

THE HIERARCHIC PRINCIPLE

BERTIL MALMBERG

We owe to Roman Jakobson the principle of the hierarchic structure of the linguistic expression (since his *Kindersprache*, 1941). What Chomsky's school has done is to carry over the principle formulated by Jakobson to the other levels of human language. It is also basic in Hjelmslev's glossematic theory. In fact, this idea was far from being new when put forward by these two famous scholars. We know that the ancient distinction between SONANTS and CON-SONANTS (= those which sound /alone/ and those which sound together /with others/) goes back to Latin and Greek grammar. A principle which implies the existence of certain basic, conditioning (governing) units to which others (governed), according to given rules, can be added is a condition for the strongly creative power of human language. Chains of phonemes are built up in such a way that given syllabic nuclei surrounded by their satellites follow each other in series that can be expanded infinitely.

I have already had the occasion of commenting briefly upon the concept of distinctive feature. I underline that I look upon the feature as a form unit which, like any other functional element in language, has its concrete physical manifestation (in this case described as combinations of given phonetic qualities, the specification of which can be chosen by the descriptivist). How to define these features in formal (non-physical) terms is a problem I do not want to take up today. It is, however, neither easier nor more difficult than the corresponding definition of the phoneme.

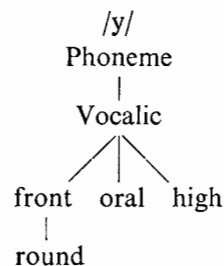
My thesis is that on all levels of linguistic structure, the same hierarchic principle is valid, and that from the feature up to the sentence, the paragraph, and the discourse, we find the same interplay of conditioning and conditioned units. This principle is the same on the paradigmatic and on the syntagmatic level, in synchrony and in diachrony. Already in the classical phonetic definitions, a certain order was maintained. It was e.g., said that something was VOCALIC, ORAL, or OCCLUSIVE before it was said that it was BACK or HIGH, DENTAL or PREPALATAL respectively (just as we specify that a certain animal is a bird or a reptile before we indicate that it is carnivorous or not). Qualities such as high, bilabial, uvular or labiovelar were specifications within more general categories such as vowels, stops, and nasals. The feature fricative

cannot be combined with features like vocalic or nasal, the feature voiced not with vocalic (since voice is not distinctive in vowels), etc.

In exactly the same way, the consonant of a syllable, as marginal, presupposes the vowel and is combined with it according to rules which to some extent may be general, but most of which are at any rate determined by the respective arbitrary phonotactic system. The unstressed syllable of a group presupposes the stressed syllable as nucleus. The stressed syllable can function alone, the unstressed cannot.

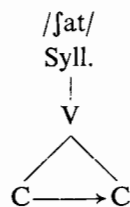
The structure of the sentence is manifested on the expression level, at least as a first general approximation, by the intonation contour(s). A rising intonation indicates continuation, a falling marks the end of something: $\text{---}\uparrow$ $\text{---}\downarrow$. Thus the falling contour is a condition for the rising (governing) but not vice versa. If a rise appears alone, it implies a non-manifested continuation (a lacking answer, etc.).

Chomsky and Halle say in their *Sound Pattern of English* (1968:300) that "the features themselves will be seen to be organized in a hierarchic structure". They do not, however, go into any detail. In modern feature analysis the hierarchic principle plays an important part. Let me take as a first example the French vowel phoneme /y/:



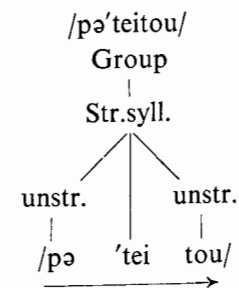
There is no horizontal dimension of order. 'Oral', is e.g., presupposed by the other features but is not preceded nor followed by them. The rounding feature is conditioned (governed) by the front feature.

A French syllable /ʃat/ (i.e., *chatte*) can be specified in the following way:

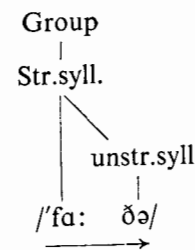


There is a horizontal order dimension ($\text{---}\rightarrow$). The order /taʃ/ gives another morpheme. The sign is linear, the syllable too.

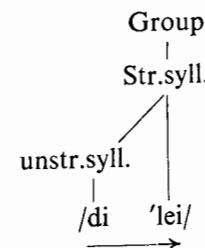
And the phonetic (English) group /pə'teitou/ (i.e., *potatoe*) can be described by



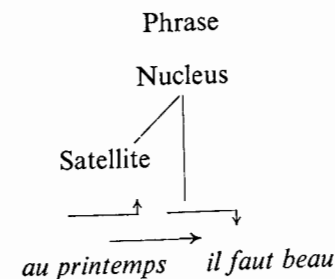
In the same way, /'fa:ðə/ (*father*) would be



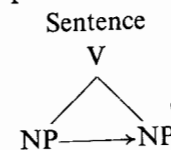
and /dilei/ (*delay*)



On the sentence level we get e.g., for the French phrase *au printemps il fait beau*:



This corresponds exactly to the schemas put up by Tesnière, and according to whom we should have e.g., the graph



for a sentence like *Pierre frappe Paul*.

In a corresponding way it can be said that in the Scandinavian word accent system, the so-called accent 2 presupposes the existence of an unmarked, neutral type, whose function it is to specify the relation between consecutive syllables. It has the same function on the syllabic group level ('word') as the rising intonation has on the sentence level. The opposition is valid only under optimal conditions (i.e., when the word is stressed in the sentence). Its distinctive features are respectively + and - (which implies that only + is an 'accent'). It is conditioned by given stress patterns.

I do not intend to go further into the consequences of this general principle here. My idea is, however, that we have to look upon grammatical structures in the same light as phonological (or expression) structures. A sentence is a unit with, as its kernel, a verb — alone or surrounded by satellites of different kinds. The sentence (*S*) is not for me, as it is for Chomsky, the basic unit. The sentence is a sequence whose interior structure we have to consider in the light of its basic components and of the hierarchic relations between them. As was indicated above, these relations are most often (but not always) reflected in a prosodic structure which is the expression of the sentence-long signs, in most cases responsible for the listener's first approximation to the content he finally finds out. This is sometimes forgotten in modern generative analysis. The so-called deep structure (which is of course in very many cases a fact) is often manifested as prosody and then consequently is a surface structure.

If we look upon the verb as the kernel of the sentence — in accordance with Lucien Tesnière's system (1959) — we get a better description of the hierarchic relations between its units and at the same time a description which may have a close connexion with the prosodic (intonation and stress) system of the expression level. Tesnière's system seems to me definitely superior to Chomsky's. But if we go into this here, we shall be leaving the domain of phonetics.

*Phonetics Institute
University of Lund, Sweden*

REFERENCES

- Chomsky, N. and M. Halle
1968 *The Sound Pattern of English* (New York, Harper and Row).
Jakobson, R.
1941 *Kindersprache*.
Tesnière, L.
1959 *Éléments de syntaxe structurale*.

DISCUSSION

BUYSENS (Bruxelles)

J'ai beaucoup apprécié cet exposé très séduisant. Je me demande seulement si on ne doit pas imposer des limites au principe hiérarchique. Quand une phrase comporte

un verbe, il est évident que celui-ci est l'élément dominant, mais il y a des équivalents de phrase sans verbe: dans 'tel père tel fils', je ne vois pas quel est le segment dominant.

MALMBERG

Ce n'est qu'en passant que j'ai mentionné, à titre d'exemple, la structure de la phrase. Je vois pleinement la difficulté signalée par M. Buysens, mais je pense qu'avec quelques modifications il sera possible de maintenir la théorie.

FRANCESCATO (Amsterdam)

Is Mr. Malmberg prepared to attribute any particular importance to the fact that (in his interpretation) a relative order is present as a criterion at all levels, except at the level of the phoneme?

MALMBERG

Yes, this is the fundamental difference between the phoneme as a minimal segment and any longer sequence (cluster, syllable, etc.) which are all linear (i.e., have a time or a space dimension respectively).

FROMKIN (Los Angeles)

As you have pointed out, the concept of hierarchical levels in language is not a new one. The revived interest in linguistic universals, however, suggest that we deal with a universal hierarchy of features, for example, as well as language specific hierarchies. What criteria do you believe are relevant for the establishment of such hierarchies? What kind of evidence is required to choose between various proposals concerning this question?

MALMBERG

I fully agree that within a given hierarchic order (e.g., the features of a phoneme) there are some basic dependencies which are universal, others which are specific for the language. The difference between the phoneme, without any order (i.e., time or space) dimension, and the sequence of phonemes (cluster, syllable, etc.) which is linear, is fundamental. When foreigners pronounce [st] for English [θ] (= *th*) they split up the phoneme into a sequence of phonemes, interpreting the features as following each other.

BUTLER (Berkeley)

As a further illustration of a high degree of hierarchical structure within the syntactic word I mention the evidence of at least four distinctive degrees of stress in Italian and Spanish (as shown by the evolution of the Latin vowel systems in these dialects) entirely determined by the position of the tonic vowel.

MALMBERG

I agree and have nothing to add.