

## ON THE ANALYSIS OF LINGUISTIC VAGUENESS<sup>1</sup>

### 1. Introduction

If the development of applied and mathematical linguistics led recently to some decrease of interest in that property of language phenomena which we call vagueness, then the further road of linguistics will most likely lead to emphasizing its importance and to its recognition as a methodological principle of the first rank without which truly realistic linguistics cannot advance. A mere recording of the individual conspicuous cases of vagueness in a language is, in the present stage, insufficient: the main task of today's linguistics is to determine the full extent of vagueness, to analyse and to explain it and to make possible the combination of its thorough consideration with the stream of the world linguistic tradition.<sup>2</sup>

The phenomenon which is understood under the term vagueness is referred to in linguistics by a number of various terms as "complexity and indeterminacy" (Kruševskij), "potentiality" (Mathesius), "border-line cases" (Bloomfield), "Klarheit der Differenziation" (Skalička), "asymmetry" (Skalička), "des nuances plutôt que des oppositions" and "oppositions phonologiques de stabilité différente" (Malmberg), "open systems" (Milewski), "complexity" (Skalička), "continuities", "differences of degree" (Wells), "degrees of relevance" (Jensen), "generality and gradience" (Bolinger), "vagueness of linguistic structure", "asymmetry" (Neustupný), "Zentrum, Peripherie, Übergang" (Daneš), "peripheral elements" (Vachek) and the like.<sup>3</sup> It seems that problems of neutralisation, functional load<sup>4</sup> and, perhaps, also a number of other questions of classical linguistic science are closely related to vagueness. By using the term vagueness, we believe it possible to bring all the above terms, and perhaps some others too, to a common denominator without eliminating their differences — and to put them on a firm theoretical foundation.

## 2. Logical Theories of Vagueness

Many objections have been raised against vagueness in the name of logic. It would seem at first glance that the *principium exclusi tertii* excludes "border-line cases" and all indeterminateness. The combination of two morphemes means either one or two words: *tertium non datur*. In the textbooks of logic we learn that "many terms of everyday life are inaccurately defined terms. For the purpose of normal communication even such inaccurately defined terms can serve us well enough. But in a precise scientific deliberation, it is necessary to work with terms exactly defined; hence, "science often replaces inaccurate terms of current speech with exact scientific terms".<sup>5</sup> This naturally means that linguistic terms, too, must conform to this requirement. At the same time, criticism of this kind does not count with the possibility of inaccuracy of terms resulting not from an inaccurate, but from a precise reflection of the object.

Contemporary logic now has at its disposal the means with which it can deal with vague elements in such a way that chaos is eliminated and they can be built into consistent axiomatic systems. From the available logical literature on vagueness, we can mention important studies by M. BLACK, T. KUBIŃSKI and W. QUINE.<sup>6</sup> It is of interest that these works were mostly based on linguistic materials and were using other materials only secondarily.

Logical theories on vagueness agree that vagueness must be primarily differentiated from generality and ambiguity. While by vagueness of the word "chair" is meant the fact that there exist objects the terming of which as "chair" is uncertain or dubious, the generality of the word "chair" shows the possibility of using it to indicate a great number of different objects, and the ambiguity of the English "put", for example, lies in the fact that it designates the present tense, past tense, or the past participle. It is only just to admit that though generality and ambiguity are not identical with vagueness, they provide very favourable conditions for it: if the same word is used for a large number of objects, then there is an increased possibility that a number of uncertain cases will also occur among them: ambiguity also, the members of which are semantically close, offers an increased possibility of the occurrence of objects, the classification of which under some of its members might be doubtful. Bolinger gives an example in which it is difficult to specify whether the word "turning" in a given sentence represents a substantive or an adjective and it would be possible to provide quite a number of similar examples from any language.

Black<sup>8</sup> quotes Peirce's definition of vagueness: "A proposition is vague when there are possible states of things concerning which it is intrinsically uncertain whether, had they been contemplated by the speaker, he

would have regarded it as intrinsically uncertain of the intermediate of the indeterminate". Black and names for complete perfect continuity sections by degree into orange, or a Black introduces doubts" on the use not in accord with he evades it and by means of a series of objects chairs more often determination of the course of judgment Black's measuring

For a logical method.<sup>10</sup> As the use fringe, he replaces is *y*, then it is not non-*y*, then it is related by Kubiński, they are consistent

Kubiński's this author introduces a functor of negation tedly" (e. g. *xy* functor  $\eta$ , with which of the type "x is a system describing expressing the relation. This means that with following frequency word:

- a) M is one word; M
- b) M is not understood one word than
- c) M is just on the

would have regarded them as excluded or allowed by the proposition. By intrinsically uncertain we mean not uncertain in consequence of any ignorance of the interpreter, but because the speaker's habits of language were indeterminate". Black further exemplifies vagueness in the word "chair" and names for colours: in the latter, it is especially clear that because of the perfect continuity of the spectrum it is not possible in a designation of its sections by degrees to find the exact point where, for instance, red changes into orange, orange into yellow, etc. In the following parts of his study, Black introduces the term "fringe": That is a sphere of "uncertainty and doubts" on the use of the vague word.<sup>9</sup> He then demonstrates that fringe is not in accord with the usual conception of negation and in further analysis he evades it and works out a method of measuring the degree of vagueness by means of a so-called consistency profile: for vague words such as "chair" it is presumed that in a number of judgements, whether the elements of a series of objects are chairs or not, some of the objects will be called chairs more often and some of them less often; it is in fact the statistical determination of consistency in calling particular objects "chairs" during the course of judgements repeated several times, which is the basis for Black's measuring of vagueness.

For a logical interpretation of vagueness, Kubiński uses a different method.<sup>10</sup> As the usual conception of negation does not admit the existence of fringe, he replaces it by another conception from which it follows that if  $x$  is  $y$ , then it is not non- $y$ , but from which it does not follow that if  $x$  is not non- $y$ , then it is  $y$ , because  $x$  might lie on the fringe. In the systems formulated by Kubiński, the law of the excluded middle is then not valid, though they are consistent logical systems.

Kubiński's third study<sup>11</sup> is probably the most important for us. The author introduces in it as primitive terms of his system, in addition to a new functor of negation, a functor  $\varepsilon$  which has an intuitive content "is undoubtedly" (e. g.  $\varepsilon xy$  we read " $x$  is undoubtedly  $y$ ") and a very important functor  $\eta$ , with which it is possible to express the relation between  $x$ ,  $y$ ,  $z$ , of the type " $x$  is rather  $y$  than  $z$ ". There are defined functors  $\delta$  in the same system describing the relation " $x$  is rather  $y$  than non- $y$ " and functor  $\omega$  expressing the relation of equidistance " $x$  is  $y$  and  $z$  in the same degree". This means that we have at our disposal an apparatus for describing the following frequent situations in problems of language units, for instance word:

- a)  $M$  is one word;  $M$  are two words (functor  $\varepsilon$ )
- b)  $M$  is not undoubtedly a single word, but it is nearer to an evaluation as one word than as two words (functor  $\eta$ )
- c)  $M$  is just on the boundary between one and two words (functor  $\omega$ ).

Elements for which  $\omega xyz$  is valid (i. e.  $x$  is in the same degree  $y$  and  $z$ ) we shall call in our study boundary elements and their class BOUNDARY. Elements for which  $\eta xyz$  (i. e.  $x$  is rather  $y$  than  $z$ ) is valid we shall call peripheral and their class PERIPHERY. Elements for which neither  $\varepsilon xy$  or  $\varepsilon xz$  is valid, are situated on the MARGIN and hence we may call them marginal, while elements for which  $\varepsilon xy$  or  $\varepsilon xz$  are valid will be called central and their class CENTRE.<sup>12</sup> From the given definitions it follows that the margin covers the whole boundary and periphery of elements  $y$  as well as of elements  $z$ . This situation can be graphically demonstrated as follows:

| $\varepsilon xy$  | $\eta xyz$       | $\omega xyz$ | $\eta xzy$       | $\varepsilon xz$ |
|---|------------------|--------------|------------------|------------------|
| centre of $y$   | periphery of $y$ | boundary     | periphery of $z$ | centre of $z$    |
| <div style="text-align: center;"> <math>\longleftarrow</math>                      m a r g i n                      <math>\longrightarrow</math> </div> |                  |              |                  |                  |

The terms with which Kubiński's study provides us are certainly more differentiated than a mere demarkation of centre and margin or analysis by the use of the consistency function (Black). The terms periphery and boundary are undoubtedly more important for linguistics without a doubt than an unanalysed term margin. In fact, mostly we come across peripheral elements; boundary (equidistant) elements are probably very rare and are not so important in language (and in other spheres of reality too) as peripheral elements. We are convinced that by using the terms VAGUENESS, MARGIN, BOUNDARY, PERIPHERY and CENTRE we come much closer in linguistics to the requirements of a dialectical way of thinking. "Hard and fast lines", "forcibly fixed boundary lines and differences in classes" are no longer prescribed to us as logical necessities. Thus linguistics can reach a state in which it will be able to describe language just as it is, with all irregularities and complexities.

On the other hand, of course, it is not possible to say that contemporary logical theories of vagueness have satisfied us completely. For instance, Kubiński's systems presume an exact division of the centre, periphery and boundary. One of the problems which will certainly merit attention in the future is adoption of the possibility of gradual transition from the centre to the periphery and from the periphery to the boundary.

### 3. Some Types of Vagueness

Another disadvantage of logical theories is the fact that they take only one type of vagueness, which we shall call DISCOURSE VAGUENESS,

into account: the (word) describing course vagueness, elements) with the process takes place or different speakers using Black's model, ever, is not the In linguistics we work such as phonemes such cases is usual lower order with c We can consider s of the lower order course, neighbouring state, the property once and it is impossible SYSTEMIC VAGUENESS

Non-terminological. However, should § 2, we have to consider a) the vagueness of b) to which other proximate. It may glottal stop may a marginal element tion). The first c GUENESS and the types of vagueness the terms quoted it, offer here a good

### 4. An Anal

As we have observed, accompanied by its ar Black's consistency course vagueness which we propose in in both types of v

into account: they are usually concerned with cases of a single symbol (word) describing a series of similar objects. When investigating the discourse vagueness, the process of classing definite objects (thus non-language elements) with a certain word (language element)<sup>13</sup> serves as material. This process takes place in discourse, can be many times repeated (by the same or different speakers of the language) and then statistically evaluated by using Black's method of consistency function. Discourse vagueness, however, is not the only, and also not the most important, type of vagueness. In linguistics we want to apply this term mainly to cases of linguistic units such as phoneme, morpheme, word and the like. The matter in question in such cases is usually the problem of classing a definite (linguistic) unit of lower order with definite more general (linguistic) units of a higher order. We can consider such classing only on the basis of knowledge of all units of the lower order, their linguistic properties (including vagueness) and, of course, neighbouring elements of the system. As classing in this case is a state, the property of *la langue*, and not a process, we obtain results only once and it is impossible to evaluate them statistically. Let us call this type **SYSTEMIC VAGUENESS**.<sup>14</sup>

Non-terminologically, vagueness is often spoken of in a very broad sense. However, should we consider vagueness in the sense of the terms defined in § 2, we have to consider simultaneously two circumstances:

- a) the vagueness of which linguistic unit is under consideration and
- b) to which other linguistic unit the marginal elements of vague units approximate. It may be a certain concrete unit (e. g. marginal elements of the glottal stop may approach /h/), or zero (for instance, the glottal stop with marginal elements in which the articulation diminishes and is close annihilation). The first of these cases might be called **APPROXIMATION VAGUENESS** and the second **ANNIHILATION VAGUENESS**. The given types of vagueness are definitely not unique. Detailed consideration of all the terms quoted in § 1 which point to vagueness but are not identical with it, offer here a good basis for further study.

#### 4. An Analysis of Linguistic Vagueness

As we have observed above, the mere registration of vagueness, unaccompanied by its analysis, cannot be satisfactory. Analysis with the aid of Black's consistency profile — though of great help when applied to discourse vagueness — is of no use in cases of systemic vagueness. The analysis which we propose in the following paragraphs can, on the contrary, be used in both types of vagueness.<sup>15</sup>

## 4.1. Classes of linguistic units

The first step in an analysis of vagueness is a determination that linguistic phenomena are classes composed of elements which themselves may again be classes. Such a determination, naturally, is not at all a new discovery and we come across it in linguistics very frequently, sometimes under various terms. A few examples of classes: a language in the sense of "language of a certain nation" is regularly a class, the elements of which are geographical, social and functional dialects; each such dialect is usually a class of group or individual dialects, etc.; the phoneme in general is a class the elements of which are classes of vowels and consonants; a certain phoneme is a class of its variants, and so on.

For an analysis of vagueness, we obviously have to presume classes different from those normally used in logic and in which it is valid that "it is possible to make a basic determination on each individual as to whether it belongs or does not belong to the class under consideration."<sup>16</sup> We must reckon with classes which have not only the elements appropriate to them "undoubtedly" but also with such elements which belong to a given class "rather" than to any other, or which lie on the boundary between two classes: simply, classes which are an application of Kubiński's principle to the theory of classes and which should be called OPEN CLASSES.<sup>17</sup>

## 4.2. Complexity of linguistic units

Another important term for the analysis of linguistic vagueness is that of complexity. By complexity we understand the fact that each class is regularly characterized by a greater number of features simultaneously and not by a single feature.<sup>18</sup> In Japanese, for instance, a word is characterized by the following features:

- a) it is composed of a small group of semantemes which may be followed by several formemes,
- b) Certain variants of phonemes do not occur at its beginning ( $\eta$ , dz, d<sub>3</sub>),
- c) It has at the most one bound and one free accent,
- d) it is not interrupted by a pause,
- e) it can form an utterance on its own, etc.

Complexity thus understood is closely connected with the problem of redundant features which manifests itself first of all in phonology. The principle of complexity is naturally strongly opposed to the exclusion of redundant features from phonology.<sup>19</sup> It is indisputable that not everything



in an act of speech is the manifestation of *la langue*. But, in our opinion, such a narrow limitation of *la langue* which excludes redundancy from language, does not give a true picture of the correct structure of reality. For a correct description of a language we need both: a recording of the main outlines of the structure with the aid of non-redundant features, and, of course, a recording of details in structure which must necessarily also include redundant features.

But I believe one cannot emphasize enough the fact that the principle of complexity does not exclude the hierarchy existing among features. It is quite clear that not all features are of the same importance for a class. Nevertheless, it is impossible to solve this situation by omitting some of the features completely. Such a procedure does not result in building up a hierarchy but, on the contrary, in its annihilation.

The problem of the hierarchy of features is of course very complicated in practice and it is not easy to find criteria according to which it would be possible to determine it simply. It is, however, clear, for instance, that features characterizing all the elements of a certain class and no other are very important. If, let us say, a consonant is obligatorily voiced in all positional variants of the phoneme, while it is tense only in some variants and not in others, then, for the given phoneme, the presence of voice is more important than tenseness. This, nevertheless, in no way diminishes the need for a perfect description of tenseness within the same linguistic discipline which describes the presence of voice and other features of the given consonant.

#### 4.3. Asymmetry of features

For an explanation of vagueness, the statement of its complexity is obviously not sufficient. We can imagine complex classes exactly separated one from the other, without any marginal elements between them. The cause of vagueness lies in the fact that not all elements of a class can be characterized by all the features of the class, and that some features may be characterized by the features of other classes. This property we shall call ASYMMETRY of features.<sup>20</sup> The elements which are less characterized or are characterized by features of the opposite class, but still belong to the given class, are evidently the elements which we called peripheral in § 2. The elements which are so negligibly characterized that it is not clear whether they belong to the given or to the opposite class, are no doubt those which in § 2 we called boundary elements. This situation can be demonstrated something like this

| elements:      | CLASS A        |                |                |                | CLASS B        |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                | e <sub>1</sub> | e <sub>2</sub> | e <sub>3</sub> | e <sub>4</sub> | f <sub>1</sub> | f <sub>2</sub> | g <sub>1</sub> | g <sub>2</sub> |
| a <sub>1</sub> | +              | +              | +              | +              | +              | +              | +              |                |
| a <sub>2</sub> | +              | +              | +              | +              |                | +              |                |                |
| a <sub>3</sub> | +              | +              |                | +              |                |                |                |                |
| ⋮              |                |                |                |                |                |                |                |                |
| b <sub>1</sub> |                |                |                | +              |                | +              | +              | +              |
| b <sub>2</sub> |                |                | +              |                | +              |                | +              | +              |
| ⋮              |                |                |                |                |                |                |                |                |
|                | centre<br>A    |                | periphery<br>A |                | boundary       |                | periphery<br>B |                |
|                |                |                |                |                |                |                | centre<br>B    |                |

The marginal character of elements is doubtlessly influenced not only by the asymmetry of the features in the given class but also by the asymmetry of features in the opposite class, the elements characterized by the features of the opposite class being also peripheral within their own class. We shall call the above table the Table of Asymmetry. Such a table is certainly nothing new or surprising in linguistics. But if we try to elaborate it in concrete cases, and it should accompany an analysis of every linguistic class, we recognize that the matter is not so simple. It must be considered which class is concerned, what are its elements, what are the features of the class, what sort of hierarchy obtains among the features, with which other classes it has common marginal elements, what are the features of these classes etc.

In conclusion, we may say the following, concerning our analysis of vagueness: linguistic units are classes which are 1) complex, i. e. their elements are characterized by a greater number of features, 2) their features are asymmetric, i. e. all elements of the class are not necessarily characterized by the features of the class and, vice versa, some elements can be characterized by the features of other classes. The elements less characterized by the features of another class are marginal elements which cause the vagueness of the given class. These marginal elements can be further analysed into boundary and peripheral elements.

### 5. The Importance of the Theory of Vagueness

It is obvious that the theory of vagueness is still in its initial stage. In addition, the mode of analysis we have proposed and tested experimentally in several cases elsewhere,<sup>21</sup> is certainly also not the last word. Even so, it may mean a step forward which need not be quite devoid of value for linguistics. VACHEK's study<sup>22</sup> has already revealed that a concept related to vagueness can explain some linguistic changes such as the gradual transi-

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tion of some or all elements on to the periphery of a given class, then on to the boundary, and finally, on to the periphery or into the centre of the opposite class. This complete process can be traced, thanks to the theory of vagueness, in all its stages by means of linguistic description.

The second perspective is concerned with the application of mathematical procedures in linguistics. We are afraid that as long as so-called mathematical linguistics will not be able to take into consideration the vagueness of linguistic units,<sup>23</sup> it will hardly be possible to speak of even relatively final results. (In some types of applied linguistics, the neglect of vagueness will probably remain a programmatic necessity. In such cases, it would of course be unwise to demand consistent consideration for vagueness.)

The third perspective is concerned with broader problems than those of linguistics. It is quite clear that vagueness is not limited to language only and that an analysis of linguistic vagueness can substantially support studies of vagueness in non-linguistic spheres of reality.

## 6. Clarity and Vagueness

We should like to add a note on one of the terms introduced in § 1 which points to vagueness but is not identical with it. This term we call, with V. SKALIČKA<sup>24</sup>, clarity. While in considering vagueness we are interested in the elements of which there can be doubt as to the class to which they belong, in the case of clarity we are interested in the degree of differentiation between two terms of opposition, the strength of the opposition, the clarity of the very existence of a definite unit in the language system.

As an example we may introduce two dialects, between which there are several sub-dialects about which there can be hesitation as to which of the said two dialects they belong. Hence, the opposition of these two dialects is vague. Apart from this, however, we can speak about the clarity of this opposition, which is evidently the greater a) the more features there are which distinguish the two dialects (such features are separate phenomena of phonology, grammar, vocabulary etc. of both dialects), and b) the smaller is the vagueness of the opposition<sup>25</sup>.

## Notes

<sup>1</sup> This article is based on a lecture delivered on March 26, 1964 in the Linguistic Association in Prague.

<sup>2</sup> E. g., such questions should be considered as to whether vagueness is a feature of all linguistic phenomena or only of some (in such a case, of which), how to trans-

form vague elements into non-vague ones, how vagueness in language originated and why it persists (W. QUINE, *Word and Object*, New York—London 1960, p. 125 "Vagueness is a natural consequence of the basic mechanism of word learning") It can be deduced from the following paragraphs that attention has frequently been drawn to vagueness in linguistics, but also that it has been equally frequently overlooked. Only a few linguists take vagueness really seriously and are successful in solving the problems of its analysis (see for instance V. SKALIČKA in *Zur ungarischen Grammatik*, Praha 1935, *Asymetrický dualismus jazykových jednotek* [The Asymmetric Dualism of Language Units], *NR* 19, 1935, p. 296—303, *Komplexnost jazykových jednotek* [The Complexity of Language Units], *AUC-Philologica*, 3, No. 1, 1957, p. 15—25 and other works dedicated to particular questions). Consistent consideration of vagueness does not in the least mean a break with the results hitherto achieved by linguistics. Such apprehension would be uncalled for. We should fall into opposite extreme if we assumed that vagueness of linguistic oppositions means the disappearance of units and the rule of absolute continuity. Reality is composed of firm knots and only among them do we find single transitional cases. Hence the results of linguistics which do not take transitions into account, are mostly rather incomplete and insufficiently precise than incorrect.

<sup>1</sup> KRUSĚVSKIJ, N., *Očerkek nauki o jazyke*, Kazaň 1883; MATHESIUS, V., *O potenciálnosti jevů jazykových*, *Věstník Královské české společnosti nauk, třída filosoficko-historicko-jazykozpytná* 1911, II, p. 1—24 (the English version in *PSRL*, p. 1—32); BLOOMFIELD, L., *Language*, New York 1933; SKALIČKA, V., *Zur ungarischen Grammatik*... 1935; SKALIČKA, V., *Asymetrický dualismus*... 1935; MALMBERG, B., *Observation sur le système vocalique du français*, *Acta linguistica* II, 1940—1, p. 232—46; MALMBERG, B., *A propos du système phonologique de l'italien*, *Acta linguistica* III, 1942—3, p. 34—43; MILEWSKI, T., *Derywacja fonologiczna*, *Biuletyn Polskiego Towarzystwa Językoznawczego* (Bulletin de la Société Polonaise de Linguistique) 9, 1949, p. 43—57; SKALIČKA, V., *Komplexnost*... 1957; WELLS, R., *Is a Structural Treatment of Meaning Possible?*, *Reports for the Eighth International Congress of Linguists*, 1957, p. 197—209; JENSEN, M. K., *Tonemicity*, Bergen—Oslo 1961; BOLINGER, D. L., *Generality, Gradience, and the All-or-None*, 's-Gravenhage 1961; NEUSTUPNÝ, J. V., *The Asymmetry of Phonological Oppositions*, *The Bulletin of the Phonetic Society of Japan* (Onsei gakkai kaihō) 106, 1961, p. 1—6; DANEŠ, F., *Zusammenfassung des Diskussionsbeitrages, Zeichen und System der Sprache*, II. Band, Berlin 1962, p. 62; VACHEK, J., *On Peripheral Phonemes of Modern English*, *BSE* IV, 1964, p. 7—109.

<sup>2</sup> Cf. J. VACHEK, *op. cit.*; also M. K. JENSEN, *Tonemicity*, pp. 35—36.

<sup>3</sup> O. WEINBERGER, *Logika*, Praha 1959, p. 122.

<sup>4</sup> M. BLACK, *Language and Philosophy*, Ithaca—New York 1949; T. KUBIŃSKI, *Nazwy nieostre*, *Studia Logica*, 7, 1958, p. 116—79; T. KUBIŃSKI, *Systemy pozornie sprzeczne*, *Zeszyty naukowe Uniwersytetu Wrocławskiego, Seria B, Matematyka, Fizyka, Astronomia* 1959, p. 53—61; T. KUBIŃSKI, *An Attempt to Bring Logic Nearer to Colloquial Language*, *Studia Logica* 10, 1960, p. 61—75; W. QUINE, *Word and Object*... 1960.

<sup>5</sup> He quotes the sentence "That dirty dog — turning in front of me like that!" (BOLINGER, *Generality* ... 1961, p. 21). It is just such cases that Bolinger terms generality, hence in disagreement with the above quoted terminology.

<sup>6</sup> M. BLACK, *Language and Philosophy* ... 1949, p. 30.

<sup>7</sup> *Ibid.*, p. 34.

<sup>8</sup> T. KUBIŃSKI, *Nazwy nieostre* ... 1958, p. 120—1.

<sup>11</sup> T. KUBIŃSKI, *An Attempt ... 1960*.

<sup>12</sup> I accept now DANEŠ's (*Zusammenfassung ... 1962*) and VACHEK's (*On Peripheral Phonemes of Modern English ... 1964*) terms periphery and centre as more suitable than asymmetry, pole, and the like, which I used earlier. Daneš' term "transition" for boundary is a less happy choice, because peripheral elements also are "transitional".

<sup>13</sup> There exist two types of discourse vagueness:

a) Vagueness of content units. Some objects are classed with a word, for instance, "chair", more consistently and others less consistently and thus we arrive at the distinction between central and marginal elements. Interesting notes on this problem can be found in BOLINGER's *Generality ... 1961*, chapter 2, even though it seems that we still have to wait for a systematic elaboration of this question. As QUINE demonstrated (*Word and Object ... 1960*, p. 126), vagueness is not necessarily a matter of general terms; we find marginal utilisations with singular terms also. For instance, with "Mount Rainier", hesitation may arise as to where the mountain of this name actually begins. In such a case, we divide the whole region of the mountain range into smaller parts, each one of which we then attach separately to the term "Mount Rainier".

b) Vagueness of expression units. Some sounds are classed with a certain phonological unit in a greater number of "identifications" than others. The assumption that each phonetic unit may be, in case of normal, careful pronunciation and under normal conditions of listening, classed with a definite phonological unit (i. e. phoneme, prosodeme etc.) without any hesitation, proves to be false. For instance, we have analysed statistically the classing of a large number of phonetic manifestations with a certain variant of the Japanese free accent (the so-called final variant). A result of 0% or 100% was not obtained in a single one of the phonetic manifestations, which means that all manifestations were marginal in the sense defined in § 2, and hence the final variant of the Japanese free accent is a very vague unit. In this respect, our results are not the first. From his Dutch dialects EBELING presents a vague opposition /v/ : /f/ — some manifestations can clearly be identified as /v/, others as /f/, but most manifestations lie between these two extremes (*Linguistic Units, 's-Gravenhage 1960*, p. 46, 48—9). Discourse vagueness of the Norwegian accent is analysed statistically by M. K. JENSEN, *Tonemicity ... 1961*. It is interesting that numerous reviewers did not pay appropriate attention to the conclusions of the author which are of paramount importance for the theory of language. Jensen was in fact the first to prove statistically the discourse vagueness of phonological units.

<sup>14</sup> More attention is generally being paid to systemic vagueness than to discourse vagueness. However, equally often it is disclaimed in practice. BLOOMFIELD, e. g., in his *Language* says for instance on page 181: "... None of these criteria can be strictly applied: many forms lie on the border line between bound forms and words, or between words and phrases", but on page 178—9 of the same work, he categorically asserts that "the man I saw yesterday's" is simply one long word. — In addition to his previous works, SKALIČKA analyses the systemic vagueness of grammatical units e. g. in his study *Komplexnost jazykových jednotek ... 1957*; the author of the present study has presented a few notes on vagueness in syntax (review of E. H. JORDEN, *The Syntax of Modern Colloquial Japanese, Zeitschrift für Phonetik und allgemeine Sprachwissenschaft* 13, 1960, p. 83—9) and an attempt to analyse phonological vagueness (*The Asymmetry ... 1961*). But vagueness applies also to such oppositions as of *la langue* and *la parole* (cf. already SKALIČKA, *The Need for a linguistics of la Parole, Recueil linguistique de Bratislava* 1, 1948, p. 21—36). VACHEK's essay *On*

Peripheral Phonemes in Modern English ... 1964, is a very interesting contribution to this problem. I tried to further develop the analysis of the vagueness of *la langue* in an essay on foreign phonological elements in Japanese, to appear in the volume *Jazyková situace v stranách Azii i Afriky*, Moscow 1966.

<sup>15</sup> This analysis is based on previous works by V. SKALIČKA. In principle it was formulated earlier in our essay in 1961 (The Asymmetry ...).

<sup>16</sup> K. BERKA in *Moderní logika*, ed. by O. Zich, Prague 1958, p. 94.

<sup>17</sup> Cf. MILEWSKI's "systemy otwarte" (Derywacja fonologiczna ... 1949). Milewski however has in mind only language as a whole, and not individual linguistic classes. — Openness of the classes represents but a different formulation of their vagueness.

<sup>18</sup> Complexity, conceived in this way, differs from the complexity as defined by V. SKALIČKA (Komplexnost ... 1957) for whom it is a fact identical with what we call vagueness. In the sphere of linguistic analysis, the problem of complexity is projected as a problem of the "plurality of criteria". Considerations of this subject are very important for the theory of complexity, though they are often not sufficiently consistent. Although several criteria are often admitted, they are usually not independent but complement each other in such a manner that where one criterion is insufficient, only then does the other (or others) come to assert itself. The criteria of the word mentioned by BLOCH (Studies in Colloquial Japanese II, *Language* 22, 1946) are in such a relation, and a similar relation exists also among TRUBETZKOY's criteria of monophonemicity (Grundzüge der Phonologie, Praha 1939). Sometimes hierarchy among criteria is conceived in such a way that some criteria are considered merely as auxiliary (C. E. BAZELL, The Choice of Criteria in Structural Linguistics, *Linguistics Today*, 1954, p. 15). Such a standpoint means, however, that although we should recognize the plurality of criteria in linguistic analysis, this does not lead to complexity in linguistic description. Various use of criteria in the course of analysis does not, in fact, come out anywhere in the resulting description, which is contrary to the rule that each step in analysis should correspond to data in the description of the language.

<sup>19</sup> In the Circle Linguistique de Prague, too, voices were raised against a strict division of features into phonological and extra-phonological. Cf. DE GROOT's note on the definition of Variation extraphonologique concomitante in *TCLP* 4, 1931, p. 319, and his article in the same volume of *Travaux*. For new opinions on this question we quote only C. F. HOCKETT: "... Of course it is easy to miss some relatively subsidiary secondary features and this obviously impairs our description of the phonological system of a language less than it would to miss some clearly primary feature. But we should not intentionally overlook them". (A Manual of Phonology, Baltimore 1955, p. 175).

<sup>20</sup> Here we make use of V. SKALIČKA's terminology (Asymetrický dualismus ... 1935). Contrary to our own article from 1961 we apply the term "asymmetric" only to features. Less characterized elements we call here — in agreement with DANEŠ and VACHEK — peripheral, and a class with peripheral elements we call a vague class.

<sup>21</sup> On the Japanese prosodic system (work concluded in 1963, not yet published) and foreign phonemic system of Japanese (to be published in the volume *Jazyková situace v stranách Azii i Afriky*).

<sup>22</sup> J. VACHEK, On Peripheral Phonemes of Modern English ... 1964.

<sup>23</sup> So far we have no knowledge of any attempt to use open classes. From the point of view of the theory of vagueness, J. I. LEVIN's article Ob opisanií sistemy lingvističeskich ob'ektov obladajuščich obščimi sredstvami, *VJa* 1964, No. 4, p. 112—9 is very interesting. But Levin, too, counts only with closed classes.

<sup>24</sup> V. SKALIČKA, *Zur ungarischen Grammatik ... 1935*.

<sup>25</sup> Very lucid is SKALIČKA's formulation: "Die grammatischen Differenziationen sind in den einzelnen Sprachen verschieden. Ihre Klarheit hängt von der Anzahl der Merkmale und dem Maße der Konsequenz dieser Merkmale in einer Differenziation ab". (*Zur ungarischen Grammatik ... 1935*, p. 36—7).