allophones (variant forms of phonemes) make up words and pieces of words. Variant phonological forms combine into variant morphological forms:

Strings of **allophones** produce **allomorphs of a particular morpheme**.

Allomorphy: Predictable and Unpredictable

There are two kinds of allomorphs:

- **Unpredictable**

Unpredictable allomorphs are variant forms which seem rather unsystematic to modern English speakers. Their roots go back into history: they are the remnants of old linguistic forms that have by and large been replaced by other forms as a result of language change over time. For example, the allomorphs of **gen**, **gon** and **gn** (‘birth, type, origin’), are the leftovers of an ancient grammatical process that operated predictably in Indo-European, the ‘ancestor’ of most modern European languages. Since those processes no longer operate in English, we cannot understand their patterning, and therefore cannot predict the form of an allomorph – they have become *unpredictable* (for us).

- **Predictable**

Predictable allomorphs are predictable, because we can see the logic of their occurrence. They **are systematic**. In fact, they are so regular, that we can make rules which describe the alternations. Take a look at the words below:

abbreviate	aggressive	appeal	attend
account	alleviate	arrive	
affect	annual	assent	

All the highlighted prefixes are allomorphs of **ad-** ‘to, toward.’ The **d** in **ad-** always changes to the sound of any following consonant (example of total regressive assimilation), except before **m**, **j**, and **v**. Because this occurs so predictably, we don’t need to memorize these forms (unlike the unpredictable allomorphs).

Assimilation, therefore, often triggers off a common predictable allomorphy process: The alveolar nasal [n], in particular, almost always assimilates to the **place** (of articulation) **of the following stop or nasal**. So an [n] usually changes to the *bilabial* nasal [m] when the

next sound is a *bilabial*. So any morpheme that ends in [n] is likely to undergo nasal assimilation in this situation. In most words borrowed from Latin or French, the spelling matches the pronunciation; however, with newly coined words, it usually does not. For example, the word ‘*input*’ does not show nasal assimilation in the spelling, even though often people actually say [impUt]. The phonetic alteration occurs regularly and predictably, regardless of the spelling! Words which existed before the rise of nearly universal literacy usually reflect the nasal assimilation in their spelling, while more recently coined words may not, and perhaps never will. Why? Because written language forms slow down linguistic change.

Assimilation (of which, as we remember, there are several types) is probably the most frequent type of predictable allomorphy. The other most frequent types of predictable allomorphy involve **insertion** of sounds or the **deletion** of sounds.

Five Types of Unpredictable Allomorphy

Recap: ‘**Allomorphy processes**’ are the consequence of several natural tendencies in the way we make speech sounds. The phonetic features of the sounds we make vary, depending on how the sounds are combined, i.e., on their phonetic environment. When we speak, the movement and position of our organs of speech are not always precisely the same, which naturally affects the *quality* of the sounds we produce. Because sound quality varies depending on the speaker and on the phonetic environment, communication between us would have become impossible, if we did not have the ability to *perceive* a whole range of varying sounds as belonging to the same phoneme.

Phonemes are the contrastive units of sound which both the speaker and the listener perceive to be the same sound.

Because a morpheme is a combination of phonemes (not actual sounds), it may sound distinctly different in different phonetic environments, yet we still perceive it as the same morpheme:

He plays [z], she watches [iz], and it all makes [s] sense.

The adjustments our speech organs naturally tend to make when producing speech sounds result in variation in the physical characteristics / quality of the sounds we make. This sound variation follows a certain pattern governed by a set of phonological rules which ‘*see*’ features, not phonemes: they adjust features, not phonemes.

This means that phonological rules may affect the way we pronounce the phonemes that make up a morpheme, but that we still *perceive* those strings of sounds as the same morpheme, because morphemes are made up of phonemes, and not of the sounds that we actually pronounce. We refer to variant forms of phones as allophones. By analogy, differences in the pronunciation of *combinations of allophones* have produced allomorphy, or variant forms of the same morphemes. What are the allomorphy processes generated by phonological rules?

There are **5 major types of unpredictable allomorphy** in English, resulting from five allomorphy processes:

- | | |
|-------------------------------|----------------------------------|
| ○ Ablaut | gon / gen / gn (no vowel) |
| ○ Weakening | tag / teg / tig |
| ○ Nasal Insertion | frag / frang |
| ○ Metathesis | cer / cre |
| ○ Latin/Greek Doublets | hemi / semi , etc. |

Most of these allomorphy processes, as you can see, are the result of the common sound changes that we discussed last week. Below are a few common allomorphy processes:

Ablaut

Ablaut involves the alternation of the **vowel** in the root: the vowels vary between **e**, **o**, or { (no vowel)}.

The prehistoric Indo-European language, spoken about 5000 years ago, did not just use suffixes for inflection; it could also change root vowels to show certain kinds of inflections. These root vowel changes were a regular and predictable grammatical process, just as regular and predictable as adding the inflectional suffix **-ed** to the roots of the majority English verbs is a regular and predictable way of forming the past tense in modern English. Over time, one branch of the prehistoric language developed into early Germanic languages, from which English also descended. As this happened, the ablaut process died out, and was gradually replaced by other ways of showing inflections (i.e., through inflectional suffixes). English still retains the traces of ablaut in some of its inflected forms (mostly irregular verbs):

	e-grade	o-grade	zero-grade
Indo-European	sengwh 'to sing'	songwh	sngwh
Modern English	sing(s) – present tense	sang (past tense) song (N)	sung (Past Participle form)

Weakening

Weakening involves the alternation of the vowel in a root: the vowels vary between **a**, **e**, **i**.

Weakening only affects vowels formed near the front of the mouth.

Examples: grad / gred / gress frag / frang / fring cap / cep / cip / cup

Nasal Insertion

Nasal insertion involves the insertion of **n** or **m** after the vowel in the root.

frag / frang / fring tag / teg / tig / ting

Nasal insertion is a relic of a regular grammatical process in IE. Like ablaut, it involved changing the internal structure of the root for grammatical purposes.

Metathesis

Metathesis, as we remember, is the switching of any two sounds.

Usually, the two sounds are side by side, with a few exceptions: **spec** and **scep** 'look, see.' We can see metathesis in many languages, and it has occurred repeatedly throughout the history of English. Children often metathesize, saying **psgetti** instead of **spaghetti**. Adults also metathesize at times, and these 'new words' occasionally become part of the language. The modern word **third** comes from OE **thrida**. Early in English history, the metathesized word had 'caught on' and eventually displaced the original form. The native words **third**, **three**, and the Latin morpheme **tri** 'three' can all be traced back to the same prehistoric morpheme, but metathesis had affected only the first word. Before literacy was so widespread, these new words were more likely to enter the language than they are now. Today, in some dialects of English, **ask** is pronounced **aks**, but this isn't likely to catch on because of Standard English forms.

Metathesis is impossible to predict, although some combinations of sounds seem especially prone to it. The **sk** combination and **vowel+r** combination, are more likely to be reversed than others. But words with these combinations of sounds do not necessarily have metathesized allomorphs.

Latin / Greek Doublets

There are several regular correspondences between the sounds in Latin Morphemes and those in Greek, i.e., Latin **s** usually corresponds to Greek **h**, Latin **f** – to Greek **ph**, and Latin **u** – to Greek **y**:

hemi / semi	fer / pher / phor
hyper / super	fa / pha / phe
hex / sex	bi-/ di-
hept / sept / septen	

English often borrowed the same morpheme from both languages. If we know the Latin / Greek sound correspondences, we can easily recognize these allomorphs.

Predictable Allomorphy Rules

The rules which describe predictable allomorphy have 3 necessary components:

- **The sound affected**
- **The new sound** (the one which the affected sound changes to)
- **The context in which the change occurs** (i.e., the nearby sounds that cause the change).

The sound affected becomes the new sound when it occurs in the context of critical nearby sounds.

Re-cap of the already familiar to us writing rules:

Linguists usually write these rules using special shorthand symbols:

The sound affected → the new sound / in the context of critical nearby sounds.

For the nasal assimilation rule, for example, we could write

$n \rightarrow m / \underline{\quad} p, b, m$

The **underline** in the context component of the rule stands for the **sound affected**. The **position** of the underline relative to the critical sounds indicates the position of the affected sound. This rule indicates that **n** must become **m** *before* the critical nearby sound.

When writing rules, sounds or spellings are given in **lower case letters**. The uppercase letters **V** and **C** stand for **VOWEL** and **CONSONANT**, respectively. They are used when the rule affects any or all vowels or consonants.

The symbol \emptyset indicates ‘no sound.’

The knowledge of allomorphy rules enables us to:

- Recognize morphemes that have been affected by a rule, and give its original (underlying) form, and
- Identify the rule, which affected the morpheme.

Here are a few of the many allomorphy rules:

1. **Nasal Assimilation:** This rule affects prefixes, which end with **n**. When **n** becomes **m** before another **m**, we will call that Nasal Assimilation also, not Total Assimilation.
2. **Voice Assimilation** occurs any time one sound alters its voice feature to become more like a nearby sound. It usually occurs in roots which end in **c**, **g**, **b**, or **p**. Most of the cases of Voice Assimilation in English involve the velar stops [k], [g], which are spelled with the letters **c** and **g**. A few cases involve alternation between [b] and [p], which are spelled with the letters **b** and **p**.
3. **Total Assimilation** is very common with prefixes, particularly in older words.
4. **Vowel Deletion** may be of 2 kinds, affecting a) morphemes ending in a vowel and b) morphemes ending with a **vowel + r**: **the vowel in the first morpheme is deleted when the following morpheme begins with a vowel.**
5. **Vowel Insertion:** this rule accounts for many of the filler letters we encounter when doing word analysis (parsing), and is the result of *epenthesis*.
6. **Rhotacism:** this rule changes the allomorph ending in **s** to the allomorph ending in **r** (remember: **flosis > floris*; **honosis > honoris*, etc.?)