ON THE MORPHEME BOUNDARY AS A CRITERION OF PHONEMIC DIVISIBILITY

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ABSTRACT

Neither the morpheme, nor the word boundary can be regarded as the absolute criterion of phonemic divisibility of a phonetic complex. Phonemic divisibility in language does not fully coincide with a phonemic divisibility in speech. In most cases phonetic characteristics by themselves determine phonemic divisibility.

The assumption that a morpheme boundary can not lie within a phoneme is not argued by the representatives of different linguistic trends. Nevertheless, this statement doesn't seem to be as obvious as it is usually believed.
First of all, it must be noted that the present report is concerned with the branch of phonology in which the problems are treated in accordance with investigations of speech production and speech perception mechanizms. This phonological trend is bound with traditions of Leningrad Phonological school. The thesis that the morpheme boundary is the criterion of phonemic divisibility remains indisputable for modern representatives of Scherbian phonology /1/.
In the present report only the problems of the inflexional, fusion languages are treated.
The statement that a morpheme boundary can not lie within a phoneme is a consequence of Scherba's understanding of the phoneme as a linguistic unit which can be, on it's own, the signifier of morpheme. This definition of the phoneme is bound with the specific idea of the origin of the phonemic level in general and concrete phonemes in particular.
In his article "O diffuznyh zvukah" ("On Inarticulate Sounds") L.V.Scherba says that human speech originally consisted of inarticulate sounds, the latter being afterwards divided into phonemes. The morpheme boundary was "the cause" of this division /2/. That means that if a morpheme boundary does not lie within a phonetic complex, the latter is not divided into phonemes, as there are no reasons for this division. Scherba's state-

ment, then, is connected, first of all, with the origin of phonemic level in human language, phonemes being differentiated later on the basis of inarticulate sounds. Thus, Scherba considered a morpheme boundary as the cause of phonemic divisibility, rather then a criterion of it.[1]
It seems that the problem of the origin of phonemes must not be identified with the problem of the divisibility of definite phonetic complexes in a language with a developed system of phonemes. Even accepting the assumption that in a developed language the speakers do not divide a phonetic complex which has no morpheme boundary within it (for there is no functional reason for such division according to Scherba), the reverse is not necessarilly true. In other words, if a morpheme boundary does lie within the complex in question, the latter may or may not be bi-phonemic.
The above is not an evaluation of Scherba's concept, but rather the tracing of the origin of the idea that a morpheme boundary determines the phonemic divisibility.
Let us define the phoneme as it is understood in the present report.
The phoneme is, no doubt, something sounding in speech, and a certain image in the psycholinguistic system. (We are not interested now in a very difficult problem of the correlation of various speech sounds and the corresponding linguistic and psycholinguistic inits). At the same time the phoneme is a constituent of signifiers of semantic units.
It seems that the phoneme as the constituent of the signifier in speech and phoneme as a unit of storage of signifiers in a speaker's lexicon should not be mixed up.
Being the constituent of the signifier in speech, the phoneme comes to the fore as a phonetic unit, characterised, first of all, by its "material" (acoustic, articulate, perceptive) qualities, as the "brick" of sounding. It means that a psycholinguistic system should include the set of "phonemes-sounds", the set of

sound images.

As the unit of storage of signifiers in psycholinguistic lexicon the phoneme is a "brick" of the image of word sounding in the psycholinguistic system of an individual. If a signifier is kept in lexicon as the image of sounding then the "storage phoneme" is the image of the "phoneme-sound". It is possible, however, to suggest that the signifier is stored in lexicon as a chain of abstract units, a chain of indexes, not bound with the image of sounding. If so, the psycholinguistic system must include a set of "storage phonemes" and some mechanisms for re-coding "phonemes-sounds" into "storage phonemes".

In any case, the signifier of the word in "phonemes-sounds" may not, on the whole, coincide with the signifier of the word in "storage phonemes". For instance, the final "storage phoneme" in the Russian word ЛЕС is С. If in speech chain this word occurs before a voiced obstruent then the "phoneme-sound" З appears in the final position. To find the word in the inner lexicon, a speaker of the language should use some psycholinguistic rules to re-code the "phoneme-sound" chain ЛЕЗ into the "storage phoneme" chain ЛЕС.

It seems that Leningrad Phonological school, postulating the constant set of phonetic features for the phoneme, is oriented mostly to the "phoneme-sound". The concepts of Moscow Phonological school, postulating the constant phonemic organisation of the morpheme, are more applicable to the description of "storage phonemes", for it is quite possible that the basic allomorphs or phonetic allolexes represent semantic units in the internal lexicon; the latter, however, should be verified by experiment.

The question, whether the morpheme boundary is always connected with phonemic divisibility of phonetic complex, is solved according to the above-mentioned understanding of the phoneme.

The only functional reason to regard a boundary as a criterion of phonemic divisibility should be kept in mind: the boundary may be the place of coming together in the speech chain of two independent units, each of them represented in lexicon and, therefore, characterised by the permanent phonemic structure. So, if in the process of speech production or speech perception two independent semantic units occur side by side, then the phonetic complex, appearing at their juncture, is naturally biphonemic.

In derivatives, however, morphemes don't come together as independent units. A derivative, existing already in the language, is not "built" of morphemes in speech chain. This statement is confirmed by psycholinguistic experiments, carried out specially for the purpose. The experiment has shown that derivatives and non-derivatives required for their production and perception, while words made ad hoc, - and it is these words which rely on morpheme, - need more time, at least, for perception /3; 4/. The derivative's "life in language" is a gradual loss of motivation /5/. The phenomenon of "morphological absorption" was for the first time described by Bogoroditsky /6/. So, a morpheme juncture is usually not a boundary between independent units coming together in speech-processing. The more is the word assimilated by the language, the more its motivation is erased and the less important is its morpheme structure for phonological interpretation of sounds representing its signifier.

As it is not necessary to preserve the inner form of the word, the replacement of "inconvinient" combinations of phonemes at the morpheme juncture seems to be natural. Quite natural is also the fact that the combination incovinient for pronounciation is replaced by a phonetic complex coinciding with a phoneme of the language. And so, it is no suprise that in the word ДЕТСКИЙ the morpheme boundary lies within Ц. This Ц seems to be the "same" (in acoustic, articulatory, perceptive aspects) as the other Ц in the same position (e.g. in the word СТРЕЛЕЦКИЙ). So, if we speak about "phonemes-sounds", Ц in ДЕТСКИЙ can be nothing but the phonological complex Ц.

Yet the fact that the morpheme boundary lies within Ц in ДЕТСКИЙ gives no reasons to consider Russian Ц as biphonemic, for phonetically Ц≠ТС and morpheme boundary does not often lie within Ц, besides we should just call for common sense. The appearance of Ц in ДЕТСКИЙ is a manifestation of morphological absorption of signifier. This process takes place on a word level and is the replacement of the "phoneme-sound" combination by one phoneme and has nothing to do with the phonological interpretation of the "phoneme-sound"

Some other conclusions can be drawn concerning "storage phonemes". The interpretation of Ц in ДЕТСКИЙ depends upon the morpheme organization of this word in internal lexicon.

The problem of morphological organisation of the word ДЕТСКИЙ is rather difficult. Regarding linguistic description as a model corresponding to speech behavior, the essence of the matter is as follows: does the speaker of language re-code the set of "phonemes-sounds" ЦК into the set of "storage phonemes" ТСК , restoring in this way the signifiers of morphemes in derivative. If so, the "storage phoneme" chain ТСК and if it is not so, the

"storage phoneme" chain ЦК is the correlate of "phoneme-sound" chain ЦК in the word ДЕТСКИЙ. It depends, in its turn, on the degree of the loss of motivation in concrete words. It is also possible that the restoration of morpheme signifiers and the re-coding of "phoneme-sound" chain take place only in special speech situations, for example in the process of derivation, when the word stored in the lexicon serves as a model for a new derivative. It is also well known that new derivatives are not constructed as a sum of morphemes, they are formed by analogy with the derivatives already existing in the language.

As there is no need to preserve the inner form of the word, the way of accomodation of phoneme combinations at the morpheme juncture is also adopted from the pattern-word.

Thus the way of re-coding of juncture "phonemes-sounds" into "storage phonemes" in one derivative does not seem to contain information about the "storage phoneme" chain (correlating to the same "phoneme-sound" chain) of other derivatives. In each particular case the solution lies in the psycholinguistic lexicon.

All these facts make it possible to come to the following conclusion: the morpheme boundary is not an indisputable criterion of phonemic divisibility for either "phonemes-sounds" or "storage phonemes".

Now let us turn to the problem of word boundary as the criterion of phonemic divisibility.

Words are, no doubt, independent linguistic and psycholinguistic units. Phonetic complex appearing at their juncture is biphonemic "storage phoneme" complex, if we do not, of course, assume that every word-combination is included as a unit in the internal lexicon. So, word boundary shows that phonetic complex appearing at a word juncture is biphonemic.

The language speaker can never break the limits of his language habits, so it is no wonder that sounds, corresponding to the "phonemes-sounds" appear at word juncture. It seems, however, that the language speaker must have some special rules for production and perception of word juncture phonemes. The latter statement is supported by existence of phonemes which appear only at the juncture. Besides, it is possible that solutions concerning word juncture phonemes may be provided by higher linguistic levels, i.e. after reaching a solution concerning the whole word, the stage of recognition of "phonemes-sounds" being omitted. So, conclusions about the phonemic organization of juncture phonetic complexes should not be transferred to the coinciding complexes (maybe even coinciding by chance). The word boundary, then, can-not serve as a reliable criterion of phonemic divisibility for "phonemes-sounds".

Summing up, we can conclude that neither morpheme nor word boundary is a criterion of phonemic divisibility of phonetic complex, if we speak about "phoneme-sound". The morpheme boundary is not the criterion of phonemic divisibility either if we speak of "storage phoneme". The problem of phonemic set of a derivative should be specially solved for each word. If we speak about "storage phonemes", then word boundary shows phonemic divisibility of phonetic complex appearing at a word juncture.[2]

How can be, then, solved the problem of phonemic divisibility for phonemes-sounds? V.Kasevic, who proceeds from the fact that speech is a continuum, concludes: "...the problem of segmentation belongs to linguistics rather than to natural sciences, i.e. acoustics or physiology" /1, p.17/. This statement, however, seems to be unacceptable.

If the speech chain were absolutely undivisible "materially", articulatorily, acoustically, and perceptively, the linguistic divisibility would be also absolutely impossible, for the latter can be nothing but an interpretation of information contained in the "material" side of speech. In fact, there are no gaps in speech chain, but the problem is not to find the very place where a phoneme boundary lies, but to identify the number of phonemes included in a phonetic complex. This problem is easily solved, if only "material" characteristics are taken into account. Speech is a successive changing of states of speech organs, and, hence, of acoustic and perceptive characteristics. In most cases there are no problems in identifying the quantity and character of such units. Of course, this approach, in the case of sounding speech, can cause some difficulties, because of coarticulation, reduction and so on. But the question is the divisibility of phonetic complex in language, not in speech. If a segment of speech chain does not contain enough phonetic information for its divisibility, coinciding with segmentation as it takes place in language, then the information of higher levels is used. Generally, however, there is no doubt that the chain CV (let us take Russian as an example) consist of at least two articulations. As both consonants and vowels can themselves be semantic units, every CV chain undoubtedly consists of two phonemes. Looking for a morpheme boundary for a phonemic interpretation of each CV chain seems to be as naïve as the method of quasihomonyms.

It should be noticed that the problem of phonemic divisibility rarely arises at all, outside affricates and diphtongs.

It seems that this problem cannot be solved with the help of phonological methods. We think that psycholinguistic experiments should be called to do it.

NOTES

1 It can be supposed that mechanisms of this kind are operative in the process of child mastering phonemic system.
2 Morpheme boundaries differ. A phonetic complex with a boundary between a stem and a flexion is more probable divided phonemically than a phonetic complex with a morpheme boundary of some other type. A boundary between the stem and the flexion, here, is closer to a word boundary.

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