

COMPOSITIONAL AND LOCATIONAL FEATURES OF VERBAL CONSTRUCTIONS

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0.0. This paper is intended to prove the following assertions: 1) there is a fixed system of co-occurrence of compositional and locational features of verbal constructions in a given language 2) such a system yields systems of implications which operate in the process of speech.

0.1. An expression dominated by a verb is called a verbal expression (Ve). It is manifested by an unexpanded verb (V), e.g. *go*, Pol. *ić, czytam, pada*, or an expanded one, called a verbal construction (Vc), e.g. *slip on the floor, he slipped on the floor, yesterday he slipped on the floor*.

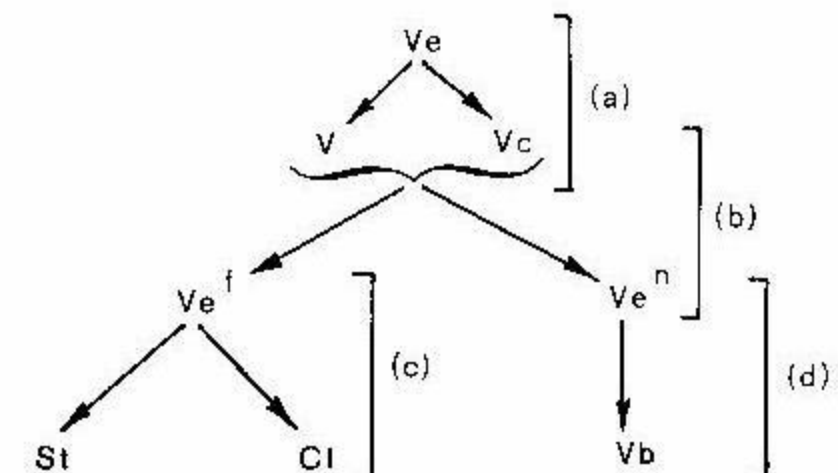
A verbal expression is finite (Ve^f) if its main verb is finite, i.e. specified as to the grammatical category of person, e.g. *he slips on the floor, he slipped on the floor*, Pol. *czytam*. The verbal suffix, the subject, or both, are the specifiers.

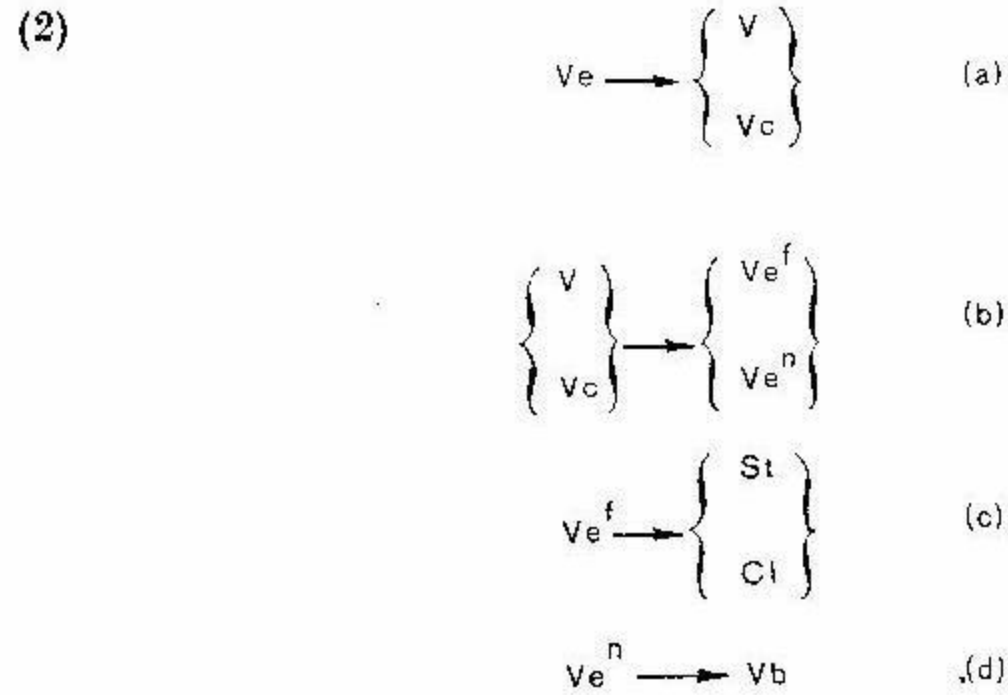
A verbal expression is non-finite (Veⁿ) if its main verb is non-finite, i.e. unspecified as to the grammatical category of person, e.g. *dance* in *she likes to dance*. Briefly it is called a verbative. When manifested by a verbal construction, the verbative is called a verbal group (Vg), e.g. *drive a car* in *he wants to drive a car*.

A finite verbal expression is either independent, and then it is called a sentence (St), or dependent, and called a clause (Cl).

The distinctions we have just introduced are shown in diagram (1) and in the set of formulas (2).

(1)



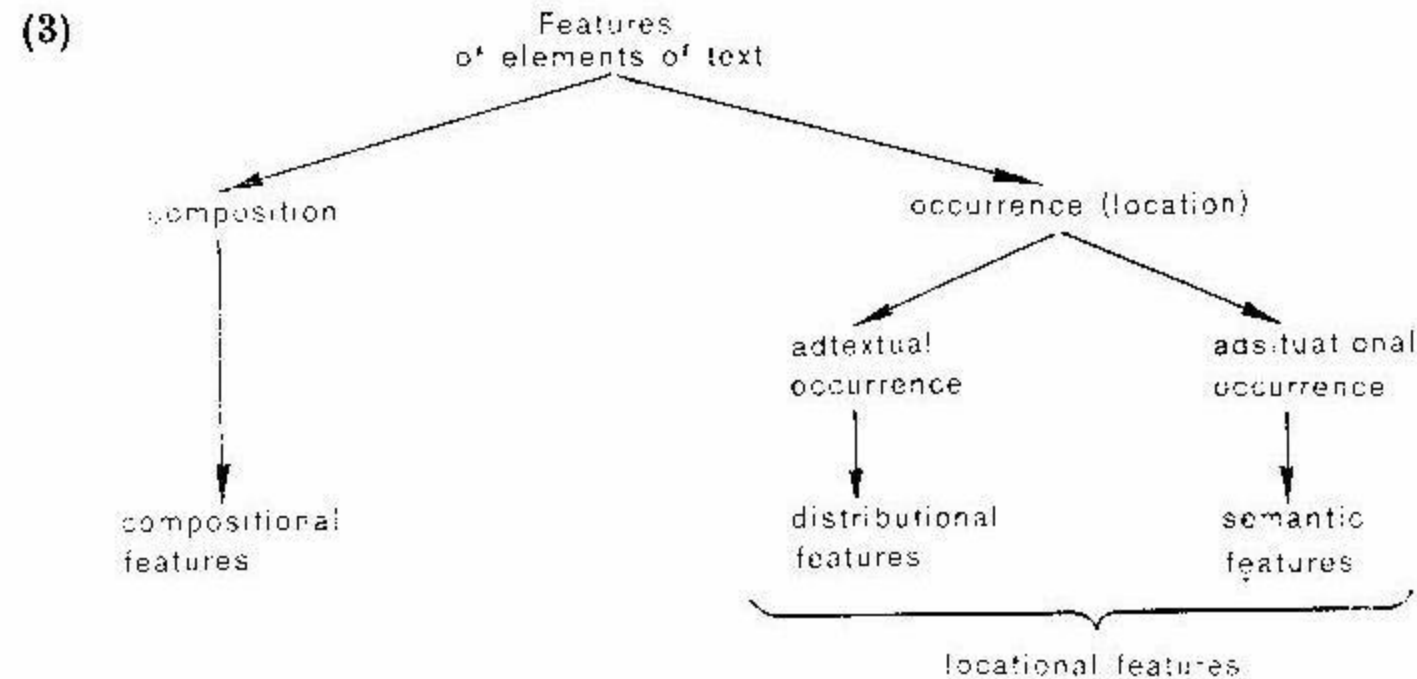


Ultimate categories we obtain are thus the sentence (St), clause (Cl), and verbative (Vb). Each of these categories is manifested either by an unexpanded verb (V) or an expanded one, i.e. verbal construction (Ve).

0.2. Elements of text, including verbal constructions, are defined and described in terms of compositional as well as locational features¹.

A definition, or description, through composition brings in such specifications as type of structure, actual variant of the structure, actual variants of elements of the structure.

Locational features of elements of text include the adtextual and ad-situational occurrence (location) of textual segments, and are accordingly divided into distributional and semantic features. The nature of these two types of features as features of occurrence is basically the same. They differ



¹ The terms *compositional* and *locational* replace the terms *inherent* and *relational*, respectively. Cf. Sroka 1969a, p. 51 and 1969b, p. 140.

only by the type of environment taken into account: the text — in the case of distributional features, and the extratextual reality — in the case of semantic features.

Diagram (3) elucidates the basic division of features of elements of text.

0.3. Differences of structure and way in which the structure is filled in involve differences of occurrence (location). No one-to-one correspondence between compositional and locational features should, however, be assumed in advance. A system of co-occurrence of these two types of features is to be stated empirically for each particular case. If this is done, one can point to implications proceeding from compositional to locational features and those proceeding in the opposite direction. A system of co-occurrence of features can be presented in a matrix². In our case, the two dimensions of the matrix are the two types of features: the compositional and the locational. A positive co-occurrence of a pair of features will be marked by 1, a null co-occurrence will be marked by 0, e.g.,

(4)

$\alpha \backslash \beta$	<i>p</i>	<i>q</i>	<i>r</i>
<i>a</i>	1	0	0
<i>b</i>	0	1	1
<i>c</i>	0	0	1

Matrix *M*

Relations of co-occurrence and resulting systems of implications between features are valid only for a given matrix, and the validity of the matrix is, in turn, confined to the element of text for which it is stated. A matrix shows variations within an element of text; the latter is defined in such a way as to admit those variations without itself being affected in its essential features.

If a defined element of text (T_w) whose matrix is stated is specified by any of the features enumerated in the matrix, it yields an element of text (a subcategory) characterized by a feature selected (implied) by the specifying feature. Such a process is called selectional generation, and the general rule it follows is called a selectional-generative function³. The formula of that function is this:

$$(5) \quad T_w @ x \Rightarrow y$$

It is to be read as follows: a defined element of text T_w specified by a feature which belongs to a set of features X yields an element of text which belongs to a set of elements Y . The examples which follow are based on matrix *M* presented above (4).

² For earlier applications of a matrix in language description see Pike 1962 and 1964.

³ For the principles of selectional-generative function see Sroka 1969a and 1969b.

$$(6) \quad \begin{array}{l} T_w @ a \rightarrow T_p \\ T_w @ r \rightarrow T_b \vee T_c \end{array}$$

T_p , T_b , and T_c represent elements of text characterized, respectively, by the features p , b , and c .

In the formula of selectional-generative function presented above, T_w is a constant, @ is a symbol of specification, x is an independent variable, and y is a dependent variable. Another, simpler, formula of that function is this:

$$(7) \quad T_w \rangle x \Rightarrow y$$

It renders the following rule: for the element of text T_w , a feature which belongs to a set of features X selects a feature which belongs to a set of features Y . The examples given above take on, accordingly, the following shape:

$$(8) \quad \begin{array}{l} T_w \rangle a \rightarrow p \\ T_w \rangle r \rightarrow b \vee c \end{array}$$

As can be seen, instead of the symbols T_p , T_b , and T_c representing elements of text, we have the symbols p , b , and c representing features.

0.4. The main part of this paper deals with the following topics: 1) compositional features of verbal constructions, 2) locational features of verbal constructions, and 3) selectional generation for a verbal construction. The following sentences, in their compositional and locational features, are the object of description:

- (9) *David pushed Harry* (St₁)
Harry was pushed by David (St₂)
Harry pushed David (St₃)
David was pushed by Harry (St₄)

These four sentences are regarded as variants of a sentence K which is defined as follows:

$$(10) \quad K = SV \left\{ \begin{array}{l} O \\ Ag \end{array} \right\}, \text{ where:} \quad (a)$$

$$V = \text{push- @ PAST} \quad (b)$$

$$\left\{ \begin{array}{l} S \\ O \end{array} \right\} = \left\{ \begin{array}{l} David \\ Harry \end{array} \right\}, \quad \text{subject word} \neq \text{object word} \quad (c)$$

$$Ag = \text{by} \left\{ \begin{array}{l} David \\ Harry \end{array} \right\}, \quad \text{noun word of the} \\ \text{agentive} \neq \text{subject word} \quad (d)$$

$$K \text{ is in positive co-occurrence with a past action of} \\ \text{pushing characterized by two different participants:} \quad (e) \\ \text{agent and patient.}$$

1. Compositional features

1.0. According to what was said above (0.2), compositional features of a verbal construction include its structure and the way in which the structure is filled in.

1.1. The four sentences (St₁, St₂, St₃, and St₄) introduced above exhibit two different structures:

$$(11) \quad \begin{array}{ll} SV^aO & (g) \\ SV^pAg & (h) \end{array}$$

Structure g contains the subject (S), active verb (V^a), and object (O). Structure h contains the subject (S), passive verb (V^p), and agentive (Ag). The former is characteristic for St₁ and St₃, the latter for St₂ and St₄.

In connection with the categories of representation applied here it should be noted that they are exclusively categories of elements of text. They are not categories of elements of extratextual reality, such as the subject of information (datum), action, agent, patient (q.v. below, 2.2.3)⁴.

The verb (V) is regarded as the nucleus (centre) of a sentence⁵, and such elements as the subject, object, and agentive are treated as its expansions.

Within the limits of structures g and h , the subject (S) is a (pro)nominal expression preceding the verb; the object (O) is a (pro)nominal expression following the verb; the agentive (Ag) is a *by*-expression (*by* expanded by a (pro)nominal expression) following the passive verb; it is restricted semantically as *expressio agentis*.

1.2. Structure g , as well as structure h , is completed in two different ways in our sentences.

Thus structure g is found in St₁ and St₃, but in the former *David* is the subject and *Harry* is the object, whereas in the latter *Harry* is the subject and *David* is the object. These two realizations will be referred to as g_1 and g_2 , respectively.

Analogously, structure h is found in St₂ and St₄, but in the former *Harry* is the subject and *by David* is the agentive, whereas in the latter *David* is the subject and *by Harry* is the agentive. The realization characteristic for St₂ will be referred to as h_1 , and that characteristic for St₄ will be referred to as h_2 .

1.3. When defined only in terms of the compositional features stated, the sentences St₁, St₂, St₃, and St₄ will bear the symbols p , q , r , and s , their defining features being g_1 , h_1 , g_2 , and h_2 , respectively.

2. Locational features

2.0. Locational features of a verbal construction include the occurrence of its compositional base with regard to elements of the textual or extratextual reality, and are, accordingly, distributional or semantic features (see above, 0.2). The latter type of locational features will now be in focus.

⁴ For a different approach see Fillmore 1968. Cf., for example, Fillmore's use of the term *agentive*.

⁵ Cf. Tesnière 1959.

2.1. We shall first consider the occurrence of p , q , r , and s with regard to variant structures of the action of pushing whose participants are David and Harry, one of them being an agent, the other a patient. Two variant structures of such an action are obtained by two different assignments of the active and passive roles to David and Harry. In one case, David is the agent, and Harry is the patient, in the other, Harry is the agent, and David is the patient. We may also speak of two types of action, namely action₁ and action₂, corresponding to the two assignments.

(12) David — agent, Harry — patient (action₁)
 Harry — agent, David — patient (action₂)

It appears that the sentences p and q are in positive occurrence with regard to action₁, and in null occurrence with regard to action₂; conversely, the sentences r and s are in positive occurrence with respect to action₂, and in null occurrence with respect to action₁. The fact of positive co-occurrence of a sentence with action₁, and null with action₂, will be referred to as feature a , and that of positive co-occurrence with action₂, and null with action₁, will be referred to as feature b .

2.2. From the point of view of the structure of discourse as carrying information we distinguish in an utterance the subject of information (S_i) and the predicate of information (P_i); their referents in the extratextual reality are, respectively, the datum (D) and the novum (N). S_i and P_i are kept distinct from the grammatical subject (S) and predicate (P); the corresponding categories of the two sets may, but need not, coincide. Word-order, accent, intonation, context, and speech situation are the features which are to be considered in connection with the distinction of S_i and P_i. The datum and novum evolve in the process of the speaker's and listener's getting acquainted with their surrounding. That acquaintance is obtained either directly or by means of discourse, and both these factors contribute to accepting certain elements (or features) of the reality spoken of as the datum and some others as the novum.

There are many ways of putting the action described in 2.1. in the datum-novum scheme. For the purposes of this paper two possibilities are selected. As shown in (13), in one of them David is the datum, and the remaining elements are the novum; in the other, Harry is the datum and the remaining elements are the novum.

(13) David — datum; pushing in the past, Harry — novum (perception₁)
 Harry — datum; pushing in the past, David — novum (perception₂)

The problem of occurrence of verbal constructions with regard to various realizations of the datum-novum structure of our perception of the extratextual reality, as well as the very problem of datum and novum, requires

empirical investigation. Some characteristics of that occurrence may be universal, as seems to be reflected in the fact that S_i tends to appear in the front or close to front position in the sentence; others may be proper to particular languages. Whichever they are, they have to be stated empirically.

As regards our sentences p , q , r , and s , we accept hypothetically that, if accent and intonation are neutral, p and r are in positive occurrence with regard to perception₁ and perception₂; q is in positive occurrence with regard to perception₂, and in null occurrence with regard to perception₁; and s is in positive occurrence with respect to perception₁, and in null occurrence with respect to perception₂. The fact of positive co-occurrence of a sentence with perception₁, and null with perception₂, will be referred to as feature c ; that of positive co-occurrence with perception₂, and null with perception₁, will be referred to as feature d ; finally, the fact of positive co-occurrence of a sentence with perception₁ as well as perception₂ will be called feature e .

2.3. The features defined in 2.1–2 appear in the following combinations: ae , ad , be , and bc . The corresponding sentences will, respectively, bear the symbols j , k , l , and m .

3. Selectional generation

3.0. As in the case of elements of text, the relation of co-occurrence between two features, A and B , within a given element of text, may be that of 1) identity (coincidence), 2) exclusion (incompatibility), 3) inclusion, and 4) intersection (overlapping).

If A and B occur only together, the relation of co-occurrence between them is that of identity. That relation yields a bilateral implication (determination, selection): $A \rightarrow B$, and $B \rightarrow A$.

If A and B never occur together, the relation of co-occurrence between them is that of exclusion. That relation yields only a bilateral negative implication: $A \rightarrow \sim B$, and $B \rightarrow \sim A$.

If A and B occur together, and, besides, A occurs without B , but B does not occur without A , the relation of co-occurrence of A to B is that of active inclusion, and the relation of B to A is that of passive inclusion. In such a case, there is a unilateral (positive) implication: $B \rightarrow A$; in the opposite direction there is only an implication of non-exclusion: if A then B is not excluded.

If A and B occur together, and, besides, each occurs without the other, the relation of co-occurrence between them is that of intersection. That relation yields only a bilateral implication of non-exclusion: if A then B is not excluded; and if B then A is not excluded.

3.1. Relations of co-occurrence between features belonging to two dif-

ferent sets, and resulting implications, are easily stated on the basis of feature matrices, i.e. tables of co-occurrence of features (cf. above, 0.3).

According to what was stated in section 2, we give a table (14) of occurrence of the sentences p , q , r , and s with regard to action₁ and action₂, as well as to perception₁ and perception₂, and then convert it into a table (15) of co-occurrence of features for K as defined in (10).

(14)

$\alpha \backslash \beta$	action ₁	action ₂	perception ₁	perception ₂
p	1	0	1	1
q	1	0	0	1
r	0	1	1	1
s	0	1	1	0

(15)

$\alpha \backslash \beta$	a	b	c	d	e
g_1	1	0	0	0	1
h_1	1	0	0	1	0
g_2	0	1	0	0	1
h_2	0	1	1	0	0

Each of these tables may be regarded as a double matrix (i.e. decomposable into two matrices) since the horizontal dimension in each of them is filled in by two different sets of features.

In table (14) the values for α are sentences defined compositionally, the values for β — situational environments. In table (15) the values for α are compositional features of St_1 , St_2 , St_3 , and St_4 , and the values for β — semantic features of these sentences. The transposition of table (14) into (15) is possible owing to the fact that the type of occurrence of an element of text with regard to some environment or environments is a locational feature. Thus, for example, the positive occurrence of p with regard to action₁ and its null occurrence with regard to action₂ is the locational feature a of St_1 . Since, in turn, St_1 is characterized by the compositional feature g_1 , we may speak of the positive co-occurrence of features g_1 and a . On similar grounds we speak of positive or null co-occurrences of other pairs of compositional and locational features. Notice that a locational feature is a range of occurrence of an element of text in a stated field of occurrence (i.e. a set of environments), and not just a single positive occurrence in a given environment. Hence the three different ranges of occurrence of the set of sentences p , q , r , and s , with regard to perception₁ and perception₂, as shown in the right-hand part of

table (14), yield three different locational features c , d , and e taken account of in table (15).

3.2. The system of co-occurrence of features shown in table (15) yields two sets of implications, one proceeding from compositional features to locational features (16), the other proceeding from locational features to compositional ones (17).

(16)

	$g_1 \rightarrow$	$\begin{bmatrix} a \\ e \end{bmatrix}$		(a)
	$h_1 \rightarrow$	$\begin{bmatrix} a \\ d \end{bmatrix}$		(b)
	$g_2 \rightarrow$	$\begin{bmatrix} b \\ e \end{bmatrix}$		(c)
	$h_2 \rightarrow$	$\begin{bmatrix} b \\ c \end{bmatrix}$		(d)

(17)

	$a \rightarrow$	$\begin{Bmatrix} g_1 \\ h_1 \end{Bmatrix}$		(a)
	$b \rightarrow$	$\begin{Bmatrix} g_2 \\ h_2 \end{Bmatrix}$		(b)
	$c \rightarrow$	h_2		(c)
	$d \rightarrow$	h_1		(d)
	$e \rightarrow$	$\begin{Bmatrix} g_1 \\ g_2 \end{Bmatrix}$		(e)
	$\begin{bmatrix} a \\ e \end{bmatrix} \rightarrow$	g_1		(f)
	$\begin{bmatrix} a \\ d \end{bmatrix} \rightarrow$	h_1		(g)
	$\begin{bmatrix} b \\ e \end{bmatrix} \rightarrow$	g_2		(h)
	$\begin{bmatrix} b \\ c \end{bmatrix} \rightarrow$	h_2		(i)

Following these two sets of implications, selectional generation may proceed in one or the other direction. In one case the result of generation are sentences defined in terms of locational features, in the other, sentences defined in terms of compositional features. Within K , the former are the sentences j , k , l , and m

characterized by the combinations of features $\begin{bmatrix} a \\ e \end{bmatrix}$, $\begin{bmatrix} a \\ d \end{bmatrix}$, $\begin{bmatrix} b \\ e \end{bmatrix}$, and $\begin{bmatrix} b \\ c \end{bmatrix}$, respectively; the latter are the sentences p , q , r , and s characterized by the features g_1 , h_1 , g_2 , and h_2 , respectively.

It will be recalled that selectional generation has its basis in the principle of selectional-generative function, and that the formula of the latter, $T_w @ x \rightarrow y$, reads as follows: a defined element of text specified by a feature which belongs to a set of features X yields an element of text which belongs to a set of elements Y . T_w is a constant, x is an independent variable, and y is a dependent variable.

If the set of implications stated under (16) is accepted as the basis for selectional-generative function, then the features g_1 , h_1 , g_2 , and h_2 are values for the independent variable x , and the sentences j , k , l , and m are values for the dependent variable y ; the constant element will be K as defined under (10). In this case, one obtains the following solutions:

$$(18) \quad \begin{array}{ll} K @ g_1 \rightarrow j & (a) \\ K @ h_1 \rightarrow k & (b) \\ K @ g_2 \rightarrow l & (c) \\ K @ h_2 \rightarrow m & (d) \end{array}$$

The formula (18a) reads as follows: the sentence K specified by the feature g_1 yields the sentence j . The remaining formulas read analogously.

If, in turn, the set of implications stated under (17) is accepted as the basis for selectional-generative function, then the variables are different. There are two independent variables, namely 1) one which includes features a and b as its values, and 2) one which covers features c , d , and e as its values. The former will be referred to as variable x , the latter as variable z . The sentences p , q , r , and s are values of the dependent variable. As in the former case, the constant element is K . Since we deal here with two independent variables, the formula of selectional-generative function that is to be applied, will be a slight modification of the one which was used above. It will namely contain symbols for two independent variables:

$$(19) \quad T_w @ \begin{bmatrix} x \\ z \end{bmatrix} \rightarrow y$$

Solutions in the case under discussion are these:

$$(20) \quad \begin{array}{ll} K @ \begin{bmatrix} a \\ e \end{bmatrix} \rightarrow p & (a) \\ K @ \begin{bmatrix} a \\ d \end{bmatrix} \rightarrow q & (b) \\ K @ \begin{bmatrix} b \\ e \end{bmatrix} \rightarrow r & (c) \end{array}$$

$$K @ \begin{bmatrix} b \\ c \end{bmatrix} \rightarrow s \quad (d)$$

The formula (20a) reads as follows: the sentence K specified by the features a and e yields the sentence p . The remaining formulas read analogously. (In the notation throughout this paper, braces indicate alternatives, and square brackets indicate complexes; in this we follow a widely accepted practice.)

3.3. Rules of the type presented underly the process of speech. A continuous solution of selectional-generative function takes place both on the part of the speaker and on the part of the listener. The implications applied by the speaker proceed basically from locational to compositional features; those applied by the listener follow both ways although the implications proceeding from compositional to semantic features are central.

4. The appeal made in this paper to certain empirical facts should be treated as tentative. Our main purpose has not been an adequate description of a syntactic phenomenon of a given language (although it is hoped that the paper makes some contribution in this respect as well), but to supply a frame for application by the linguist in his investigation and description. The frame suggested seems to bring in a powerful potential as regards general linguistics, descriptive linguistics, and their applications. The problem of relation between the structure of the sentence and the type of perception (datum — novum) is a matter for empirical investigation. This paper will fulfil its role if it stimulates such investigation and serves as first aid in theoretical difficulties. A statement of the system of co-occurrence of compositional and locational features in a language (and languages as realizations of a common category) is one of the objectives that a linguist should have in view.

REFERENCES

- Chomsky, N. 1965. *Aspects of the theory of syntax*. Cambridge, Mass.: The MIT Press — and M. Halle 1968. *The sound pattern of English*. New York: Harper.
- Fillmore, C. J. 1968. "The case for case". *Universals in linguistic theory*. Ed. by E. Bach and R. T. Harms, 1 - 90. New York: Holt, Rinehart & Winston.
- Halliday, M. A. K. 1961. "Categories of the theory of grammar". *Word* 17. 3. 241 - 92.
- 1967. "Notes on transitivity and theme in English", 1 and 2. *Journal of Linguistics* 3. 37 - 81, 199 - 244.
- Lamb, S. M. 1966a. *Outline of stratificational grammar*. Washington, D. C.: Georgetown University Press.
- 1966b. "Prolegomena to a theory of phonology". *Language* 42. 2. 536 - 73.
- Longacre R. E. 1964. *Grammar discovery procedures*. The Hague: Mouton.
- 1965. "Some fundamental insights of tagmemics", *Language* 41. 1. 65 - 76.
- Pike, K. L. 1962. "Dimensions of grammatical constructions", *Language* 38. 3. Part 1, 221 - 44.

- Pike, K. L. 1964. "Discourse analysis and tagmeme matrices". *Oceanic Linguistics* 3. 1. 5 - 25.
- 1967. *Language in relation to a unified theory of the structure of human behavior*². The Hague: Mouton.
- Sroka, K. 1969a. "Distributional features". *Linguistics* 49. 51 - 64.
- 1969b. „Model selekcyjno-generatywny funkcji składniowej”. *Biuletyn Polskiego Towarzystwa Językoznawczego* 27. 137 - 48.
- Tesnière, L. 1959. *Éléments de syntaxe structurale*. Paris: Klincksieck.
- Zawadowski, L. 1959. *Constructions grammaticales et formes périphrastiques*. Kraków — Wrocław — Warszawa: Zakład Narodowy Imienia Ossolińskich.
- 1966. *Lingwistyczna teoria języka*. Warszawa: Państwowe Wydawnictwo Naukowe.