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Fundamentals of Language

JANUA LINGUARUM NR 1

FUNDAMENTALS OF LANGUAGE

by

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FOREWORD

The GATE OF LANGUAGES (*Janua linguarum*) is indeed an appropriate title for a series of essays seeking the key to the laws that govern language and its relationship with other social institutions. This name appeals to me, moreover, as a link that connects the modern search with the writings of Johann Amos Comenius, the great humanist thinker in the science of language. His works, like many Greek and Latin treatises from the Stoa to the Cartesian epoch, carry numerous fruitful ideas which now again capture the attention of linguists.

The title of the series refers, furthermore, to the recent past of our science. Nicolaas van Wijk, whose name heads this set of essays, was one of the outstanding pioneers in the inquiry into the structure of language and into the principles of its evolution. The subtitle of his book *Phonologie* – "een hoofdstuk uit de structurele taalwetenschap" (a chapter of structural linguistics) – may be applied to his whole life's work. In 1902, as a twenty-two year old student at Leipzig, he offered a bold contribution 'Zur relativen Chronologie der urgermanischen Lautgesetze', published in Paul-Braune *Beiträge zur Geschichte der deutschen Sprache und Literatur*, XXVIII, in which he displays a clear insight into the coherence of sound patterns and their mutations, and some twenty years later he took up and elaborated these views in his first original work in comparative phonology, 'Een phonologiese parallel tussen Germaans, Slavies en Balties', *Mededeelingen der Koninklijke Akademie van Wetenschappen*, Afd. Letterkunde, deel 77–79, serie A (1934–5). Van Wijk, and there lies his main strength, never sacrificed the manifold empirical data in favor of a speculative theory, nor did his amazing mastery of the concrete philological material conceal from him the theoretical corollaries.

I am particularly glad to inaugurate the series of essays dedicated to the memory of this eminent Dutch linguist, since twenty five years ago it was he who, along with Antoine Meillet, encouraged

my first, modest attempts to grasp the structural laws of language with respect to the factors of time and space (*De nieuwe taalgids*, XXIV, XXV). It is again to the author of *Phonologie* (1939) that I feel deep gratitude for the first support of my initial efforts to dissolve language into its ultimate components, the dyadic distinctive features.

When a quarter of a century separates us from the Prague International Conference, which broke the ground for general phonology, it is appropriate to survey the main problems of this discipline in its present stage. On the other hand, it was tempting to explore, forty years after the publication of Saussure's *Cours* with its radical distinction between the "syntagmatic" and "associative" plane of language, what has been and can be drawn from this fundamental dichotomy.

Leiden, October 1955 ROMAN JAKOBSON

TABLE OF CONTENTS

Foreword V

PART I

PHONOLOGY AND PHONETICS

I—THE FEATURE LEVEL OF LANGUAGE 3
1.1 Distinctive features in operation 3
1.2 Structure of distinctive features 4
1.3 Opposition and contrast 4
1.4 Message and code 5
1.5 Ellipsis and explicitness 5

II—THE VARIETY OF FEATURES AND THEIR TREATMENT IN LINGUISTICS 7
2.1 Phonology and phonemics 7
2.2 The "inner approach" to the phoneme in relation to sound 8
2.3 Types of features 8
2.41 The "outer" approaches to the phoneme in relation to sound: A. The mentalist view 11
2.42 B. The code-restricting view 12
2.43 C. The generic view 12
2.44 D. The fictionalist view 13
2.441 "Overlapping" of phonemes 14
2.45 E. The algebraic view 15
2.5 The cryptanalyst's and decoder's devices as two complementary techniques 17

III—THE IDENTIFICATION OF DISTINCTIVE FEATURES . 20
3.1 Syllable 20
3.2 Two kinds of distinctive features 22
3.3 Classification of prosodic features 22
3.31 Tone features 22

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3.32 Force features 23
3.33 Quantity features 24
3.34 The interconnection between stress and length 24
3.4 Comparison of prosodic and inherent features . 25
3.5 General laws of phonemic patterning . . 26
3.51 Restriction in the over-all inventory of distinctive features 27
3.6 The two classes of inherent features . . . 28
3.61 Sonority features 29
3.62 Tonality features 31
3.7 Stages of the speech event 31
3.71 The use of different stages in the study of distinctive features 33
3.72 Nomenclature of distinctive features . . . 36

IV—PHONEMIC PATTERNING 37
4.11 Stratification: nuclear syllable 37
4.12 The role of the nasal consonant 38
4.13 The primary triangle 38
4.14 The split of the primary triangle into two triangles, consonantal and vocalic 39
4.15 Patterning of oral resonance features . . . 40
4.16 Sonority features in relation to the optimal consonant and vowel 41
4.2 The dichotomous scale 44
4.3 The spatio-temporal pattern of phonemic operations 49

PART II

TWO ASPECTS OF LANGUAGE AND TWO TYPES OF APHASIC DISTURBANCES

I—APHASIA AS A LINGUISTIC PROBLEM 55
II—THE TWOFOLD CHARACTER OF LANGUAGE . . 58
III—SIMILARITY DISORDER 63
IV—CONTIGUITY DISORDER 71
V—THE METAPHORIC AND METONYMIC POLES. . . 76

SUPPLEMENT

SELECTED LIST OF STUDIES IN GENERAL PHONOLOGY (1931—1955) 83

PART I

PHONOLOGY AND PHONETICS

BY

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I

THE FEATURE LEVEL OF LANGUAGE

1.1 *Distinctive features in operation.* Family names such as *Bitter, Chitter, Ditter, Fitter, Gitter, Hitter, Jitter, Litter, Mitter, Pitter, Ritter, Sitter, Titter, Witter, Zitter,* all occur in New York. Whatever the origin of these names and their bearers, each of these vocables is used in the English of New Yorkers without colliding with their linguistic habits. You had never heard anything about the gentleman introduced to you at a New York party. "Mr. Ditter," says your host. You try to grasp and retain this message. As an English-speaking person you, unaware of the operation, easily divide the continuous sound-flow into a definite number of successive units. Your host didn't say *bitter* /bítə/ or *dotter* /dátə/ or *digger* /dígə/ or *ditty* /díti/ but *ditter* /dítə/. Thus the four sequential units capable of selective alternation with other units in English are readily educed by the listener: /d/+/í/+/t/+/ə/.

Each of these units presents the receiver with a definite number of paired alternatives used with a differentiating value in English. The family names, cited above, differ in their initial unit; some of these names are distinguished from each other by one, single alternative, and this minimal distinction is common to several pairs, e.g. /nítə/:/dítə/ = /mítə/: /bítə/ = nasalized *vs.* non-nasalized; /títə/:/dítə/ = /sítə/:/zítə/ = /pítə/:/bítə/ = /kítə/:/gítə/ = tense *vs.* lax. Such pairs as /pítə/ and /dítə/ offer an example of two concurrent minimal distinctions: grave *vs.* acute together with tense *vs.* lax. The pair *bitter* /bítə/ and *detter* /détə/ presents two successive minimal distinctions: grave *vs.* acute followed by diffuse *vs.* compact. For an acoustic and motor definition of the cited distinctions, see 3.61 and 3.62.

1.2 *Structure of distinctive features.* Linguistic analysis gradually breaks down complex speech units into morphemes as the

ultimate constituents endowed with proper meaning and dissolves these minutest semantic vehicles into their ultimate components, capable of differentiating morphemes from each other. These components are termed **distinctive features**. Correspondingly, two levels of language and linguistic analysis are to be kept apart: on the one hand, the **semantic level** involving both simple and complex meaningful units from the morpheme to the utterance and discourse and, on the other hand, the **feature level** concerned with simple and complex units which serve merely to differentiate, cement and partition or bring into relief the manifold meaningful units.

Each of the distinctive features involves a choice between two terms of an opposition that displays a specific differential property, diverging from the properties of all other oppositions. Thus grave and acute are opposed to each other in the listener's perception by sound-pitch, as relatively low-pitched and high-pitched; in the physical aspect they are correspondingly opposed by the distribution of energy at the ends of the spectrum and on the motor level by the size and shape of the resonating cavity. In a message conveyed to the listener, every feature confronts him with a yes-no decision. Thus he has to make his selection between grave and acute, because in the language used for the message both alternatives occur in combination with the same concurrent features and in the same sequences: /bítə/—/dítə/, /fítə/—/sítə/, /bíl/—/búl/. The listener is obliged to choose either between two polar qualities of the same category, as in the case of grave *vs.* acute, or between the presence and absence of a certain quality such as voiced *vs.* voiceless, nasalized *vs.* non-nasalized, sharp *vs.* plain.

1.3 *Opposition and contrast.* Since in the listener's hesitation "Is it /bítə/ or /dítə/?" only one of the two logically correlated alternatives belongs to the actual message, the Saussurian term **opposition** is suitable here, whereas the term **contrast** is rather to be confined to cases where the polarity of two units is brought into relief by their contiguity in sensory experience as, for instance, the contrast of grave and acute in the sequence /pi/ or the same

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contrast, but with a reversed order of features, in the sequence /tu/. Thus opposition and contrast are two different manifestations of the polarity principle and both of them perform an important role in the feature aspect of language (cf. 3.4).

1.4 *Message and code.* If the listener receives a message in a language he knows, he correlates it with the code at hand and this code includes all the distinctive features to be manipulated, all their admissible combinations into bundles of concurrent features termed phonemes, and all the rules of concatenating phonemes into sequences – briefly, all the distinctive vehicles serving primarily to differentiate morphemes and whole words. Therefore, the unilingual speaker of English, when hearing a name like /zítə/ identifies and assimilates it without difficulty even if he had never heard it before, but either in perception or reproduction he is prone to distort, and to distrust as alien, a name such as /ktítə/ with its unacceptable consonantal cluster, or /xítə/ which contains only familiar features but in an unfamiliar bundle, or, finally, /mýtə/, since its second phoneme has a distinctive feature foreign to English.

1.5 *Ellipsis and explicitness.* The case of the man faced with family names of people entirely unknown to him was deliberately chosen because neither his vocabulary, nor his previous experience, nor the immediate context of the conversation give him any clues for the recognition of these names. In such a situation the listener can't afford to lose a single phoneme from the message received. Usually, however, the context and the situation permit us to disregard a high percentage of the features, phonemes and sequences in the incoming message without jeopardizing its comprehension. The probability of occurrence in the spoken chain varies for different features and likewise for each feature in different texts. For this reason it is possible, from a part of the sequence, to predict with greater or lesser accuracy the succeeding features, to reconstruct the preceding ones, and finally to infer from some features in a bundle the other concurrent features.

Since in various circumstances the distinctive load of the phonemes is actually reduced for the listener, the speaker, in his turn, is relieved of executing all the sound distinctions in his message: the number of effaced features, omitted phonemes and simplified sequences may be considerable in a blurred and rapid style of speaking. The sound shape of speech may be no less elliptic than its syntactic composition. Even such specimens as the slovenly /tem mins sem/ for 'ten minutes to seven', quoted by D. Jones, are not the highest degree of omission and fragmentariness encountered in familiar talk. But, once the necessity arises, speech that is elliptic on the semantic or feature level, is readily translated by the utterer into an explicit form which, if needed, is apprehended by the listener in all its explicitness.

The slurred fashion of pronunciation is but an abbreviated derivative from the explicit clear-speech form which carries the highest amount of information. For many American English speakers /t/ and /d/ are ordinarily not distinguished between a stressed and unstressed vowel but can be produced distinctively when there is danger of a confusing homonymity: "Is it Mr. Bitter /bítə/ or Bidder /bídə/?" may be asked with a slightly divergent implementation of the two phonemes. This means that in one type of American English the code distinguishes the inter-vocalic /t/ and /d/, while in another dialectal type this distinction is totally lost. When analyzing the pattern of phonemes and distinctive features composing them, one must resort to the fullest, optimal code at the command of the given speakers.

II

THE VARIETY OF FEATURES AND THEIR TREATMENT IN LINGUISTICS

2.1 *Phonology and phonemics.* The question of how language utilizes sound matter, selecting certain of its elements and adapting them to its various ends, is the field of a special linguistic discipline. In English this discipline is often called phonemics (or, puristically, phonematics) since among the functions of sound in language the primary one is to serve as a distinctive vehicle and since the basic vehicle for this function is the phoneme with its components. The prevailingly continental term phonology (launched in 1923 and based on the suggestions of the Geneva school),[1] or the circumlocution functional phonetics is to be preferred however, although in English the label "phonology" frequently designated other domains and especially served to translate the German *Lautgeschichte.* The advantage of the term "phonology" might be its easier application to the whole variety of linguistic functions performed by sound, whereas "phonemics" willy-nilly suggests a confinement to the distinctive vehicles and is an appropriate designation for the main part of phonology dealing with the distinctive function of speech sounds.

While phonetics seeks to collect the most exhaustive information on gross sound matter, in its physiological and physical properties, phonemics, and phonology in general, intervenes to apply strictly linguistic criteria to the sorting and classification of the material registered by phonetics. The search for the ultimate discrete differential constituents of language can be traced back to the *sphoṭa*-doctrine of the Sanskrit grammarians[2] and to Plato's conception of *στοιχεῖον*, but the actual linguistic study of these

[1] R. Jakobson, *O češskom stixe* (Berlin, 1923), pp. 21ff.

[2] Cf. J. Brough, 'Theories of general linguistics in the Sanskrit Grammarians,' *Transactions of the Philosophical Society* (1951).

invariants started only in the 1870's and developed intensively after World War I, side by side with the gradual expansion of the principle of invariance in the sciences. After the stimulating international discussion of the late twenties and early thirties, the first attempts to sum up the basic results of the research, Trubetzkoy's and van Wijk's outlines of general phonology, appeared in 1939.[3] The subsequent theoretical and practical achievements in the structural analysis of language required an ever more adequate and consistent incorporation of speech sounds into the field of linguistics with its stringent methodology; the principles and techniques of phonology improve and its scope becomes ever wider.

2.2 *The "inner" approach to the phoneme in relation to sound.* For the connection and delimitation of phonology (especially phonemics) and phonetics, the crucial question is the nature of the relationship between phonological entities and sound. In Bloomfield's conception, the phonemes of a language are not sounds but merely sound features lumped together "which the speakers have been trained to produce and recognize in the current of speech sounds – just as motorists are trained to stop before a red signal, be it an electric signal-light, a lamp, a flag, or what not, although there is no disembodied redness apart from these actual signals."[4] The speaker has learned to make sound-producing movements in such a way that the distinctive features are present in the sound waves, and the listener has learned to extract them from these waves. This so-to-speak inner, immanent approach, which locates the distinctive features and their bundles within the speech sounds, be it on their motor, acoustical or auditory level, is the most appropriate premise for phonemic operations, although it has been repeatedly contested by outer approaches which in different ways divorce phonemes from concrete sounds.

2.3 *Types of features.* Since the differentiation of semantic units is the least dispensable among the sound functions in language,

[3] N. Trubetzkoy, 'Grundzüge der Phonologie' = *Travaux du Cercle Linguistique de Prague*, VII (1939); N. van Wijk, *Phonologie: een hoofdstuk uit de structurele taalwetenschap* (The Hague, 1939).

[4] L. Bloomfield, *Language* (New York, 1933), p. 79f.

speech participants learn primarily to respond to the distinctive features. It would be deceptive, however, to believe that they are trained to ignore all the rest in speech sounds. Beside the distinctive features, there are, at the command of the speaker, also other types of coded information-bearing features that any member of a speech community has been trained to manipulate and which the science of language has no right to disregard.

Configurative features signal the division of the utterance into grammatical units of different degrees of complexity, particularly into sentences and words, either by singling out these units and indicating their hierarchy (culminative features) or by delimiting and integrating them (demarcative features).

Expressive features (or emphatics) put the relative emphasis on different parts of the utterance or on different utterances and suggest the emotional attitudes of the utterer.

While the distinctive and the configurative features refer to semantic units, these two types of features, in turn, are referred to by the redundant features. Redundant features help to identify a concurrent or adjoining feature, either distinctive or configurative, and either a single one or a combination. The auxiliary role of redundancies must not be underestimated. Circumstances may even cause them to substitute for distinctive features. Jones cites the example of the English /s/ and /z/ which in final position differ from each other solely in the degree of breath force. Although "an English hearer will usually identify the consonants correctly, in spite of their resemblance to one another," the right identification is often facilitated by the concomitant difference in the length of the preceding phoneme: *pence* [peñs] – *pens* [pen:z].[5] In French, the difference between voicelessness and voicing ordinarily accompanies the consonantal opposition tense/lax. Martinet notes that in an energetic shout the lenis /b/ matches the fortis /p/ in energy so that a strong *bis!* differs from *pisse!* only through the normally redundant feature voiceless/voiced.[6] Conversely, in Russian, the difference between lax and tense is a redundant feature accompany-

[5] D. Jones, *The Phoneme: its nature and use* (Cambridge, 1950), p. 53.
[6] *Word*, XI (1955), p. 115. Cf. R. Jakobson, C. G. M. Fant, M. Halle,

ing the distinctive opposition voiced/voiceless, while under the special conditions of whispering only the redundant feature remains and takes over the distinctive function.

If the distinctive function of speech sounds is the only one under analysis, we use the so-called "broad" or phonemic transcription, that notes nothing but phonemes. In a Russian specimen /pil,íl/ '(one) spread dust', /i/ is an unstressed phoneme that includes, furthermore, two distinctive features: in traditional articulatory terms, /i/ is opposed to /a/ of /pal,íl/ '(one) fired' as narrow to wide and to /u/ of /pul,ál/ '(one) took a pot shot' as unrounded to rounded. The information load of the vowel analyzed is, however, far from confined to its distinctive features, notwithstanding their paramount relevance in communication.

The first vowel of /pil,íl/ is a velar [ɯ] in contradistinction to the palatal [i] of /p,il,íl/ '(one) sawed' and this difference between back and front is a redundant feature pointing to the distinctive opposition of the preceding unpalatalized (plain) and palatalized (sharp) consonant: cf. Russian /r,áp/ 'pitted' – /r,áp,/ 'ripple'.

If we compare the sequences /krugóm pil,íl/ '(one) spread dust all around' and /ispómpi l,íl/ '(one) poured from a pump', we observe that the syllable /pi/ in the second specimen contains a more obscure (tending toward a brief, mid-central articulation) variety of vowel than in the first sample. The less obscure variety appears only immediately before the stressed syllable of the same word and thus displays a configurative feature: it signals that no word boundary follows immediately.

Finally, /pil,íl/ may be uttered with a prolongation of the first, pretonic vowel [ɯ:] to magnify the narrated event, or with a prolongation of the second, accented vowel [i:] to imply a burst of emotion.

The velarity in the first vowel of /pil,íl/ denotes the antecedent plain feature; the unreduced, less obscure character denotes that no word boundary follows; the vowel lengthening denotes a certain

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Preliminaries to speech analysis, third printing (Massachusetts Institute of Technology, Acoustics Laboratory, 1955), p. 8.

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