



Intro to Ling (S4)

Prof. Belfakir

PHONOLOGY

WHAT'S PHONOLOGY?

While phonetics is the study of the ways in which speech sounds are produced, **phonology** is the study of (1) how the speech sounds of a language are used in that language to distinguish meaningful units (such as words) from each other, and (2) how sounds are patterned in a language. Consequently, the study of phonology requires us to take meaning into consideration, while phonetics does not.

PHONEMES

We know that English speakers distinguish between [s] and [z], and we use this difference to signal the difference between the words *sip* and *zip*. We will say that [s] and [z] **contrast** with each other in English. In fact, pairs of words like this are called **minimal pairs**, and are used to demonstrate that the pairs of sounds which are used in a language to distinguish words from each other are called **phonemes**. We enclose phonemes in / / (e.g., /s/, /z/) to distinguish them from sounds ([s], [z]).

ALLOPHONES

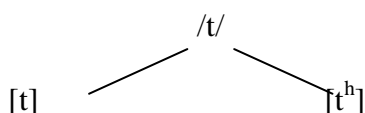
English speakers pronounce the [t] in *toll* differently from that in *stole*. The [t] of *toll* is breathier than the [t] of *stole*. The former is said to be **aspirated**, and the latter **unaspirated**. We represent the aspirated [t] as [t^h], with the **diacritic** [h] indicating aspiration. We represent the unaspirated [t] as [t] with no diacritic. The important point here is that English speakers do not signal any difference in meaning with the difference between [t^h] and [t]. They treat the two sounds as variant ways of pronouncing the “the same sound.” Substituting one of these sounds for the other would not affect the meaning of a word, but it would create an odd and perhaps non-native pronunciation of the word. No pair of English words is distinguished solely by the difference between [t] and [t^h].

English speakers treat the difference between [d] and [t] differently from the way they treat the difference between [t^h] and [t]. In the case of [t] and [d], the difference can signal a difference in meaning; in the other cases it cannot. Differences in sound that signal differences in meaning are said to be **phonemic**, **distinctive**, or **contrastive**. Differences in

sound that do not signal meaning differences are **non-distinctive** or **non-contrastive**. One objective of phonology is to identify which sound differences are contrastive and which are not. As we have seen, the contrastive sound units are called phonemes.

PHONEMES AND ALLOPHONES

A good way to think about a phoneme is as a group of phonetically similar sounds that are treated as members of the same sound category. Because the members of a sound category are treated as “the same sound” in a language, they cannot be used for communicating differences in meaning. English speakers treat [t^h] and [t] as belonging to the same sound category, so they cannot be used to distinguish one word from another. Different phonemes are different categories of sounds and the differences among these categories can signal differences in meaning. English speakers treat [t] and [d] as these can be used to differentiate one word from another. Sound categories are abstractions. We can only perceive them when one of their members is pronounced. The sounds that make up the category are called the **allophones** of that phoneme. Thus [t] and [t^h] are allophones of the English phoneme /t/. Notice that the individual sound symbols are the same as those we used for phonetics, but to distinguish phonology from phonetics, we enclose phonemes in **slanted brackets** / / and use square brackets [] for phonetic notation.



That is, the phoneme /t/ is pronounced in (at least) two ways, [t] and [t^h], depending upon its context.

ALLOPHONES AND THEIR CONTEXTS

Note that if we substitute the aspirated allophone of /t/ for its unaspirated relative, then we create an odd pronunciation of a word. [t^hɪl] is the typical English pronunciation of *till*, but [tɪl] is not. Some allophones of a phoneme are in **complementary distribution**, that is, they occupy different positions (**contexts** or **environments**) in words—where one can occur the other cannot. As we have seen, English has a very general pattern of lengthening vowels before voiced consonants.

Let's look at a very systematic set of English vowel allophones. The vowels of *cap* and *can* differ phonetically: that of *cap* is a plain [æ]; that of *can* is **nasalized**, represented by [æ̃]. (If you have trouble hearing the difference, try starting to say each word normally and then omit the final consonant.) The phoneme /æ/ thus has the allophones, [æ] and [æ̃]. In fact, all English vowels have both nasalized and non-nasalized allophones. We can represent this as the rule: *Whenever an English vowel occurs before a nasal consonant, it becomes nasalized; otherwise it is non-nasalized.* And because nasals are voiced, we should expect a vowel before them to be lengthened relative to the same vowel before a voiceless sound. And, indeed, this is what we find. Listen to the vowels in *cat*, *cad*, and *can*. You should notice that the first vowel is unlengthened, [æ]; the second one is lengthened, [æ̃]; and the third one is both lengthened (in fact, probably even more than the second one) and nasalized, [æ̃ː].

Exercise 1:

What sounds are presented by the bolded letter(s) in the following words? Provide an allophonic (**narrow**) transcription. mad, back, spill, cat, tang