

PROPERTIES AND FUNCTIONS OF THE PROSODIC PHENOMENA IN LANGUAGES

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ABSTRACT

Prosodic distinctions are quantitative and relational. Their perception implies comparisons on a syntagmatic axis, which involve the element of time. All these properties are corollaries of the basic fact that sound intensity, pitch and duration are dimensions of the sound signal.

The functions of the prosodic phenomena in languages are determined by their nature.

PROPERTIES OF THE PROSODIC PHENOMENA

The term "prosodic" is used in this paper to denote all linguistic phenomena based on sound intensity, pitch or duration. These phenomena are interconnected by frequent co-variation (for instance, in many languages the prominence of the accented vowel is implemented simultaneously by greater intensity, increased duration and higher pitch) or by implication and incompatibility rules (e.g., in Ancient Greek tone contrasts imply both accentedness and length, so that unaccentedness and shortness are incompatible with distinctive tones). However, such cases still do not entitle us to group intensity, pitch and duration together. This can be done only if they have at least one common property.

Various authors mention such properties, or hint at them, but I do not know of a scholarly work where an exhaustive list of such properties would be presented. Let us try to enumerate them now.

(1) Distinctions in the domains of intensity, duration and pitch have a quantitative character. They do not imply the presence or absence of a phenomenon (cf., for a different situation, nasality, voicing, rounding, aspiration etc. in the realm of the inherent features), but a variation as to the amount of a phenomenon,

always along a continuous scale.

(2) All three distinctions considered here are relational. Since pitch, intensity and duration of sounds vary greatly depending on individual properties of speakers and on communication circumstances, it is usually impossible to give absolute numerical values for these phenomena, both in general and in a particular language. Thus, in order to determine the linguistically relevant prosodic characteristics of a sound, we have to compare it to some other sound(s) within the same spoken chain.

(3) This comparison takes place on a syntagmatic axis, in contradistinction to the mere paradigmatic comparison which suffices for the perception of inherent features. The perception of stress and of intersyllabic tone involves a comparison between syllables, and the perception of intrasyllabic tone ("Tonverlauf") is based on the comparison between various points within the given syllable (or, more exactly, the given syllable nucleus). Such syntagmatic comparisons must precede the comparison to the other member of the phonological paradigm. Quantity contrasts imply even three relations:

- a) the duration of the given vowel, i.e., the time distance between its beginning and its end;
- b) the ratio of this duration to the duration of other sounds within the given spoken chain;
- c) the paradigmatic contrast between that ratio and a different ratio in the word which constitutes the other member of the contrast.

(4) The syntagmatic comparison involves the element of time: it is necessary to compare points at a certain time distance within the same utterance.

Our enumeration of the properties of prosodic phenomena should not be concluded

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here. Another fact, usually unmentioned in the existing scholarly literature, also deserves our attention, and I would like to insist on this fact.

(5) All prosodic phenomena are based on variation in the dimensions of the acoustic signal. Dimensions are properties of magnitude which can be mapped on a continuous scale, so that the reduction of this property to zero implies the disappearance of the object characterized by the property. Sound signals, being vibrations of material particles, have three dimensions: amplitude, which roughly corresponds to sound intensity, frequency, which is the basis of pitch, and duration. Thus, our three categories of prosodic phenomena cover the whole range of dimensions of the acoustic signal. These entities inevitably exist in all utterances, and even in all speech sounds (a certain reservation must be added in connection with pitch in some consonants, where the picture is more complex). In contradistinction to this, an inherent phenomenon may be present or absent in a sound; if it were present in all sounds, it would be unable to accomplish its distinctive function.

Now, the question arises: are all five properties enumerated independent from each other? Or does there exist a logical conditioning among them? And if so, which is the fundamental one?

I submit the following answer to these questions: the crucial fact is that prosodic distinctions are based on the dimensions of the sound signal, i.e. on elements which are ubiquitous in language. The other four facts are corollaries to this one and constitute a logical chain. Since we have to do with phenomena which are present anyhow, and which are dimensions, absolute (yes or no) distinctions are precluded, so that contrasts are necessarily quantitative. And since the given elements also vary depending on communication circumstances and peculiarities of individual human voices, distinctions are not based on absolute numbers, but on relations - obviously within the same spoken chain, which means in the speech of the same speaker and under the same communication circumstances. Given the linear character of speech, relations within the spoken chain are always relations between different points in time. Thus we can conclude that the logical and

the perceptual particularities of prosodic phenomena are conditioned by their physical nature.

In the opinion of many authors the fundamental characteristic of the prosodic phenomena is that they are connected with the concept of syllable. In fact, what matters here is not the syllable, but the vowel. The physical and perceptual properties of vowels render them the most appropriate domain for distinctions based on the dimensions of the sound signal. Only in exceptional cases do consonants carry contrasts based on pitch or intensity, and consonantal contrasts as to duration are less frequent than corresponding contrasts in vocalism. Since a syllable usually contains a vowel, a relationship between prosodic phenomena and syllables arises.

FUNCTIONS OF THE PROSODIC PHENOMENA

The linguistic functions of the prosodic phenomena are threefold:

(1) They play a decisive role in what is known as sentence intonation.

(2) They serve to divide utterances into words or syntactic groups, thus facilitating the act of communication.

(3) They may be distinctive on the level of word phonology.

Note that in written texts the first function is performed by punctuation signs, and the second function basically by blanks between words. The third function of the prosodic phenomena is shown only by certain writing systems (e.g., Greek, Czech, Hungarian), whereas other alphabets fail to furnish this kind of data (Russian, Lithuanian, Serbocroatian, English, Rumanian) or provide only partial information (Italian, Spanish, German).

The first function (sentence intonation) is an exclusive domain of prosodic phenomena. True, some morphemes such as interrogative pronouns or particles can assume certain functions belonging otherwise to sentence intonation, but we have to do here with morphosyntactic units, and not with inherent sound features. In the second, configurational function prosodic phenomena are much more common than the inherent ones. However, the latter features also can serve as boundary signals (by the, pauses, which so often appear in this function, also belong to

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the prosodic domain, since they are definable as a reduction of sound intensity to zero). As to the third function (word phonology), it constitutes the principal domain of inherent sound features. In all languages of the world those features serve to distinguish phonemes, which implies that they distinguish words, whereas in only a part of the languages - a very large part, to be sure - is that function performed also by prosodic features.

Looking at the same facts from another viewpoint, we may state the following: prosodic phenomena in the first function are universal, in the second function they occur in almost all languages, and in the third function in the great majority of languages. Thus the range of functions of prosodic features across languages includes all functions which can be accomplished by any sound element. This range embraces the whole field covered by the inherent features plus a vast domain particular to the prosodic phenomena.

The functional delimitation between prosodic and inherent phenomena is governed by their physical nature. The so often recurring types of semiotic information conveyed by sentence intonation require vehicles that are ever-present. This is why only variation in the dimensions of the speech sounds is suitable for this role. It is even hard to imagine how inherent features could accomplish such a function. Should segmental features be added or subtracted, or should this happen to entire phonemes? Anything of that kind would largely increase the complexity of linguistic patterns and possibly also interfere with the lexical message of the utterance. Basically the same is valid for the configurational, i.e., the culminative, demarcative and interrogative functions, which are so important for the understanding of the verbal message. True, inherent features of segmental phonemes, too, play sometimes a role in these domains, but such situations are marginal and incidental. Even in such instances the primary function of the segmental entities is to denote lexical (or morphological) meanings, but their distributional characteristics cause their presence to be interpreted by the hearer also as a signal helping him to determine the boundaries of a word or of a syntactic group.

The exclusive or predominant use of prosodic phenomena on the levels of sentence intonation and word configuration makes it possible to avoid an interference of signals pertaining to these domains with the segmental composition of the word. However, the question arises: what happens when sentence intonation patterns get superimposed to the prosodic characteristics of words in languages where these characteristics are relevant in word phonology? The answer to this question is very instructive. A coexistence is perfectly possible in spite of the circumstance that both systems of signs utilize the same physical substance, i.e., the variation in the dimensions of the sound signal. What gets realized is a vector-type compromise between the two systems. The prosodic shape of the word is materialized as a modification of the pertinent segment of the sentence intonation pattern, - or the sentence intonation is manifested as a modification of the prosodic shape of the word. This is possible because we have to do here with quantitative and relational contrasts; such compromises would be unimaginable in the realm of inherent phonological phenomena with their "yes or no" contrasts.

The vast field of lexical meanings necessitates the use of many more distinctions than can be supplied by the limited set of prosodic distinctive features. Only the more numerous and more variegated inherent sound phenomena can accomplish this role. In this case the position of the prosodic phenomena is peripheral. They are not indispensable and may be absent. True, in many languages they belong to the inventory of DF in word phonology, but even there the preponderance of inherent phonological phenomena is incontestable.

SOME OTHER CORROLARIES TO THE NATURE OF THE PROSODIC PHENOMENA

The abstract, relational character of the prosodic phenomena is responsible for the fact that speakers are less frequently aware of their presence, let alone of their nature. Segments defined by inherent sound features are more tangible. As a rule even the linguistically untrained speaker is able to describe, if asked, the segmental composition of

a word. As to forms differentiated only by their prosodic characteristics, the same speaker often "feels" that they are different, but usually he is unable to identify the units which carry the difference. This explains why so many writing systems do not note the prosodic phenomena, although they normally show all distinctions based on inherent sound features.

Also the difficulties experienced by persons trying to master a prosodic pattern in the process of foreign language learning are attributable to the abstract nature of the phenomena in this domain. The same circumstance influences the diachronic fate of prosodic contrasts in word phonology, which show much less stability than distinctions based on inherent features. To be sure, in the past of various languages we find many instances where an inherent feature, such as voicing or consonantal palatalization or aspiration, disappeared from the system, or was introduced into the system. But this always concerns only a fraction of the inherent features operative in the given linguistic pattern, whereas prosodic distinctive features can all disappear from the system. This happened for instance in Polish, in Upper and Lower Lusatian, in many Western Macedonian dialects, etc. Standard French tends towards the same goal by eliminating the last traces of vocalic quantity. Structural differences in the prosodic domain play an extremely important role in languages with complex prosodic patterns, such as Chinese, Thai, Japanese, Swedish, Norwegian, Serbo-Croatian, Slovenian or Latvian. Apparently the average lifetime of a prosodic distinction is shorter than that of an inherent distinction. The topic deserves further study. It would be a worthwhile task to calculate, on the basis of language histories known to us, approximate life-expectancy indexes for each DF, inherent or prosodic, or, for that matter, of various phonemes or categories of phonemes. The results would furnish a basis for further investigations seeking to establish the causes of the different fate of various entities involved.

We can conclude that the understanding of the true nature of the prosodic phenomena contributes to the understanding of their behavior in many respects.