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CLASS 1

Phonetics and Phonology

The aim of this class is to provide a brief introduction to Phonetics and Phonology. It describes the main differences between phonemes and allophones and the different types of distributions in which allophonic variants may occur. The class is divided into three sections:

- Phonetics and Phonology
 - Phonemes and allophones
 - Complementary distribution and free variation
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STEP 1. WATCH THE FOLLOWING VIDEO CLASS

<https://canal.uned.es/video/5a72fd91b1111f741c8b4573>

STEP 2. READ THE FOLLOWING CLASS NOTES

⇒ **Phonetics and Phonology**

Phonetics and *Phonology* are two disciplines that study speech sounds from different perspectives. Phonetics describes sounds from a physiological approach, that is, it deals with the ways sounds are produced and perceived by speakers. Thus, Phonetics, for example, examines the positions and the movements of the speech organs involved in the production and perception of sounds. For instance, a sound such as [b] is produced with a complete closure of the lips which blocks the outgoing airflow, with vocal fold vibration and a sudden release of air.

Phonology, on the other hand, describes sounds from a mental (linguistic) perspective. One of the main roles of Phonology is to analyse the entire range

of sounds in a language and decide which of them are linguistically relevant (or contrastive) and which of them are not, namely, which of them are *phonemes* and which of them are *allophones*. A phoneme is the smallest unit in a language that can cause a difference in meaning (or a contrast) between two words. An allophone, on the other hand, is one of the different possible realisations of a phoneme. Contrary to phonemes, allophones do not create a contrast in meaning between two words.

⇒ Phonemes and allophones

In order to determine whether a particular sound is a phoneme or an allophone, we must examine whether this sound causes differences in meaning or not. If it does, the sound is a phoneme; if it does not, it may be an allophonic variant of a given phoneme.

The best way to determine if a sound is responsible for changes in the meaning of words is to find a *minimal pair*, that is, two words which contain the same sounds in the same position except for one. If this sound causes a difference in meaning between the two words, it should be interpreted as a phoneme. If this sound does not trigger a semantic difference, it should be categorised as an allophone, that is, as one of the possible realisations of a given phoneme. This is illustrated in the following Spanish and English examples which include two words only differentiated by one sound, [t] and [r].

(1)	Spanish	English
	[ˈpata] (meaning “leg”)	[ˈsɪti] (meaning “city”)
	[ˈpara] (meaning “for”)	[ˈsɪri] (meaning “city”)

Whereas in Spanish the presence of a [t] or a [r] triggers a difference in meaning (“leg” vs. “for”), in English it does not (“city”). Thus, while in Spanish [t] and [r] are two contrastive units or phonemes (/t/ and /r/), in English [t] and [r] are two allophones or realisations of the same phoneme. Thus, Spanish has two phonemes (/t/ and /r/) and English has one phoneme (/t/) which can be realised as [t] or [r]. In this case, the decision to use one of the two allophonic variants ([t] or [r]) is geographically determined. In British English, the /t/ between vowels tends to be produced as [t] (*city* [ˈsɪti]). In American English, however, it is usually produced as [r] (*city* [ˈsɪri]). Phonemes are represented between slashes (/ /) and allophones between square brackets ([]).

⇒ Complementary distribution and free variation

Apart from geographical or dialectal variability, the use of a given allophone is sometimes determined by the phonetic context or environment in which it occurs, that is, by the types of sounds that surround this allophone. Allophones can appear in two types of distributions (or set of environments):

- 1) in complementary distribution
- 2) in free variation

When two allophones are in complementary distribution, they are mutually exclusive. That is, they occur in different environments and whenever one allophone appears the other does not. For example, the English phoneme /l/ can be realised as [l] (clear “l”) or [ɫ] (dark “l”) depending on the following phonetic context. Clear “l” only occurs before vowels and /j/ and dark “l” only before consonants (except for /j/) or before a pause. Regarding their phonetic properties, both [l] and [ɫ] are produced with a constriction made by the tongue tip at the alveolar ridge. However, [ɫ] is also produced with an additional rising of the back of the tongue towards the velum. The mutually exclusive distribution of [l] and [ɫ] is schematised in (2). The notation conventions used in these rules are interpreted as follows: the arrow means “is realised as”, the slash (/) means “in the environment of”, and the horizontal line indicates the spot where a given sound is realised. Thus, /l/ is realised as [l] before a vowel or a /j/ and as [ɫ] before a consonant or a pause. The symbol # indicates a word boundary.

(2)

		Examples
/l/ →	{	[l] / _____ vowel
		/j/
	{	[ɫ] / _____ consonant
		#
		<i>light</i> [laɪt]
		<i>lure</i> [ljʊə]
		<i>milk</i> [mɪɫk]
		<i>mill</i> [mɪɫ]

When allophones are in free variation, they can appear in the same context without changing the meaning of the word. An example was presented in (1) where the /t/ in the word *city* could be realised as [t] or [ɾ]. Another common example of two allophones in free variation is the case of British English /t/ in word final position which can be pronounced as [t] or [ʔ]. This is illustrated in (3) where the word *put* has two possible endings ([t] and [ʔ]) which do not alter its meaning. Thus, [t] and [ʔ] are allophonic variants of the same phoneme /t/. With respect to their phonetic properties, both sounds are produced with no vocal fold vibration

and with a complete closure of the articulators in different places, namely, at the alveolar ridge for [t] and at the vocal folds for [ʔ].

(3)

Examples

$$/t/ \rightarrow \begin{cases} [t] / ___\# & \text{put } [put] \\ [ʔ] / ___\# & \text{put } [puʔ] \end{cases}$$

Furthermore, for two sounds to be interpreted as allophones of the same phoneme they should also be *phonetically similar*. For example, in English the sounds [ŋ] and [h] are in complementary distribution since [h] can only occur at the beginning of syllables (for example, *head* [hed]) but never at the end, and [ŋ] can only appear at the end of syllables (for example, *sing* [sɪŋ]) but never at the beginning. Despite being in complementary distribution, these sounds could never be interpreted as two allophones of the same phoneme because their phonetic characteristics are too different. As we will see in Unit 3 (Class 1), [h] is a voiceless glottal fricative and [ŋ] a voiced velar nasal. Thus, they do not share any phonetic feature and therefore it is very unlikely that they could be allophonic variants.

When learning a second language, it is crucial to know which sounds constitute the phonological system of a language, that is, which sounds are phonemes, and which ones are phonetic realisations or allophonic variants of a given phoneme. Two or more sounds can be different phonemes in a given language but allophonic variants of the same phoneme in another. For example, /n/ and /ŋ/ are phonemes in English since they produce a difference in meaning in pairs of words such as, *sin* [sɪn] and *sing* [sɪŋ]. In Spanish, on the other hand, these two sounds are allophones ([n] and [ŋ]) of the same phoneme /n/ since they are not responsible for any semantic change and they occur in complementary distribution. /n/ becomes [ŋ] in syllable-final position when the next syllable starts with [k] or [g], as in *un gato* [un ˈgato] (“a cat”) as opposed to *un sapo* [un ˈsapo] (“a toad”).

Furthermore, there are sounds which can be both phonemes and allophones in the same language. For example, both in English and in Spanish /m/ is a phoneme since it triggers a difference in meaning in pairs of words such as *moon* [mu:n] and *noon* [nu:n] or *mi* [mi] (“my”) and *ni* [ni] (“neither”) respectively. However, in both languages, [m] can also be an allophonic variant of /n/ when it appears at the end of a syllable and the next one starts with [p], [b] or [m], as illustrated below.

English:	<i>one</i>	[wʌn]	<i>one boy</i>	[wʌm ˈbɔɪ]
Spanish:	<i>un</i>	[un]	<i>un pelo</i>	[um ˈpelo] (“a hair”)