

# On the Uses of Complementary Distribution

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The Snow Queen said to me: 'If you assemble this word, you will be your own master and I shall give you the whole world and a pair of skates.'

H.-K. Andersen

## 1. The problem stated

The concept of complementary distribution (CD) played an outstanding role in all brands of classical phonology. It is implicitly present in de Saussure's *Course*, and it is a cornerstone of American descriptive linguistics, which did not receive any impulses from de Saussure. Trubetzkoy made wide use of it in the opening chapters of *Grundzüge der Phonologie*. In glossematics, the commutational test is centered on the same concept. The 20th century has witnessed the rise and fall of naive distributionalism, but the concept of CD has not developed since it became current, and today its range of action is defined as vaguely as it was fifty years ago.

If, together with pre-generative phonology, we assume that the sound string is made up of phonemes and that phonemes are realized in allophones, we shall arrive at the trivial conclusion that the allophones of one phoneme stand in CD. This statement follows from the definition of the allophone and needs no proof. The real problem is whether the statement about allophones of one phoneme standing in CD can be reversed, that is, whether segmental elements occurring in mutually exclusive positions are thereby allophones of the same phoneme. The most famous example of this type was discussed by Trubetzkoy and has become a locus classicus. Trubetzkoy observed that in Modern German *h* and *η* stand in CD (*h* is word-initial prevocalic, and *η* is word-final postvocalic) and yet represent different phonemes.

## 2. Present weakness of the theory

Theory of CD is marred by three weaknesses: position is taken for an unequivocal concept, which it is not; the elements whose distribution interests the phonologist are referred to simply as sounds, which is insufficient and misleading; the moment in the overall process of decipherment at which CD comes in is unspecified.

CD presupposes mutually exclusive positions. Usually, *position* means environment and is defined in phonotactic terms (for instance, between vowels, before voiceless consonants, after *s*, word-finally, etc.). It is enough to add prosodic factors for the picture to become very complicated. Thus, in a language that allows only schwa in the unstressed syllable, schwa will turn

out to be an allophone of all stressed vowels. If *syllabic* and *nonsyllabic* are positional factors, *i* and *j* are always allophones of one phoneme by definition.

The example of *h:ŋ* is looked upon as unique because Trubetzkoy discovered two *phonemes* in CD. If he had searched among allophones, he would have found any number of them belonging to different phonemes and still standing in CD. Consider the situation in Russian. In this language there are palatalized and nonpalatalized consonants. Before the palatalized consonants all vowels are fronted. It follows that not only [a] before a palatalized consonant (conventionally designated as [ä]) is in CD with [a] before a nonpalatalized consonant but *all* the fronted vowels - [ä], [ö], [ü], [e] - stand in CD with *all* the retracted variants, for example, [ā] and [o]. Why are only [a] and [ä] felt to be allophones of one phoneme, rather than [a] and [ö]? According to Trubetzkoy, [a] and [ö] do not share a unique set of distinctive features and therefore belong to different phonemes. This is a correct but tautological answer; besides, there is no way of knowing the distinctive features of every phoneme before the phonemes themselves have been isolated.

### 3. Zinder's approach

Another approach to this problem goes back to Ščerba but is mainly known from Zinder's work. In Zinder's opinion, only such sounds constitute one phoneme as stand in CD *and* can alternate within the same morpheme; [a] and [ä] fulfill both conditions [a] and [ö] do not: compare [dal] 'gave' (singular) and ['däl'i] 'gave' (plural) (/l/ and /l'/ are independent phonemes). That [a] and [ä] arise automatically, depending on the quality of the postvocalic consonant, is obvious because [dal] *becomes* [däl'] under clearly defined circumstances and [a] is in CD with [ä]. Since [dal] never becomes [döl'] under similar circumstances, there is no need to connect [a] and [ö]. It is the morpheme and not position that serves as the generator of allophones and provides a natural limit for subphonemic alternations.

Zinder's rule is correct: if two sounds stand in CD and alternate within one morpheme, their alternation must indeed be caused by the changing phonetic environment, so they are allophones of the same phoneme. All Russian vowels followed by palatalized consonants are in CD with all vowels standing before nonpalatalized consonants; in any language, all vowels before *n*, *m* are nasalized and are in CD with non-nasalized vowels, etc., but the unity of the phoneme is achieved through the alternating morpheme. And yet, Zinder's rule cannot be applied in the search for the phoneme, and as a tool of phonological discovery it is as useless as the rule formulated by Trubetzkoy. In order to work with this rule, we must have the entire speech sequence segmented; for instance, we must know that *dal* is [d-a-l], that *dal'* is [d-ä-l'], and so forth. But if we are at the stage of assembling phonemes, if the nondiscreet current of speech has not yet yielded phonemes, transcriptions

like [d-a-l] do not exist. Phonological analysis begins with morphological segmentation. From alternating morphemes we obtain phonemes as bundles of abstract distinctive features, then discover their phonetic correlates, and finally recognize the allophones of each phoneme. The only possible order of phonological discovery is this: morphemes--phonemes with their distinctive features--allophones. Allophones can never be obtained before phonemes, and all attempts to reverse the sequence and first to obtain allophones in order to assemble them into phonemes is self-deception. The same conclusion can be reached by the purely logical analysis of the rules proposed by Trubetzkoy and Zinder.

Here are these rules once more. Trubetzkoy: two sounds belong to the same phoneme if they stand in CD and possess the same unique set of distinctive features. Zinder: two sounds belong to the same phoneme if they stand in CD and alternate within one and the same morpheme.

### 4. Conclusion

Both Trubetzkoy and Zinder, though they have only started their search for the phoneme, already operate with the concept of the *same phoneme*. But what can they know about phonemes before phonemes have emerged? How did they arrive at their rules? Evidently, they know what the *same phoneme* is (this is all the more unexpected in Zinder's case, for he does without distinctive features). CD as a tool of discovery is worthless. At the stage at which it could have been profitable, before the emergence of segmented and fully characterized phonemes, it cannot yet be applied, and at the final stage, when the phonemes have been obtained, its function is modest: it either emphasizes the fact that the allophones of one phoneme must have the same distinctive features (a conclusion that follows from the definition of the allophones as a contextual realization of the phoneme and the phoneme as a bundle of distinctive features) or brings out the decisive role of the morpheme in phonetic segmentation (but this too is trivial by the time the search is over). Only in historical phonology, with its emphasis on letters, Zinder's rule can be put to good use.