

# Phonology Analytics in DROP

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**Introduction**

**Overview**

1. Alternate Meanings of the Term Phonology: *Phonology* is a branch of linguistics that studies how languages or dialects systematically organize their sounds – or signs, in sign languages. The term also refers to the sound system of any particular language variety.
2. Focus of the Phonology Field: At one time, the study of phonology only related to the study of systems of phonemes in spoken languages. Now it may relate to:
   1. Any linguistic analysis either at a level beneath the word – including syllables, onset and rime, articulatory gestures, articulatory features, mora, etc. OR
   2. All levels of language where sounds or signs are structured to convey linguistic meaning (Brentari, Fenlon, and Cormier (2018)).
3. Phonological Equivalents in Sign Languages: Sign languages have a phonological system equivalent to the system of sounds in spoken languages. The building blocks of signs are specifications for movement, location, and hand shape (Stokoe (1978)).

**Terminology**

1. Phonology as a Language System Component: The word *phonology* – as in *the phonology of English* – can also refer to the phonological system – the sound system – of a given language. This is one of the fundamental systems that a language is considered to comprise, like its syntax, its morphology, and its vocabulary.
2. Distinction between Phonology and Phonetics: Phonology is often distinguished from *phonetics*. While phonetics concerns the physical production, acoustic transmission, and perception of the sounds of speech (Lass (1998), Carr (2003)), phonology describes the way sounds function within a given language or across languages to encode meaning.
3. Distinction between Theoretical/Descriptive Linguistics: For many linguists, phonetics belongs to descriptive linguistics, and phonology to theoretical linguistics, although establishing a phonological system of a language is necessarily an application of theoretical principles to the application of phonetic evidence.
4. Conflation between Phonology and Phonetics: This distinction was not always made, particularly before the development of the modern concept of the phoneme in the mid-20th century.
5. Crossover of Phonology with Phonetics: Some sub-fields of modern phonology have a cross-over with phonetics in descriptive disciplines such as psycholinguistics and speech perception, resulting in specific areas such as articulatory phonology or laboratory phonology.

**Derivation and Definitions**

1. Origin of the Term Phonology: The word *phonology* comes from the ancient Greek φωυη, *phone, voice, sound*, and the suffix -*logy*, which is from the Greek λογος, *logos, word, speech, subject of discussion*.
2. Trubetzkoy’s Definition of the Term: Trubetzkoy (1939) defines phonology as *the study of sound pertaining to the system of language*, as opposed to phonetics, which is *the study of sound pertaining to the act of speech* – the distinction between *language* and *speech* being basically Saussure’s distinction between *langue* and *parole*.
3. Lass Definition of the Term: Lass (1998) writes the phonology broadly refers to the sub-discipline of linguistics concerned with the sounds of language, while in more narrow terms, *phonology proper is concerned with the function, behavior, and organization of sounds as linguistic items*.
4. Definition of Clark, Yallop, and Fletcher: According to Clark, Yallop, and Fletcher (2007), it means the systematic use of sound to encode meaning in any spoken human language, or the field of linguistics studying this use.

**Analysis of Phonemes**

1. Decomposed Units of Distinctive Sounds: An important part of traditional, pre-generative schools of philosophy is studying which sounds can be grouped into distinctive units within a language; these units are known as phonemes.
2. Example: Phoneme Units in English: For example, in English the *p* sound in *pot* is aspirated, while that in *spot* is not aspirated. However, English speakers treat both sounds as variations/allophones – of the same phonological category, that is of the phoneme *p*. Traditionally, it would be argued that if an aspirated *p* were interchanged with an unaspirated *p* in *spot*, native English speakers will still hear the same words; that is, the two sounds are perceived as *the same* p.
3. Phoneme Units in other Languages: In some other languages, however, these two sounds are perceived as different, as they are consequently assigned to different phonemes. For example, in Thai, Hindi, and Quechua, there are minimal pairs of words for which the aspiration is the only contrasting feature – two words can have different meanings but with the only difference in pronunciation being that one has an aspirated sound where the other has an unaspirated one.
4. Sound Inventory of Native Speakers: Part of the phonological study of language therefore involves looking at data – phonetic transcriptions of the speech of native speakers – and trying to decide what the underlying phonemes are and what the sound inventory of the language is.
5. Criteria for Identifying Minimal Pairs: The presence or absence of minimal pairs, as mentioned above, is a frequently used criteria for deciding whether two sounds should be assigned to the same phoneme. However, other considerations often need to be taken into account as well.
6. Historical Evolution of Language Phonemes: The particular contrasts which are phonemic in a language can change over time. At one time, [f] and [v], two sounds that have the same place and the manner of articulation and differ in voicing only, were allophones of the same phoneme in English, but later come to belong to separate phonemes. This is one of the main factors of historical change of languages as described in historical linguistics.
7. Interchanging the Allophones of Phonemes: The findings and insights of speech perception and articulation research complicate the traditional and somewhat intuitive idea of interchangeable allophones being perceived as the same phoneme.
8. Gibberish resulting from Allophone Switch: First, interchanged allophones of the same phoneme can result in unrecognizable words.
9. Highly Co-articulated Low-level Speech: Second, actual speech, even at a word level, is highly co-articulated, so it is problematic to be able to splice words into simple segments without affecting speech perception.
10. Assigning Sounds to Individual Phonemes: Different linguists therefore take different approaches to the problem of assigning sounds to phonemes.
11. Constraints around Allophone Sounds: For example, they differ in the extent to which they require the allophones to be phonetically similar.
12. Equivalence with the Brain Functions: There are also differing ideas as to whether this grouping of sounds is purely a tool for linguistic analysis, or reflects an actual process in the way human brain processes a language.
13. Idea behind Morphophonemes and Morphophonology: Since the early 1960s. theoretical linguistics have moved away from the traditional concept of a phoneme, preferring to consider the basic units at a more abstract level, as a component of morphemes; these units are called *morphophonemes*, and analysis using this approach is called morphophonology.

**Other Topics in Phonology**

1. Aspects of Phonological Studies - #1: In addition to the minimal units that can serve the purpose of differentiating meaning – the phonemes, phonology studies how sounds alternate, i.e., replace one another in different forms of the same morpheme – allomorphs, as well as, for example, syllable, stress, feature geometry, and intonation.
2. Aspects of Phonological Studies - #2: Phonology also includes such topics as phonotactics – the phonological constraints on what sounds can appear in what positions in a given language – and phonological alternation – how the pronunciation of a sound changes through the application of phonological rules, sometimes in a given order which can be feeding or bleeding (Goldsmith (1995)), as well as prosody, the study of supra-segmentals, and topics such as stress and intonation.
3. Phonology applied to Sign Languages: The principles of phonology can be applied independently of modality because they are designed to serve as general analytical tools, not language specific ones. The same principles have been applied to analysis of the sign languages, even though the sub-lexical units are not instantiated as speech sounds (Wikipedia (2020)).

**References**

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