

39. Prof. LOUIS HJELMSLEV (Copenhagen) : *The Syllable as a Structural Unit.*

The purpose of this paper is to present and to discuss a definition of the syllable which has been published by me in 1937 (1).

The definition is the following : *A syllable is a chain of expression including one and only one accent.*

Like any other scientific definition, this definition of the syllable is part of a system of definitions and cannot be adequately understood without considering the system as a whole. But I shall not begin by developing the whole deductive theory or by stating the whole set of more general definitions from which the definition of the syllable must be deduced. My first task must be to make you familiar with my conception of the syllable in a way which is theoretically non-committal.

That the syllable is claimed as a chain of expression does not seem to need any further justification. It seems obvious that in any utterance a distinction must be made between the *content* or the meaning on the one hand, and its *expression* on the other, and it follows from this that any language must consist of two planes : the plane of content or, if you like, the inner plane, and the plane of expression or the outer plane. The syllable of course belongs to the plane of expression, and is a chain consisting of a larger or smaller number of elements of the expression.

The syllable is not necessarily of phonic nature. In any linguistic expression, i. e., in any pattern of sounds, of writing, of gestures, of signals, etc., syllables may be present or not, according to the structure of the expression observed. In Vedic Sanskrit, for instance, where the writing system comprises a graphic manifestation of accents, syllables can be recognized directly by a study of the writing without any knowledge of the pronunciation. There is no reason why this situation should not be appreciated in the same way as the situation of Modern German, where the sound system comprises a phonetic manifestation of accents, and where consequently syllables can be recognized directly by a study of the pronunciation without any knowledge of the writing. The syllable may be manifested by a chain of sounds or of characters or of any other symbols usable for manifestation. The syllable must be defined independently of its specific manifestation.

(1) See my papers „Accent, intonation, quantité”, in *Studi Baltici*, VI, p. 19, and „La syllabation en slave”, in *Beličev Zbornik (Mélanges Belič)*, p. 318. See also my recent paper „Die Beziehungen der Phonetik zur Sprachwissenschaft”, in *Archiv für vergleichende Phonetik*, II, Heft 2.

In my definition of the syllable as a chain of expression including one and only one accent, the only special notion presupposed is that of *accent*. Now it is clear from what has just been said, that the specific manifestation of accent must be immaterial for its definition ; otherwise it could not be adopted as the basis of the definition of the syllable, which must be established irrespective of the phenomena of manifestation. Accents may be manifested by different degrees of stress, by different degrees of pitch, by different movements of stress, by different movements of pitch, by diacritic signs of any kind, in short, by any sound or graph or other symbol which is considered usable for this purpose.

It need hardly be added that different degrees or movements of stress or pitch, different diacritic graphs, etc., are only linguistically relevant when the replacing of one of these symbols by another is capable of entailing a difference in the content (a change of the meaning). This test, which I have previously described as the *commutation test* (1), will always be sufficient to show whether a language possesses accents or not, and, if so, how many accents it has. In German, for instance, stress degrees are „commutable”, capable of entailing a difference in the content ; cp. 'hmtərge:ən „to go behind”, hmtər'ge:ən „to deceive”. In French, stress degrees are not „commutable”, not capable of entailing a difference in the content. Further, French has no other „commutable” accent symbols. Consequently German has accents, while French has not.

As the syllable has been defined as a function of the accent, the accent cannot conversely be defined as a function of the syllable. The accent must be defined as a function of something else. By *function* is here meant a direct dependence of any kind.

It seems obvious that an accent has a function in two respects :

On the one hand, an accent is bound to a chain of other units which are not accents. In 'dɒk₀tə, there is one accent manifested in the pronunciation by strong stress, and in my notation by a vertical stroke, and which we may call arbitrarily accent no. 1 ; and there is another accent manifested in the pronunciation by weak stress, and in my notation by a circle, and which we may call arbitrarily accent no. 2. In our example, accent no. 1 is bound to the chain dɒk, and accent no. 2 to the chain tə. In ɔdɒk₀tə 'smɪθ accent no. 2 is bound to the chain dɒk and

(1) See *Proceedings of the Second Intern. Congress of Phonetic Sciences*, p. 51.

to the chain $tə$, while accent no. 1 is bound to the chain $smɪθ$. These chains, which do not themselves consist of accents, but of which each accent is a function, may be termed *accent themes*, and elements included in accent themes may be termed *constituents*, whereas the accents may be termed *exponents* (1).

On the other hand, one accent may be dependent on another accent belonging to the same chain. Thus, in ${}^o dɒk_0 tə 'smɪθ$, the presence of accent no. 2 in ${}^o dɒk$ instead of accent no. 1 is due to the presence of accent no. 1 in $'smɪθ$. In $'dɒk_0 tə$, considered as an independent chain, the presence of accent no. 1 in $'dɒk$ instead of accent no. 2 is due to the presence of accent no. 2 in ${}_0 tə$. In both cases the dependence is due to the fact that the English language does not admit any accent group which includes more or less than one and only one accent no. 1. It follows from this law that a single accent-group of the structure $'{}_0$, e. g. in $'dɒk_0 tə 'smɪθ$, is not permissible, since it includes more than one accent no. 1 ($'dɒk_0 tə 'smɪθ$ would include two accent-groups and not one), and that an accent-group of the structure ${}_0$, e. g. in ${}_0 dɒk_0 tə$, is not permissible, since it includes less than one accent no. 1 (${}_0 dɒk_0 tə$ would be part of an accent-group, not a whole accent-group).

This dependence between accents belonging to the same chain must be a sort of *government*. The interdependence between accents, or exponents of the expression, is not fundamentally different from the interdependence between grammatical units, or units of the content. Just as a noun can have two cases, of which one must be chosen in one connexion and the other in another connexion, so an accent theme like $dɒk$ can have two accents, of which one must be chosen in one connexion and the other in another connexion. The accent theme has accent declension. It has not been recognized before that there may be government and inflexion in the plane of expression as well as in that of content; but it seems incontestable.

The fact of government can be used to define the difference between constituents and exponents. Let us call the accent theme with its accent an *accent syntagm*; e. g. in ${}_0 dɒk_0 tə 'smɪθ$ there are three accent syntagms: ${}_0 dɒk$, ${}_0 tə$, and $'smɪθ$. If we consider the government which takes place between accent syntagms, or between units larger than accent syntagms, we shall see that this sort of government can never take place between constituents: we never find a constituent of one

(1) Strictly speaking, the elements included in accent themes may be *constituents* or *converted exponents*, while the accents are *fundamental exponents*. For the sake of simplicity the existence of converted exponents has not been considered in this paper.

syntagm governing a constituent of another syntagm, but we often find an accent of one syntagm governing an accent of another syntagm.

This sort of government is found between *modulations* as well as between accents. In the German example

$/{}_0 vən {}_0 əs 're:g_0 nət \backslash {}_0 ge:n {}_0 vɪ:r 'nɪçt {}_0 hɪn'aʊs$

there are two modulations, manifested in the pronunciation by pitch movements, and in this notation by oblique strokes. The first of these modulations presupposes the second one. The rising pitch or the rising stroke makes you expect a falling pitch or a falling stroke coming after it. According to a well-known theory this is also why the modulation manifested by rising pitch is used in interrogations: the question presupposes an answer to come: $/ 're:g_0 nət {}_0 əs$ presupposes $\backslash 'ja:$ or $\backslash 'nam$.

Thus modulations are exponents, as well as accents. The difference between modulations and accents is in the extent of the theme: the modulation theme has a larger extent than the accent theme, and the accents belong to the modulation theme, but not conversely. To put it more precisely, the difference is that one modulation can be the exponent of a whole utterance, while one accent cannot. In $/ 're:g_0 nət {}_0 əs$, the modulation manifested by rising pitch is the exponent of the whole utterance, the accents belonging to the modulation theme together with the constituents. In $\backslash 'ja:$, the accent manifested by strong stress must consequently also belong to the modulation theme, and the modulation manifested by falling pitch is the exponent of the utterance as such.

It goes without saying that the specific manifestation is immaterial to the definition of the modulation as well as to that of the accent. The definition holds good for any modulation, irrespective of its particular manifestation in pronunciation by pitch degrees, pitch movements, stress degrees, stress movements, etc., and in writing by different sorts of strokes, etc. The definitions given are purely functional: An exponent is something capable of being governed by a government taking place between accent syntagms or between units larger than accent syntagms. A constituent is something not capable of being governed by such a government. A modulation is an exponent which can be a function of a complete utterance; an accent is an exponent which cannot be a function of a complete utterance.

As there may exist themes of different extent: modulation themes, which are larger, and accent themes, which are shorter, it follows that there may exist syntagms of different extent:

a modulation syntagm, i. e. a modulation with its theme, has a larger extent than an accent syntagm, i. e. an accent with its theme. For the sake of convenience, shorter names may be introduced for the syntagms of different orders: the minimal syntagm, or accent syntagm, may be called a *syntagmateme* of the expression, and the modulation syntagm may be called a *nexus* of the expression. The syntagmateme of the expression corresponds exactly to my definition of the syllable, as a chain of expression including one and only one accent. The syllable is nothing but the syntagmateme of the expression.

When the syllable has been established, it is possible to distinguish the two types of constituent units: *vowels* and *consonants*. The vowel is defined as a minimal central unit of an accent theme, the consonant as a minimal marginal unit of the accent theme. Practically, the vowels can be defined as the minimal units capable of building up an accent theme by themselves. The function between the central and the marginal part of the syllable is a government taking place within one accent theme. Here again the specific manifestation of the constituent units is immaterial to the definition: the *l* of the Czech word *vlk* „wolf” fulfils entirely the definition of the vowel in the functional sense of the word.

It follows from the definition that there are languages which have no syllables. A language without accents will be a language without syllables. French is an example of such a language. In most of these languages without syllables the vowel and the consonant cannot be determined either. They can only be determined if the language possesses words consisting of one single constituent unit, such as French *à* and *ou*. In the case of French the other vowels can be determined as such by the fact that they are governed by the same consonants as *a* and *u*. When the difference between vowels and consonants has been established in this way, a unit which includes one and only one vowel can be defined as a *pseudo-syllable*.

In a language which has neither accents nor words consisting of one minimal constituent unit, it would sometimes be possible to distinguish two types of constituents by studying their mutual government, but it would never be possible to determine which are to be called consonants and which are to be called vowels, and in many cases even the distinction would turn out to be impossible. In a language of this type even pseudo-syllables will mostly be inexistant.

This goes to show that the consonant and the vowel can only be consistently defined when the syllable, in the proper sense of the word, is taken as the basic unit. All our definitions must

be deductive, by descending gradually from larger to smaller units. Within the deduction, the syllable has its definite rôle, as being presupposed by the definitions of the vowel and the consonant. The syllable is a notion of the kind which in science is called operational. The pseudo-syllable is not: this notion is of no use at all and can, strictly speaking, be considered superfluous. It does not offer anything which has not been found beforehand; it is merely another way of stating the government taking place between the two types of constituents.

I shall now develop briefly the total paradigmatic deduction leading to the definition of the syllable and to the distinction of vowels and consonants.

A language is a category of two members, called *planes*, which are defined as being related to each other in such a way that a unit consisting of members of one plane may call forth a unit consisting of members of the other plane. One of these planes, the *plerematic* plane, gives form to the *content*, the ontological substance; the other, the *cenematic* plane, forms the *expression*, the physical substance (sounds, writing, gestures, etc.). Each plane is a category of, generally, two members called *species*: the *constituents* and the *exponents*. If the government taking place between „accent themes” or larger units is termed direction, constituents and exponents are distinguished by the ability of the latter only to be directed. The plerematic exponents are the *morphemes* (1), the cenematic exponents are the *prosodemes* (prosodeme being chosen as the common name for accent and modulation elements). Each species is a category of, generally, two members called *types*. The exponents are divided into types according to the extent of their theme. In the frequent case of two types of exponents we get, then, *extense* exponents: such as are able to characterize a complete utterance; and *intense* exponents, which can only characterize a chain that is smaller than a complete utterance. In plerematics, the members of the extense type are generally categories like person, voice, emphasis, aspect, tense, mood; while the intense morphemes tend to be case, comparison, number, gender, article. The corresponding prosodemes are *modulations*, which are extense, and *accents*, which are intense. A unit comprising both constituents and exponents is called a *syntagm*. A syntagm whose characteristic is a minimal unit of intense exponents, is called a *syntagmateme*. The plerematic syntagmateme is the *noun*. The cenematic syntagmateme is the *syllable*. The constituents are divided into types according to their function within the basic

(1) See *Actes du IV^e Congrès international de linguistes*, pp. 140 ff. (Copenhagen, 1938).

unit, generally the syntagmateme. The constituents — in plerematics: the *pleremes*, in cenematics: the *cenemes* — are usually of two types: central and marginal constituents. The central pleremes are the elements known as radical, the marginal pleremes are the elements known as derivational. A minimal unit consisting of central cenemes is called a *vowel*; a minimal unit consisting of marginal cenemes is called a *consonant*. The central constituents are defined as constituents of which one minimal unit may be the only constituent of a syntagmateme.

The striking parallelism in the structure of the two planes, the plane of content and the plane of expression, highly corroborates the internal value of my definition of the syllable.

This whole deductive theory of plerematics and cenematics, established by Mr. ULDALE and myself under the common name of *glossematics* (1), bases the definitions of forms on their function among themselves. The syllable, the vowel, and the consonant are functional form units and can only be defined as such. But to the description of the pure forms can be added a description of the substances formed by them: a description of the meaning and of the pronunciation, the writing, etc. The substances again are defined by their function to the forms, and can only be described correctly by a deduction from the forms. If phonetics has not as yet succeeded in giving a consistent definition of the syllable, the vowel, and the consonant, the reason is that these units have been conceived as pure sound units. They are sound units and form units at the same time, and they are only sound units because they are form units. The phonetic and the graphic syllable must be defined as manifestations of the cenematic syllable, in those languages where the cenematic syllable is realized in the form system.

40. Mr. H. J. ULDALE (Vedbæk): *On the Structural Interpretation of Diphthongs*.

It is with diphthongs as it is with a good many other concepts in our trade: everybody knows what it is, but so far no definition has been found that will ensure a purely objective decision in each concrete case and eliminate personal opinion. Perhaps the current views can be summed up in the following statement: a diphthong is a vocalic continuum of composite quality comprised within one syllable. Some of the difficulties encountered

(1) See LOUIS HJELMSLEV and H. J. ULDALE, „An Outline of Glossematics”, in *Humanistisk Samfundsskrifter*, I (Aarhus-Copenhagen-London, 1939) (in preparation).

are due to imperfect definition of the syllable, others to imperfect definition of the vowel, and still others to the vagueness of the definition of the diphthong itself.

Dangers lurk in the path of phonetician and phonologist alike. The phonetician's trouble is to know exactly how far a vowel is to be allowed to swerve from the straight path of uniform quality before it should be called a diphthong. This is necessarily a matter of taste, and the result of the inquiry is therefore of no particular interest from a scientific point of view.

The phonologist, in his turn, is faced with the question whether a given diphthong — recognized as such by some means or other, is to be interpreted as a realization of one phoneme or of two phonemes. That the methods of phonology lead to no less ambiguous results than those of phonetics, is amply demonstrated in the literature on the subject (1).

Altogether, then, the diphthong remains a puzzle — a sorry state to be in for a branch of knowledge which calls itself not only a science but several sciences. Scientific in the proper sense of the word our studies will never be, until we adopt the deductive method, based on a set of unambiguous definitions, and criteria that allow of only one interpretation of any given phenomenon.

It is the purpose of this paper to sketch a solution of the problem of diphthongs along those lines.

Going on from the definitions given by Professor HJELMSLEV in his paper, we can define a diphthong as a duplex central group, or, in other words, the central unit of a syllable is said to be a diphthong when it consists of a group of two vowels. A definition which is equally valid whatever the substance chosen for the manifestation of the system of expression, since it is deduced from purely functional definitions of the syllable and the vowel.

The diphthong is thus only a special case of grouping in general: it must be established by the same kind of function which establishes other groups, such as the consonant groups which occur in marginal units, and the groups of accents mentioned by Prof. HJELMSLEV. The ability to occur in such a group is, of course, an important part of the functional definition of each component vowel; we shall return to this question later.

The number and identity of the vowels in a given group is

(1) Cf. particularly J. VACHEK, „Ueber die phonologische Interpretation der Diphthonge” (*Práce z vědeckých ústavů XXXIII*, Filosof. Fakulty, Prague, 1933).