

On the Correlation of Phonetic and Phonemic Distinctions

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1. Introduction

Following the tradition of functional linguistics, the basic principles of phonological analysis amount to the distinctions between (1) paradigmatics and syntagmatics, (2) segmentics and prosody, (3) phonology and phonetics, and (4) language and speech. From the structural point of view the dichotomy between paradigmatics and syntagmatics is of primary importance. Despite all possible variations in views and disagreements concerning some details, the concepts of paradigmatics and syntagmatics no longer provoke any great controversy among functionalists. Paradigmatics is defined as language structure based on associative relationships, and syntagmatics as language structure based on linear (and simultaneous) relationships. Patterns, or models, of paradigmatic sound structure may be constructed on the basis of distinctive and nondistinctive sound features, phonemes and their phonetic realizations, prosodemes and their phonetic realizations, oppositions, series and correlations. Patterns of syntagmatic sound structure may be otherwise called patterns of the sound structure of words. The constituent parts of the sound structure of words are the following:

1. the sound and phonemic composition of words and morphemes;
2. the phonotactic rules of phoneme distribution, neutralization and syllabification;
3. the prosodic structure of words.

On the other hand, the distinction between phonetics and phonology remains at present the domain of most intensive investigations and numerous controversies. Generally speaking, this distinction may be defined in terms of the dichotomies between language and speech, paradigmatics and syntagmatics. Phonology lies in the domain of language, but not speech, and has both paradigmatic and syntagmatic aspects. Phonetics, on the other hand, lies both in the domain of speech and language (in that it is the level of both indiscrete material speech sounds and discrete 'sound types' of language) and, just like phonology, has both syntagmatic and paradigmatic aspects. The discrimination of speech sounds, language sounds and phonemes may contribute, among other things, to a better understanding of the development of the concept 'phoneme'. As is known, Baudouin de Courtenay tried to find psychophonetic explanations why actually different sounds may be perceiv-

ed as identical entities, making a distinction between sound as mere phonation, which is transitory and variable, and a phoneme as a psychological equivalent of sound, which is permanent and invariable. In other words, speech sounds are opposed here to what covers both language sounds and phonemes, viz., language sounds and phonemes are not differentiated by Baudouin de Courtenay. This, naturally, in no way belittles his contribution to the development of the theory of the phoneme. The idea of discriminating phonemes from sounds prevails in Sapir's works. Nevertheless, the lack of proper discrimination between language sounds and phonemes continues whenever phonemes are defined as classes of sounds, or as sounds distinguishing one utterance from another, etc.

2. Phoneme and Feature Definitions

A real breakthrough was marked by the development of the theory of the phoneme when Roman Jakobson with his co-workers, first of all N. Trubetzkoy, introduced the definition of the phoneme as a cluster, or bundle, of DFs. This established the concept of the phoneme as a member of phonematic oppositions. Since then the progress of phonology has depended first and foremost on the theory of DFs. At the present stage of phonological investigations there are available exhaustive inventories of phonetic features, expressed in articulatory, acoustic or perceptual terms (cf. the works by Peter Ladefoged) and a number of systems of DFs, such as those by Jakobson, Fant and Halle, or Chomsky and Halle, with all the possible variations and modifications. Among the problems which demand special attention one may point out the need of further elaborating the systems of DFs by way of correlating phonemic distinctions with phonetic ones. Though on the whole we may consider those systems of DFs better in which DFs have clearly stated phonetic correlates, DFs need not necessarily be directly related to phonetic features. The lack of direct correspondences between phonemic and phonetic features ensues first of all from the binarism and hierarchical ordering of DFs and oppositions (naturally, if we accept these principles of phonemic analysis). Jakobson has greatly influenced and even determined the linguistic thinking of phonologists by demonstrating the possibility of presenting all types of oppositions and features as binary, and it must be conceded that, even purely hypothetically, the binary structure of DFs seems most plausible; DFs as elementary units of the phonological structure must be characterized by most elementary relationships, and binary oppositions are the most elementary of all possible relationships. The practice of phonological analysis, moreover, has fully confirmed this, as the most exact definitions of phonemes, their most consistent classifications and hierarchical order seem to be those which are expressed in terms of binary features. Besides, Trubetzkoy's system of DFs and oppositions may be freely integrated into binary systems, though, naturally, with some modifications of the former. Trubetzkoy's distinction between multilateral and bilateral opposi-

tions preserves its significance in that it reflects the degree of closeness of relationships of phonemes, viz., the most close relationships in the case of bilateral oppositions and more loose relationships in the case of multilateral oppositions. Secondly, in terms of proportional and isolated oppositions we can express the degree of paradigmatic integration of phonemes. Reinterpretation, however, is indispensable in the case of Trubetzkoy's gradual, privative, and equipollent oppositions. As has been demonstrated by Jakobson, Halle, Fant, Chomsky and others, the distinctions between vowels of different tongue-height may be expressed in binary features. The notion of graduality, just like those of privativeness and equipollence, is useful, though, when we want to indicate the physical implementation of sound features. From the point of view of their physical nature, binary features may be termed privative when they are based upon the presence and absence of the same sound property, gradual when they present different gradations of the same property, and equipollent when they are represented by two physically different and logically equivalent properties. What I am aiming at is the fact that though DFs may be presented as universally binary, they are nevertheless based upon different relations of phonetic features. It may be noted here that for the sake of consistency of phonological analysis a positively expressed feature and the respective negatively expressed feature should be considered as two different features and not the same feature with the plus and minus values. The set-up of the hierarchies of DFs must be such that oppositions of a higher rank comprise oppositions of a lower rank. It follows from this that subclasses of different classes of phonemes are not structurally and functionally identical and must be set up independently, irrespective of the possible identity of the anthropophonic nature of their DFs. Thus phonetic features, distinctive for one set of phonemes, may be nondistinctive for another (cf. voice in sonorants, or the occlusiveness of nasal sonorants).

3. Correlates of Features

The same DFs may have different phonetic correlates, and, on the other hand, the same phonetic features may be realizations of different DFs. Phonologists and phoneticians have always been fully aware of the fact that what is referred to as a single DF is actually a complex of articulatory and acoustic parameters. Besides, this complex may be different in the realization of different phonemes of the same series. Thus the labial series may consist of purely labial and labio-dental articulations. In some cases of consonantal features referring to place of articulation the exact points of articulation are phonologically essential. Thus, in English in the series of fricative nonstop obstruents there are three kinds of apicals whose contrasts may be expressed in the most natural way as *dental* (/θ ð/) vs. *postdental* (*nondental*) (/s z š ž/), with the postdentals further contrasting as *alveolar* (/s z/) vs. *postalveolar* (*nonalveolar*) (/š ž/). The contrast of the English /l/ with /r/ may also be

expressed by means of the features *alveolar* vs. *postalveolar*. In many other cases different, though adjacent points participate in the production of the same local series. In English the phonetically pharyngeal breath /h/ constitutes the same series of nonlabials with the dorsal consonants. In Lithuanian and Russian there are two apical series; in the case of obstruents these differ phonetically as dental and postdental, and in the case of sonorants, as alveolar and postalveolar. For the sake of economy of description these two pairs of features may be reduced to a single pair and termed arbitrarily *front*, or *advanced* vs. *back*, or *retracted*. How the same phonetic features may serve as realizations of different phonemic features may be illustrated by the distinctions *gliding* (*diphthong*) vs. *non-gliding*, *long* vs. *short*, and *checked* vs. *free*. In the case of the correlation of contact (*checked* vs. *free*) the checked vowels are the marked members of the opposition, which are realized as short monophthongs, and the free vowels are the unmarked members, which are realized as diphthongs and long vowels.