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This paper focuses on aspects of Roman Jakobson's theory of phonology which have had very little impact on contemporary phonology, but hold promise for its future development. Four specific contributions are mentioned: (1) the semiotic analysis of distinctive features; (2) the delineation of the content categories of phonic signs; (3) the understanding of language structure as a system of diagrammatization; and (4) the relation between code structure and phonetic regularities in messages. These contributions form the semiotic foundations of phonology.

0. The title of this panel discussion holds an implicit, but obvious invitation to look back over the development of modern phonology and to assess the relationship between Roman Jakobson's work and the course this development followed.

But the topic of this session does not have to be understood as an invitation only to look back. It would indeed be more in keeping with Jakobson's undaunted forward-looking spirit to examine the relationship between his work and contemporary phonology with a view to the future. One might ask whether there are still important lessons we can learn from this great teacher and look to see if there are elements of his understanding of phonology or insights of his which, for whatever reasons, were left unexplored and remain to be exploited, and which might enrich the development of phonology in the years to come.

This is the tack I have chosen for this brief presentation.

The phonological enterprise, in which Jakobson was the prime mover, from its very beginnings in the 1920's was a three-pronged research program aimed at describing the phonological patterns of the languages of the world, establishing a typology of known phonological systems, and uncovering the universal laws that underlie all such systems. Trubetzkoy's Grundzüge der Phonologie can be read as an interim report on this project, for it sums up results achieved by the mid-thirties along all these three lines of research.

Jakobson early saw that the question of phonological universals was the most important task on the agenda. And from his programmatic statement at the First International Congress of Linguists (SW I:3ff.) to The Sound Shape of Language (1979), he made this task a central topic in his scholarly work.

It is perhaps not surprising, in view of this research emphasis of his, that he came to be understood as an advocate of the description of all sound patterns in terms of universals. This understanding, though, is a misunderstanding in several respects.

In the first place, universals and description are categorially distinct. Universal phonology is concerned with the species general laws that constitute the phonological aspects of our *faculté de langage* and explain the relative uniformity of all phonological systems. Descriptive phonology, on the other hand, is concerned with the given language particular sound pattern, which must be grasped as a synchronically constituted part of a cultural tradition, fulfilling a multitude of functions in a given community. A sound pattern is like all other parts of a linguistic code a product of history. In the individual, it is a technique which has been acquired through an interplay of nature and nurture. As a social code, however, it is a system of historically transmitted, voluntarily imposed semiotic conventions. The description of such patterns is an entirely different undertaking from the explanation of their relative uniformity.

In the second place, even though Jakobson can perhaps be faulted for permitting this essential distinction to be blurred in some of his writings, there is no doubt that he himself had a constant and clear conception of the object of description, of what a sound pattern is, as distinct from the laws that govern phonological systems (cf. SW I:3).

To Jakobson a sound pattern was first and foremost a sort of ideology, that is, a system of signs constituting social values (SW I:9). As such it forms part of a cultural pattern, that all-encompassing ideology through which members of a commu-

nity cognize their world. This conception was the basis of the parallels he drew between phonological markedness and the asymmetrical relations observable in other paradigms of cultural values, which may be equally culture specific, be superficially similar, but organized differently in different cultures, and be equally subject to revaluations in the course of history (cf. Trubetzkoy 1985: 161f.).

It is not difficult to see here a continuity of thought between Saussure and Jakobson. Jakobson acknowledged this continuity many times (e.g. SW I:312 and especially SW I:743ff.).

The structuralist conception of phonology as a system of signs constituting social values served as the major premiss for Jakobson's consistent efforts to grasp the sounds of language in semiotic terms, to illuminate the phonic side of speech as a system of semiotic systems embedded in culture. It is reflected in his writings on all the fields he contributed to in which the role of phonic elements is central, from descriptive linguistics to language acquisition and aphasia, to poetic language, and to the relations between linguistics and other sciences.

The Saussurean inspiration led Jakobson to two important advances. One was the semiotic analysis of distinctive oppositions, first presented in lectures in 1939 (SW I:280ff.) and in 1942 (1978, especially p. 59ff.). The other was a gradually elaborated identification of the categories of content expressed by phonic signs. His acquaintance with the ideas of C.S. Peirce led him to an explicit understanding of what it means for a system to be structured. His work in poetics, finally, led him to an understanding of the relation between code and messages which is crucially important for phonology. Let me pass these four points in review.

1. In 1939 Jakobson contrasted the minimal units of phonology with other linguistic signs and determined that the distinctive features, or, as I will call them here, the diacritic opposites, that serve to distinguish and identify the signifiants of segmental morphemes are signs in the Saussurean sense, that is, comprise a signifiant and a signifié, but differ radically from all other linguistic signs: (1) they have no specific signifiés, but signify mere otherness of their referents, the signifiants of morphemes; thus they are all systematically synonymous; (2) unlike all other linguistic signs, which are defined and form oppositions in terms of their signifiés, the diacritic opposites are defined and form oppositions on the basis of their signifiants.

The first of these characteristics is essentially related to their function: without such purely diacritic signs, the

rich inventories of content signs of human languages would be impossible. Their synonymy, again, facilitates the maintenance of communication through sound change. By their second characteristic they are--in Saussure's well-known phrase--oppositive, relative and negative. Hence they can remain invariant despite differences among speakers in vocal tract configurations. This relational character also makes it possible for them to serve as a conceptual carrier wave for a variety of categories of other phonic signs.

The fact that diacritic opposites are defined and form oppositions on the basis of their signifiants entails that a phonological theory that treats them as mere names, without regard for the substance in which they are manifested, is essentially meaningless, as Chomsky & Halle very succinctly showed (1968:400f.).

Also, since the diacritic opposites have no positively defined phonetic signifiants, the language specific implementation rules that specify their realization cannot be captured by rewrite rules of the now customary kind. To conform to their nature, the linguist's rules will have to transform diacritic oppositions into sound differences.

Jakobson repeatedly spoke about the systems of diacritic oppositions as structured, but had little to say about the variability of such structures (cf. SW I:709, 1979:166). However, there are enough indications of variability in the ranking of diacritic oppositions in different languages to make this a fruitful basis of a systematic phonological typology (cf. Andersen 1975), and to hypothesize variability in ranking to account for synchronic variation (cf. Andersen 1974, Gvozdanović 1985) and to explain major types of phonological drift (cf. Andersen 1978).

2. In 1929 Jakobson defined three classes of phonic signs (SW I:20).

The analysis of 1939 determined that these differ by the character of their signifiés. (1) The "stylistic" signs belong to the category of "content signs", which includes lexical and grammatical morphemes; Jakobson exemplified them with some of the kinds of pragmatic signs to be mentioned below. (2) The signifiés of the diacritic opposites, as mentioned, refer to the signifiants of segmental morphemes. (3) Contextual variants, finally, are phonic signs whose signifiés refer to the signifiants of diacritic opposites.

Such a semiotically based classification yields a principled basis for delimiting and subdividing the field of phonology. It could be defined as the study of systems of diacritic oppositions only; thus SW I:20. It could study the systems of phonic signs under (2) and (3) above; thus SW I:297. But it could also encom-

pass all phonic signs with social value.

In his later works Jakobson tended towards this, the widest possible understanding as he repeatedly emphasized the interdependence of the all the parts of the over-all code, the consequent impossibility of describing any part of it in isolation, and in particular, the importance of consistently analysing speech sounds in regard to meaning.

From the point of view of their signifiants, all three classes of phonic signs are clearly inseparable. One can recognize the primacy of the diacritic opposites, which are constitutive of articulate speech. They can be conceived of as a carrier wave, as I suggested above, and the other kinds of phonic signs as "epi-signs" which deform or refract ideal projections of the diacritic oppositions into sound differences. But in speech none of these signs occur separately. And already in the intended audible output, which determines a speaker's articulatory implementation of his messages, and against which he monitors his proprioceptive feedback, signifiants of all three classes are superposed.

The analysis of the signifiés of the "stylistic" phonic signs remained very sketchy in Jakobson's writings. His famous paper on "Linguistics and poetics" (1960) defined a number of generic categories of pragmatic content, which are obviously in part expressed by phonic signs and which encode language particular categories of emotive, aesthetic, conative, phatic, and referential content (cf. SW I:295). They refer to elements of the communicative situation and thus are shifters (cf. SW II:131f.).

In 1979 Jakobson pointed to some generic categories of societal phonic signs, with which a speaker adjusts his pronunciation, in accordance with the norms of his speech community, to give expression to socially defined categories of status and role (1979:42). Such phonic signs symbolize the speaker's relation to his speech community and/or his addressee(s). Jakobson insisted on the distinction between these symbolic signs, which refer to cultural categories, and the pure indices properly termed physiognomic (Bühler 1978: 286), which facilitate speaker identification (cf. Andersen 1979).

The extent to which pragmatic and societal signs may be encoded in the use of diacritic oppositions and allophonic variation is obvious, and Jakobson early emphasized the necessity of examining all three classes of signs in their interrelations in explications of phonological change (e.g., SW I:19, 216).

3. One of Jakobson's lasting contributions to the study of morphology was the demonstration that when morphological

analysis is carried through to an adequate depth, the incidence of combinations and/or concatenations of diacritic opposites in grammatical morphemes can be seen to mirror relations of meaning in the grammatical pattern of the language.

The tendency for vowels to be specialized for grammatical content in the Semitic languages was mentioned in 1929 (SW I:9) as an example of what Jakobson later called the "sense-determining function" of diacritic opposites. Later studies of the interaction between the phonemic and grammatical aspects of language (cf. SW II:103ff.) cited numerous further examples of such specialized utilization of complexes of diacritic opposites for features of grammatical content in various languages, most convincingly in the detailed analyses of the inflectional patterns of Russian and other Slavic languages (e.g., SW II:115ff., 119ff., 143ff., 148ff., 154ff., 184ff., 198ff.).

The semiotic basis for this is the "inverted" character of the diacritic signs (SW I:286ff.). Their signifiés ('otherness') serve to distinguish morpheme shapes; but by the substance of their signifiants they serve to identify morpheme shapes. Relations among complexes of diacritic opposites can consequently be used to reflect relations among the signifiants of morphemes.

The theoretical generalization implicit in the above-mentioned morphological studies was made explicit only in 1965 (SW II:345ff.), when Jakobson arrived at a Peircean characterization of language structure as essentially a "system of diagrammatization", patent and compulsory in the entire syntactic and morphological pattern of language" (SW II:357).

Several kinds of diagrammatization can be distinguished. (1) By their perceptual dimensions diacritic oppositions are associated with, and diagram, other perceptual dimensions. This is synaesthesia (cf. 1979:188ff.). (2) Thanks to similarities between perceptual dimensions and other experiential dimensions, complexes of diacritic opposites can be used to form iconic (in Peircean terms: imaginal or metaphoric) lexical signifiants such as onomatopoea and ideophones (cf. 1979:179ff.). (3) Their direct association with lexical content in "word affinities" (cf. 1979:195ff.) may be partly imaginal, but is in any case essentially diagrammatic, partial identity of signifiés being reflected by a partial identity of signifiants. (4) Most of the diagrammatic relations between grammatical meaning and sound which were revealed in Jakobson's morphological studies are of this last-mentioned type; but to these must be added (5) the morphophonemic alternations, which form diagrams indexing signifiants and/or signifiés of contiguous morphemes.

The great variety of diagrammatic relations in language awaits a thorough analysis. But Jakobson's contributions offer us a key to an understanding of language structure, which can be used to disclose in explicit terms the integration of phonology with the content systems of individual languages, the interplay between meaning and sound in historical phonology, and eventually the universal determinants of these interrelations between linguistically formed sound and sense.

4. The analysis of contextual variation forms a lacuna in Jakobson's investigations of sound patterns. He did not go beyond his understanding of 1939 that allophonic variants refer to the signifiants of diacritic opposites (cf. SW I:469 and 1979:42).

The reason for this neglect is consistent with his Saussurean understanding of the linguistic sign, which does not acknowledge the need the specify the syntactics of each linguistic sign. At the same time this neglect may be related to the absence in Jakobson's thinking of the fundamental distinction between language system and language norms (cf. Coseriu 1952).

It is in fact a question of phonological norms whether, say, flatted consonants in a given language are realized as labialized, retroflex, or pharyngealized, and whether a given five-vowel system is normally realized in one or another of several ways in a given community (cf. Vysotskij 1967). Similarly it is a question of norms whether and to what extent a given diacritic opposition is contextually suspended (the distinctive opposites being deleted in specified environments), and with what non-diacritic features complexes of diacritic opposites must be expanded before they are realizable in speech.

It follows that any individual sound pattern must be described as a system of diacritic oppositions conjoined with a historically established set of phonetic norms, expressible as rules of implementation. Phonological typology must consider not just systems of diacritic oppositions, but also the diverse norms of realization attested in different languages for each system type. Universal phonology must determine the freedom with which one and the same system type can be conjoined with different phonetic norms and the universal limits of this freedom.

From a semiotic point of view, however, Jakobson's theoretical advances offer a good basis for the systematic investigation of contextual variation.

First, variation rules expand complexes of diacritic opposites with subsidiary phonic signs that act as indexes, pointing to the context to which they have been assigned. The importance of these "auxili-

ary-sociative" signs for communication was recognized and repeatedly emphasized by Jakobson (cf. SW I:469, 1979:42). They are the semiotic counterpart of morphophonemic alternants.

Secondly, variation rules produce distributional patterns which carry information about the system of diacritic oppositions. Note that the mere fact that different phonetic values are in complementary distribution is a sign that they do not form a diacritic opposition: complementation diagrams the absence of opposition. Furthermore, by assigning different non-diacritic values to different contexts variation rules correlate non-diacritic values with (complexes of) diacritic opposites according to an apparently universal principle, viz in such a way that marked values are assigned to marked contexts, and unmarked to unmarked. This principle, by which equivalences in markedness are diagrammed by contiguity relations, was first discovered by Jakobson (1960) and by him held to be characteristic of the poetic function of language. However, it has been shown to be a much more general principle, in evidence whenever a value system is manifested syntagmatically (Andersen 1987). The phonetic co-occurrence relations thus codified in variation rules are the phonological counterpart of the lexical and morphological systems of diagrammatization which were mentioned above.

Finally, since the phonetic norms as a whole are established by convention, they serve to symbolize the speaker's allegiance to the socially or geographically defined community for which the given set of norms holds (1979:42).

5. To most phonologists today, probably, Jakobson is known primarily as the initiator of the search for phonological universals, the scholar who more than anyone else contributed to the modern understanding of the dependence of phonology on the innate capacities which are man's by nature. There seems to be a growing awareness among phonologists that there is a great deal more in language particular sound patterns than is accounted for by such universals. In turning our attention to these idiosyncratic aspects of phonology, we need not turn our backs on Jakobson. On the contrary, his view of a sound pattern as first and foremost a system of signs with social value and his substantive contributions to the elucidation of the character of these signs and of their interrelations offer a fruitful orientation and effective conceptual tools for future work in phonology.

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