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Classical Versus Generative Phonology

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Abstract

This paper examines the basic views of classical and generative phonology. It then considers the similarities and differences in the two theoretical models. Both approaches focus on the sounds of human language and are both offshoots of structural grammar. They also recognize the level of phonetic representation. However, classical phonology is preoccupied with phonemicising, while generative phonology is concerned with the generation of rules that apply to the phonemic level of representation to yield the phonetic level of representation. Besides, while classical phonology sees the phoneme as irreducible, generative phonology sees it as a bundle of features.

Introduction

The sound system of a language can be studied from two broad perspectives, namely, phonetics and phonology. Phonetics deals with the study of speech sounds, while phonemics / phonology is concerned with how the speech sounds are structured to form a system in a particular language. The major branches of phonetics are articulatory phonetics – dealing with the study of how speech sounds are produced; acoustic phonetics – studying the physical properties of the speech sounds; and auditory phonetics – concerned with the perception of the speech sounds.

There is an important link between phonetics and phonology. While phonetics tells us how the sounds of language are produced and what their articulatory, acoustic and auditory properties are, phonology studies how these sounds are structured and how they function to convey meanings in a particular language. Thus, according to Pike (143:57), "phonetics gathers raw material, phonemics cooks it". For our purpose in this paper, we use phonemics and phonology interchangeably.

It is customary to distinguish between classical phonology and generative phonology. This is because of the differences in the goals and methodologies or principles of the two. In this paper, we shall examine the goals and principles of classical phonology and generative phonology and establish their similarities and differences.

Classical Phonology

Classical phonology is an offshoot of structural grammar, which emphasizes the study of the structures of language; hence, the emphasis on the dichotomy between 'substance' and 'form'; phonemic and morphemic status; and analytical or discovery procedure. Therefore, the major goal of classical phonology, as Sommerstein (1977:1) puts it, is the investigation of the phonic features serving the particular language being investigated or capable of serving in natural language, to distinguish utterances.

Thus, the establishment of the phoneme, and the explanation of phonemic and morphophonemic alternations constitute the focus of classical phonology. In this approach, the phoneme is seen as an irreducible contrastive sound unit. For example, there are three such units in /πΘτ/. But in reality there are problems connected with the discreteness of sound because the discreteness is not borne out in actual speech. Human sound is understood to be 'continuous'.

Within the tradition of classical phonemics there are still divergent views on the concept of the phoneme. Hyman (1975:59) identifies three such different views which colour the definitions of the phoneme. There is the view that the phoneme constitutes a phonetic reality. According to this view, the phoneme is seen as a phonetic reality and all the sounds belonging to the same phoneme must share important phonetic properties. This assumption underlies Daniel Jones' (1967:7) definition of the phoneme as: "a family of sounds in a given language, consisting of an important sound of the language together with other related sounds". This same assumption underlies Gleason's (1969:258) definition of the phoneme as "a class of sounds".

For the philologists sharing this view, the primary concern is to establish those sounds that belong in the same family. This leads to the setting up of the principles of contrast and complementarity. If two sounds occurring in the same environment, when substituted bring about a meaning change, they must be considered as two separate

phonemes, for example the sound /p/ and /b/ in "pat" and "bat"; /t/ and /d/ in "mat" and "mad". The pair of words containing such sounds is said to be a minimal pair.

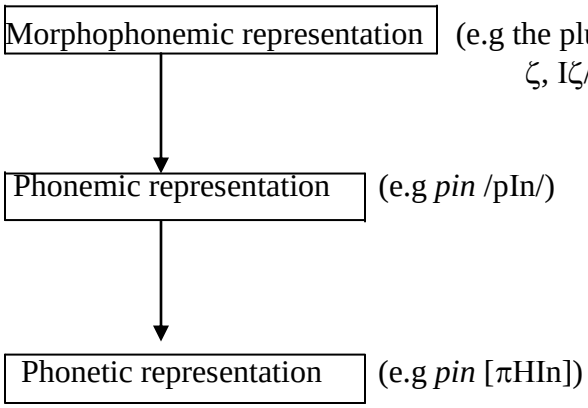
It is possible for two sounds to occur in mutually exclusive environments, that is where one occurs the other will not occur. Such sounds are said to be in complementary distribution – they are taken as allophones of the same phoneme. They are contextual variants of the same phoneme, e.g the aspirated /k^h/ and unaspirated /k͡/ in "come" and "skull", respectively; the clear /l/ and the dark /ɬ/ in the first and the second syllables of "little", respectively.

However, two sounds in complimentary distribution may not necessarily be allophones of the same phoneme. In English, the voiceless glottal fricative /h/ (e.g *home* /η↔Yμ/) and the voiced velar nasal /ŋ/ (e.g *sing* /σIN/) occur in complementary distribution. The former always occurs in syllable-initial position, while the latter occurs in syllable-final position. Yet they are different phonemes. In order to combat this problem, the classical phonemicists introduced the notion of phonetic similarity. Therefore, for two sounds in complementary distribution to be considered as members of the same phoneme, they must share certain important phonetic similarities. But the notion of phonetic similarity is not wholly clear.

The Prague school of phonology is often aligned with the American structural phonemics. But the Prague school conceives the phoneme differently. The phoneme is defined in terms of opposition in a phonological system and the important thing in defining the phoneme, as far as this school is concerned, is "function". Hence, the phoneme is regarded as a minimal unit that can function to distinguish meanings. To this school, the phoneme is an abstraction, a theoretical construct on the phonological level.

The third view of the phoneme which Hyman identifies is that which holds that a phoneme is a psychological reality (cf Fudge, 1970:79). In reality, sounds are said to be variant but, in spite of this variance, there is an abstraction of some form of invariant model that native speakers 'have in their heads'. This invariant form keeps utterances apart. It is this assumption which seems to underlie the conception of the phoneme as a psychological reality. Badouin de Courtenary and Edward Sapir, among others, hold this view. This concept of the phoneme has been much criticized especially by the Prague school on the ground that it is too mentalisitc.

It is clear from the foregoing that there are different conceptions of the phoneme with the framework of classical phonemics. But one thing is clear: the emphasis on phonemic analysis. It is relevant to note that in classical phonemics, some levels of analysis are recognized. These are the morphophonemic level, the phonemic level and the phonetic level. It should be noted that Bloomfield (Eli Fischer – JOrgense, 1975:178) established morphophonemics as a level dealing with morpheme alternations, for example the alternation of the past tense morpheme in English: /t/, /d/, /Id/. This level is established as a higher level of abstraction than the phonemic level. It is at the level where phonemes may alternate; for example the alternation of /n/ and /m/ in "indecision" and "impossible". Thus, in classical phonemics, the organisation of phonemics or phonology is conceived as follows:



Generative Phonology

Generative phonology forms part of the theory Transformational Generative Grammar, popularized by Chomsky (1957, 1965). In this grammatical model, generative phonology is, ironically, like semantics, "interpretive"; while syntax is "generative". Although it is possible to make the claim that generative phonology or systematic phonemics developed out of classical phonemic, the development of systematic phonemics leads to a shift in the goal and principles of phonology.

The primary concern of generative phonology is the development of the rules that will deal with the pronounceability of the strings 'generated' by the syntactic component of the grammar. Thus phonology becomes concerned with answering the questions:

(a) What are the general principles underlying the pronunciation of words, phrases and sentences?
(b) How far do these principles reflect the general principles underlying natural language?

A famous account of this phonological model is given by Chomsky and Halle (1968) within the framework of transformational generative grammar. It does not mean that this phonological model does not totally recognize the concept of the phoneme but what becomes its hallmark is feature analysis. Rather than seeing a phoneme as an irreducible contrastive unit of sound, it sees the phoneme as being made up of a bundle of features (Schane, 1973). Although Roman Jakobson, working within the theory of classical phonemics, started distinctive feature analysis, it is its incorporation into generative phonology which brought out the general use of distinctive feature analysis as the centre of phonological descriptions.

The distinctive features are meant to perform certain functions. Chomsky and Halle (1968) set up two such functions for their features. These are:

(a) The distinctive features are to capture the phonological contrasts of languages.
(b) The features are also to describe the phonetic content of segments specified by phonological rules as well as underlying segments.

In the tradition of generative phonology, three cardinals are set up for the distinctive features, according to Sommerstein (1977:96-97):

(a) phonetic specifiability: any feature must be specifiable in terms of phonetics, whether acoustic, auditory or articulatory; that is every feature must have identifiable "phonetic correlates".

(b) universality and completeness: the features must be complete and universal in order to do business with all languages.

(c) Binarity principle: At the underlying level, a feature must have only two specifications. This means that there are only two values for each feature; the feature is either present (+) or absent (-); there is no third possibility.

The features (especially Chomsky and Halle's) are divided into groups. The features 'sonorant', 'syllabic', and 'consonantal' form the major class features. The features 'coronal' and 'anterior' make up the cavity features; while the features 'high', 'low' 'rounded', 'distributed' form the tongue body features. But in the post-SPE literature, the features 'high' and 'low' are going into disrepute. The features 'continuant', 'delayed release', 'strident', 'tense' constitute manner of articulation features.

Moreover, in terms of distinctive feature matrixes, we can recognize two: maximally specified distinctive feature matrix, in which case redundancies are not eliminated; and minimally specified distinctive feature matrix, which eliminates all redundancies. Let's examine the distinctive features of /p/:

(i)
/p/
+obstruent
+consonantal
-continuant
+plosive
-voice

(ii)

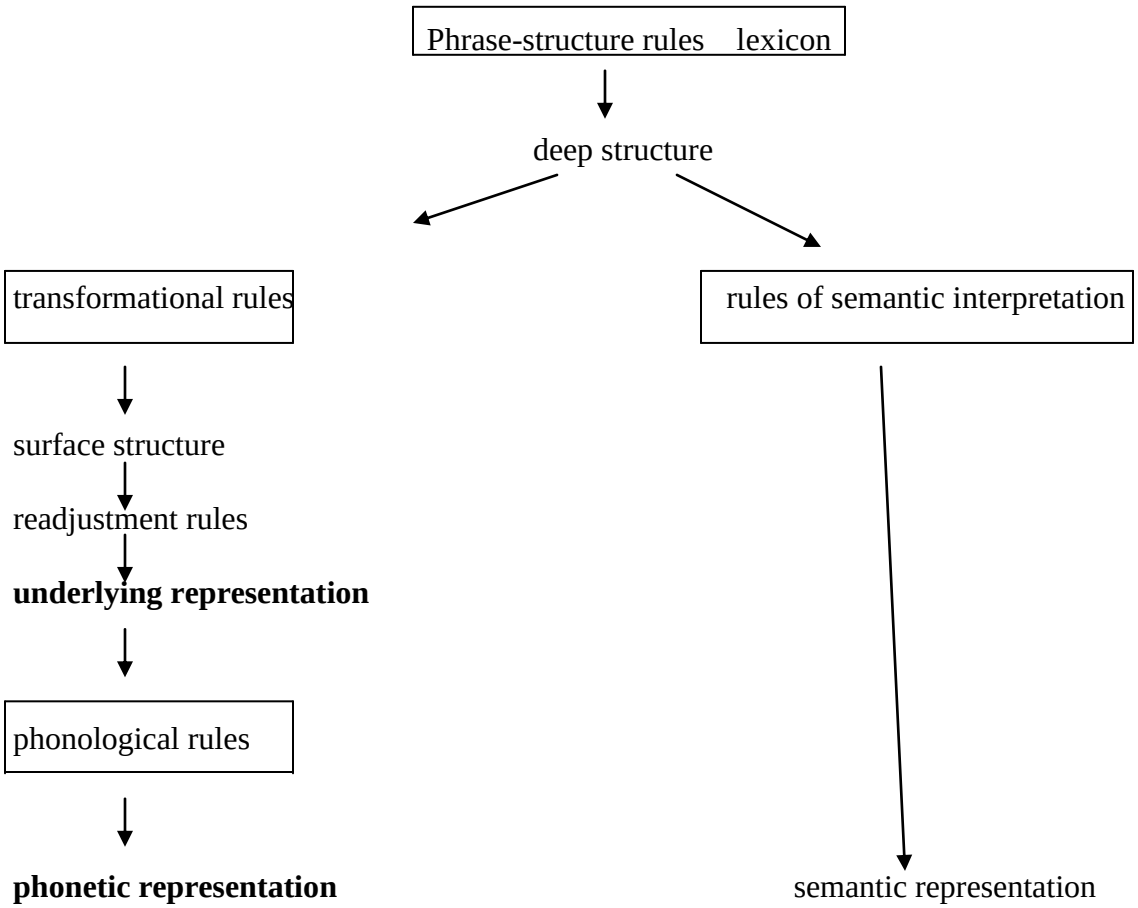
/p/
+obstruent
-sonorant
+consonantal
-vocalic
-continuant
+plosive
-voice

The two distinctive feature matrices for /p/ presented above illustrate minimally specified feature matrix and maximally specified feature matrix, respectively. In (i), all redundant features have been eliminated. In (ii), two redundant features have been included, namely '-vocalic' and '–sonorant'. Normally, obstruents are not +vocalic, and '+sonorant'; in other words, obstruents are automatically '–vocalic' and '–sonorant' .

The Place of Phonology in Generative Grammar

According to Mohanan (1995:27), *SPE* stresses the interaction between phonology and morphology, pointing out the structures which syntax and morphology motivate and the ones motivated by phonology. But there is nonconvergence between these two sets of structures. Therefore, phonology needs extra information on

morphological "construction types". The place of phonology in grammar in *SPE* is shown in the schema below:



(Adapted from Mohanan,1995:27)

In sum, the generative approach to phonological analysis begins by stating the syntactic structure, passes this on to phonology, which can use any relevant syntactic facts (Fudge, 1970:91).

The motivation for the postulation of the underlying form is to account for the intuitive knowledge the native speakers have of general or systematic relationships of certain forms. It is from this underlying form that the surface alternations are derived. For example, Chomsky and Halle (1968:51) point out that as a result of the Great Vowel Shift, there are vowel alternations like:

[I□y] ⟶ [E] e.g. serene serenity
[e□y] ⟶ [æ] e.g. profane profanity
/a□y/ ⟶ / i/ e.g. divine divinity

On the basis of such alternations, they set up the following tense vowels [V] as the underlying phonemic representations:

/ ɛ#/, /æ#/, / I#/.

Similarities and Differences between Classical and Generative Phonology

We begin this section with an observation of some of the similarities that are notable between the two phonological models. Whether classical or generative phonology, the object of study is still largely the same – the sound system of a language. This separates the two from the other areas of language study, e.g. syntax and semantics.

Furthermore, since we have seen that it is possible to make a claim that generative phonology developed out of classical phonemics, it is still possible to make another claim that both classical and generative phonology, to some extent, share the same origin. The fact that classical phonology exercises some influence on generative phonology underscores this point. For example, the underlying forms and ordered rules which characterize generative phonology are already noted in Bloomfield's work. The point of departure here is that Bloomfield separates morphophonemics from phonemics.

Another discernible similarity has to do with the systematic phonetic representation. As it has been made explicit in the organisation of phonology in the two models, both acknowledge the level of phonetic representation. In fact, the underlying phonological representation of generative phonology is similar in many respects to the morphophonemic level of classical phonology.

However, while classical phonemics is pre-occupied with how to 'phonemicize', how to represent unusual allophonic or morphophonemic situations, and so on, generative phonology has as its goal the postulation of ordered rules that deal with the pronounceability of the strings generated by the syntactic component of grammar. Thus generative phonology is not concerned with the problem of analysis.

The positions of the two models in relation to the concept of the phoneme deserve attention. While classical phonemics sees the phoneme as an irreducible contrastive unit of sound, generative phonology regards the phoneme as a bundle of features. Closely related to this is the positing of a phonemic level in classical phonology. As noted by Schane (1973), generative phonology rejected the phonemic level on the basis that it is not abstract enough. It regards the phonemic level as not more abstract than the phonetic level, hence the positing of the underlying phonological representation as a higher level of abstraction than the phonemic level (Giegerich, 1992:30). There is no intermediate level in generative phonology, between the underlying phonological representation and the systematic phonetic representation; the two are related by ordered phonological rules.

Another important difference between the two approaches relates to what is known as "mixing levels". Classical phonology refuses to admit grammatical information into phonological analysis. As Banjo (1983:13-14) says "classical structuralists insist on studying the various levels of grammar separately and independently". But in reality, many phonological descriptions require grammatical information like morphological boundaries and word categories, such as nouns, verbs, and so on. In the English language, for example, it is believed that a complete theory of phonology of English should deal with stress placement. And the placement of stress in a word is partly dependent on whether the word is a noun or a verb, for example **'import** (noun). **im'port** (verb); and **'conduct** (noun), **con'duct** (verb).

Besides, generative phonology does not concentrate on individual phonemes, unlike what obtains in classical phonology. It attempts grouping segments (phonemes) into natural classes. This is based on the assumption that segments that share phonetic

traits usually undergo the same phonological process (Schane, 1973:33). Thus it emphasizes phonological processes.

Finally, the major intention of generative phonology is to extract from language-specific rule ordering (Goldsmith, 1990:2) what rules apply across languages. That is it strives to use phonological information to explain the concept of Universal Grammar. Conversely classical phonology is interested in identifying the phonemes of languages.

Conclusion

From the foregoing it has become clear that, just like any other aspect of language study, the study of phonology has benefited from different approaches. Thus, classical and generative phonology have made the study of phonology more interesting and challenging. The divergent goals and principles that we have noted between the two should not therefore be seen as a negative development. Phonology is part of grammar and since there is just not one grammar of a language, different approaches to the phonology of a language should be expected. Whichever approach an analyst adopts should be based on the motivation for the analysis and the kind of result expected. What each theory does is to try and expand what an earlier theory has done; thus, no theory can completely discard the ideas of its precursors.

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