

## XXIV. LINGUISTICS\*

Prof. R. Jakobson	Dr. M. E. Jones	R. P. V. Kiparsky
Prof. A. N. Chomsky	Dr. Paula Menyuk	S.-Y. Kuroda
Prof. M. Halle	Dr. W. Weksel	D. T. Langendoen
Prof. J. A. Fodor	Dr. K. Wu	T. M. Lightner
Prof. J. J. Katz	T. G. Bever	P. S. Peters, Jr.
Prof. G. H. Matthews	M. J. Chayen	C. B. Qualls
Prof. P. M. Postal	S. K. Ghosh	J. J. Viertel
Dr. L. K. Bendall	Barbara C. Hall	A. M. Zwicky, Jr.
	Y. Isami	

### RESEARCH OBJECTIVES

This group sees as its central task the development of a general theory of language. The theory will attempt to integrate all that is known about language and to reveal the lawful interrelations among the structural properties of different languages as well as of the separate aspects of a given language, such as its syntax, morphology, and phonology. The search for linguistic universals and the development of a comprehensive typology of languages are primary research objectives.

Work now in progress deals with specific problems in phonology, morphology, syntax, language learning and language disturbances, linguistic change, semantics, as well as with the logical foundations of the general theory of language. The development of the theory influences the various special studies and, at the same time, is influenced by the results of these studies. Several of the studies are parts of complete linguistic descriptions of particular languages (English, Russian, Siouan) that are now in preparation.

Since many of the problems of language lie in the area in which several disciplines overlap, an adequate and exhaustive treatment of language demands close cooperation of linguistics with other sciences. The inquiry into the structural principles of human language suggests a comparison of these principles with those of other sign systems, which, in turn, leads naturally to the elaboration of a general theory of signs, semiotics. Here linguistics touches upon problems that have been studied by modern logic. Other problems of interest to logicians — and also to mathematicians — are touched upon in the studies devoted to the formal features of a general theory of language. The study of language in its poetic function brings linguistics into contact with the theory and history of literature. The social function of language cannot be properly illuminated without the help of anthropologists and sociologists. The problems that are common to linguistics and the theory of communication, the psychology of language, the acoustics and physiology of speech, and the study of language disturbances are too well known to need further comment here. The exploration of these interdisciplinary problems, a major objective of this group, will be of benefit not only to linguistics; it is certain to provide workers in the other fields with stimulating insight and new methods of attack, as well as to suggest to them new problems for investigation and fruitful reformulations of questions that have been asked for a long time.

R. Jakobson, A. N. Chomsky, M. Halle

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## A. THE PROSODIC QUESTIONS OF SLAVIC HISTORICAL PHONOLOGY RESTATED

## 1. Pattern

"Before the gradual dissolution of Common Slavic, its phonemic vowel system contained two prosodic features: 1) long (marked) vs. short, 2) high-pitched (marked) vs. low-pitched, and two inherent features: 1) diffuse vs. compact, 2) acute vs. grave.\*\*\* Any long syllable of the word and any final short syllable could carry a phonemic high pitch. Before a high-pitched syllable, any syllable of the same word apparently displayed a redundant high pitch. The rest of the syllables were low-pitched. There were two prosodic types of words: high-pitched words with one (and never more than one) phonemically high-pitched syllable, and low-pitched words without any high-pitched syllable."<sup>1</sup>

This statement requires a more precise formulation with respect to the inter-relationship of the two prosodic features – the quantitative and the tonic one – and to their distribution within the word boundaries.

In regard to the treatment of prosodic features, three kinds of word syllables – initial, internal, final – and correspondingly three dichotomies are to be considered: 1) initial-noninitial (internal and final); 2) final-nonfinal (initial and internal); 3) internal-marginal (initial and final).

Since the last or only high pitch within a word was phonemic, and no word contained more than one phonemic high pitch, the latter jointly functioned as a distinctive and culminative feature.<sup>2</sup> Under such conditions, the minimal pairs do not involve commutation but permutation – a choice between words carrying the same feature on different syllables; cf. Russian words distinguished from each other by the place of their stress: /kúpala/ 'cupola' (gen.)-/kupála/ 'bathed' (fem.)-/kupalá/ 'cupolas.'

In Common Slavic, words, all other things being equal, could differ by the place of high pitch. The high pitch, capable of falling on any word syllable, was phonemic in every position. Only the initial syllable, however, actually involves commutation; there is a free choice between both phonemic opposites; e.g., a high-pitch diphthong in the Common Slavic prototype of Serbocroat. vràna, Rus. voróna 'crow' vs. the low-pitch diphthong in the prototype of Serbocroat. vrâna, Rus. vórona 'raven' (gen.).

Phonemic features are not, while redundant features are, predictable from the phonemic environment. The initial long syllable could carry either the high or the low pitch; this was the only position where the low pitch could not be predicted from the pitch distribution in the other syllables of the same word unit. Any noninitial syllable carried a nonphonemic low pitch when one of the preceding syllables was high-pitched or when the initial syllable was low-pitched. Thus the opposition of high and low pitch was phonemic only in the initial syllable.

The low pitch of a short initial syllable is predictable: any short initial syllable carried a nonphonemic low pitch, when none of the noninitial syllables was high-pitched. The long low-pitched initial syllable participated in two phonemic oppositions: the length distinguished this syllable from short initial syllables, while the low pitch opposed it to the high-pitched syllables.

The length of a nonfinal syllable under a phonemic high pitch is predictable, since among the nonfinal syllables only the long ones may carry a phonemic high pitch. Except for nonfinal syllables under a phonemic high pitch, any syllable offers a free choice between phonemic length and shortness.

## 2. Evolution

Toward the end of the last millennium the diffuse short vowels ( $\check{u}, \check{i}$ ) of the word end lost the capacity of carrying a high pitch, so that the previously redundant high pitch of the penults became phonemic. Originally this shift was confined to the allegro variety of language. The final high pitch on short diffuse vowels and the prefinal high pitch in the same words were but stylistic variants. Within the allegro subcode of the late Common Slavic, the prefinal high pitch, caused by the shift from the short final diffuse vowels and labelled 'neoacute', was a stylistic alternant of the traditional high pitch on the final diffuse shorts, and at the same time it was a contextual variant with respect to the pretonic penults followed by long and/or compact vowels. The new prefinal high pitch fell on both longs and shorts and was in complementary distribution with longs and shorts in pretonic penults.

The long and short varieties of the neoacute presented an imminent complication for the prosodic pattern of dissyllabic words, in which one and the same syllable simultaneously shared the initial and prefinal status. The adjustment to this challenge required significant changes in vocalic quantity, and in spite of considerable dialectal differences in these modifications, for the whole Slavic area they inaugurated a new system of long-short oppositions and transformed the traditional quantitative distinctions into qualitative differences.

In the Serbo-Slovenian type of prosodic evolution the phonemic length was preserved, while the nonphonemic, redundant length was abolished. Thus the longs remained intact both under the low pitch and under the neoacute, while the old high-pitched vowels were shortened.

In the Western Slavic prosodic type, the quantitative opposition supplanted the tonic one. In particular, the following treatment is shown by the first vowel of dissyllables: The pretonic length remained intact; likewise, the combination of the quantitative and tonic marks, namely, the phonemic length under high pitch (neoacute), was maintained; but the low-pitched length, i. e., the marked term of the quantitative opposition, combined with the unmarked term of the tonic opposition, was shortened.

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The high-pitched shorts, which arose with the neoacute, are treated differently in the Lekhitic and Slovak varieties of the Western Slavic type. Lekhitic solved the conflict between the tonic mark and the unmarked quantity in the latter's favor, whereas Slovak substituted the quantitative mark for the tonic mark: length for high pitch.

While Lekhitic and Slovak have shortened the nonphonemic, redundant length tied to the old high pitch, in the Czecho-Lusatian variety of the same type any high-pitched syllable was kept long.

Thus a comparative inquiry into the Lekhitic, Slovak, and Czecho-Lusatian prosodic treatment of the initial penult discloses that the Western Slavic type has eliminated the tonic feature by substituting shortness for low pitch and, on a varied scale, length for high pitch.

In Common Slavic, the last or the only high-pitched syllable, and in absence of high pitch, the initial syllable carried the word accent. With the annulment of high pitch in the Western type, the word accent became automatically attached to the initial syllable.

The Eastern (East Slavic and Bulgarian) type abolished the distinction between the phonemic low and high pitch in favor of the latter; hence high pitch coalesced with word accent, and the vocalic length became a concomitant redundant attribute of the accent.

R. Jakobson

References

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2. R. Jakobson, Selected Writings, I (Mouton and Company, The Hague, 1962), pp. 268f., 288ff., and 469.

B. DESCRIPTION OF DEVIANT LANGUAGE PRODUCTION

1. Problem

Those concerned with language disorders have become increasingly aware of their need to gain a greater understanding of the processes of development (both physiological and psychological) of language production and perception.<sup>1</sup> The general conclusion has been that it is necessary to describe adequately language production in any instance rather than just disorder production. Furthermore, in order to determine in what way, and eventually why, some language productions deviate strikingly from the norm, it has been concluded that there has to be an adequate description of the norm. Those who conduct research in this field feel that these processes have to be described adequately so that there is some model against which diagnostic distinctions can be clarified and

diagnostic measures devised, so that future growth can be predicted, and therapeutic decisions have some basis in the facts of the properties of language and of language development.

Workers in this field have turned to linguists and psycholinguists to provide procedures and terminology for these descriptions. There have been detailed and careful studies of the phonological<sup>2</sup> and syntactic<sup>3</sup> components of language which convince us of the fact that the process of grammatical development is rapid and largely resistant to distortion. Many questions remain as to how this process occurs and certainly as to how distortions, which have no known physiological basis, occur. Attempts have been made to formulate diagnostic techniques to isolate and then relate functions that are intuitively felt to be related in the processes of acquisition and development of language such as patterning of visual, auditory, and motor skills.<sup>4</sup> Many questions remain about the nature of these functions, the relation of these functions, and certainly about methods for eliciting information about them.

In this study a generative model of grammar was used to compare the grammar of children diagnosed as using a deviant language production (infantile speech) with that of children using normal speech in an attempt to describe more adequately a language production simply characterized as infantile.

## 2. Procedure

Language was elicited and recorded in various stimulus situations from 10 children using "infantile" speech and 10 children with normal speech who were matched in age, sex, socio-economic status, and I.Q. The groups ranged in age from 3 years to 5 years, 10 months. The language of one child was sampled periodically from age 2 to age 3. The language sample of each child was analyzed, and the syntactic structures used were postulated. A number of children in each group were asked to repeat a list of sentences containing syntactic structures found in children's grammar.

Comparisons were made of i) the number of children in each group who used various transformations and the number who used forms that deviated from complete grammaticalness, ii) the frequency of usage by the two groups of forms that deviated, and iii) the number of children in each group who repeated and did not repeat all of the sentences presented and the number who corrected deviant structures. The correlation between age and increase in usage of transformations and decrease in usage of deviant forms and the correlation between sentence length and nonrepetition for both groups were also tested. A comparison was made of the grammar of the 2 to 3 year old child with normal speech and the grammatical usage of children throughout the age range of the "infantile" speech group.

### 3. Results

It was found that more children with normal speech used the various transformations and more of the children with "infantile" speech used the deviant forms (primarily those of omission of rules) and used them with significantly greater frequency. Essentially the same results were obtained when the 5 youngest members of the normal speech group were compared with the 5 oldest members of the "infantile" speech group. Also, age was significantly correlated with decrease in usage of deviant forms for the normal but not the "infantile" speech group. Significantly, more of the children in the "infantile" speech group repeated sentences with omissions or with just the last phrase, word or words of a sentence. Sentence length was significantly correlated with nonrepetition for the "infantile" but not the normal speech group. At age 2 the child with normal speech did not use some of the syntactic structures found throughout the age range in the grammar of the "infantile" speech group, but by age 3 he exceeded even the oldest child in the group in grammatical production (by using more transformations and fewer deviant forms).

### 4. Discussion

By using a generative model of grammar to describe these children's language production, the following trends and differences were observed. The term "infantile" seems to be a misnomer, since at no age level did the grammatical production of a child with deviant speech match or closely match the grammatical production of a child with normal speech. The children with deviant speech, in terms of the model of grammar used for description, formulated their sentences with the most general rules, whereas children with normal speech, as they matured, used structures that require increasingly differentiating rules for their formulation. This also seemed to be the case with the articulation difficulties found in this group. The most frequent sound errors were omission and substitution. The initial s and final t were omitted by more than 50 per cent of the children with deviant speech, and the following substitutions were also used by more than 50 per cent of the children: the sound w was used for w, r, and l; the sound t was used for t, k, and the unvoiced th; the sound d was used for d, g, and the voiced th.

It is hypothesized that the differences found in the use and repetition of syntactic structures between the groups may be due to differences in how the coding processes for perception and production of language are used. The results indicate that the most significant factor may be the difference in the children's ability to determine the complete sets of rules that are used to generate and differentiate structures at any level of the grammar.

Since the population was small, none of the trends observed were considered

conclusive differentiating factors in the description of the two groups. However, it was felt that using a generative model to describe language production provided a much more adequate and discriminating description of the differences in language production of the two groups than had previously been obtained.

Paula Menyuk

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