

THE DISTRIBUTION OF SOUNDS

1. PHONEMES

- (1) **QUESTION:** When is a sound a phoneme?

The term 'phoneme' was coined by Jan Baudouin de Courtenay ca. 1900; most important elaboration of the concept by Nikolai Trubetskoy in 1930ies.

- (2) Two words are called **MINIMAL PAIRS** if they only differ w.r.t. a single sound value.

- (3) **RULE:** Two sounds represent two different **PHONEMES** if substituting one by the other in a minimal pair leads to a change of meaning.¹

EXAMPLES:

- (4) a. [sip] - [tip]
⇒ [sip] and [tip] form a minimal pair and differ in meaning
→ [s] and [t] are phonemes
- b. [tip] - [lip]
⇒ [tip] and [lip] form a minimal pair and differ in meaning
→ [t] and [p] are phonemes

○ The two sounds do not have to be word-initial:

- (5) a. home - hone
→ [m] and [n] are phonemes
- b. sad - sat
→ [d] and [t] are phonemes

The distribution of phonemes is not predictable. The fact that *neat* starts with an [n] and *beat* starts with a [b] has nothing to do with some deeper property of language (for instance some absurd property like "adjectives start with oral stops"); we simply have to accept that the relation between the form of words (their phonetic shape) and meaning is arbitrary and non-predictable. Another way to state this is to say that phonemes are in **CONTRASTIVE DISTRIBUTION**. That is, the actual positions in which they show up in different words (= their *distribution*) makes a difference (= *contrast*).

¹'Change in meaning' can also mean that one of the two words does not mean anything at all. Imagine that in a language, all words end with an [k], and that [k] only shows up in the end of the word. For instance, this language might have words such as [mek], and [suk], but nothing like [mes] or [mem]. Still, [k] and [m] are two different phonemes, because exchanging [m] for [k] in [mek], resulting in [mem], leads to a change in meaning - even if the change consists in 'destruction' of meaning.

(6) **QUESTION:** Are there sounds which do not meet criterion (2), but still qualify as phonemes?

Yes, in principle this is possible, but such cases are rare and should not concern us here.

Example: Imagine a language that allows only one specific sound in word-final position, and in which this sound alternates with zero, as e.g. in [ba] and [ban]. But zero is not a sound. Thus, the clause “Two sounds represent...” in (2) does not apply, and [n] does therefore *by this criterion* not qualify as a phoneme. Still, [n] should be treated as a phoneme, because it leads to a change of meaning.

(7) **QUESTION:** What if a sound is not a phoneme?

There are two options: either the sounds are allophones, or they are in free variation.

2. OPTION A: ALLOPHONES (AKA ‘KOMBINATORISCHE VARIANTEN’)

Sometimes, it is not possible to find a minimal pair for a given set of two sounds. Consider e.g. the case of aspirated and non-aspirated stops in English, for which pairs such as (7)a simply do not exist. (Minimal pairs differing in aspiration are attested in other languages such as Sindhi, Vietnamese and Thai, though):

(8) a. *pit* [p^hIt] b. *pit* [pIt]

More precisely, English has the curious property that all voiceless word-initial stop are *aspirated*, there are no English words such as (7)b, in which a voiceless word-initial stop lacks aspiration.

(9) a. *pit* [p^hIt] b. *spit* [spIt]
 ty [t^haɪ] *sty* [staɪ]
 kite [k^haɪt] *sky* [skaɪ]

Another way to express this is to say that aspirated and non-aspirated consonants in word-initial position are in **COMPLEMENTARY DISTRIBUTION**. The two sounds in complementary distribution are called **ALLOPHONES** of the same phoneme.

EXAMPLE:

(10) a. si[ŋ]g b. si[n]ce
 si[ŋ]k sau[n]ter
 tru[ŋ]k hau[n]t
 sa[ŋ]k ha[n]d

→ [ŋ] and [n] are allophones of the phone /n/

Notational Convention: read /x/ as ‘the phoneme x’

An analogy: The individual called *Kal-El* at his home planet Krypton is known under two different names on (comic) earth: Superman and Clark Kent. Superman and Clark Kent are one and the same person, but they are in complementary distribution. Superman saves people, arrests villains etc..., but never appears as a reporter at the Daily Planet. On the other hand, Clark Kent works as the mild-mannered reporter at the Planet, but never saves people, arrests criminals or the like. Thus, Superman and Clark Kent never shows up in the same environment or situation, and are therefore in complementary distribution. One could also say that Superman and Clark Kent are the two *allophones* of the *phoneme* Kal-El.

Thus, if one wants to figure out whether two sounds are phonemes or allophones, one has to consider the context in which they occur and determine whether they stand in complementary or contrastive distribution. Do these two options exhaust the possibilities we find? Not quite yet.

3. OPTION B: FREE VARIATION('FREIE VARIATION')

Sometimes, we encounter situations in which it does not make a difference whether one sound or the other is used. Consider the words *kitten* and *mitten*, concentrating on the pronunciation of the sound [t]. In many dialects, the words are not pronounced with a full fledged alveolar stop, but a glottal stop [ʔ] is substituted for the [t]. You may observe this more frequently in casual or fast speech. Hence, we have the minimal pairs [kitən] vs. [kɪʔən] and [mitən] vs. [mɪʔən]. In this case, the distribution of [ʔ] and [t] is *not predictable*, because one and the same speaker may use either of the sounds in the same word. Moreover, the two sounds are also not in contrastive distribution, because clearly both [kitən] and [kɪʔən] mean the same in English. We will therefore have to introduce a third way of describing the correlation between a pair of sound: [ʔ] and [t] in the example above will accordingly be said to be in **FREE VARIATION**.

FURTHER EXAMPLE:

- (11) a. ha[r]e b. ha[R]e
 b. [r]apid [R]apid

→ [r] vs [R] in English (and French and German) are in free variation

SUMMARY

PHONEMES

- sounds are in *contrastive* distribution: substituting one for the other leads to a change in meaning
- their distribution (= the position in which they can occur) is non-predictable

ALLOPHONES

- sounds are in *complementary* (= non-contrastive) distribution
- their distribution is predictable

FREE VARIATION

- sounds are in *complementary* distribution
- their distribution is non-predictable