

Dean S. Worth

On the Structure and History of Russian

Selected Essays

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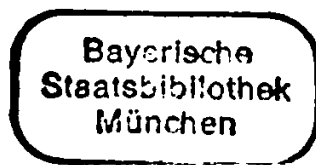
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DEAN S. WORTH

ON THE STRUCTURE AND HISTORY OF RUSSIAN
Selected Essays

With a Preface
by
Henrik Birnbaum

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PREFACE

The essays selected for this publication from the rich yield of Dean Worth's theoretical papers and philological studies (presently numbering more than one hundred) address themselves to problems of Russian linguistics, synchronic as well as diachronic, the author's predominant scholarly concern. The purpose of their being gathered in one handy volume was to make these articles available to a broader readership than that which has easy access to the various scholarly journals, testimonial volumes, and other publications where they first appeared. In two instances where the original versions were written in Russian — items number four and fourteen — they were translated into English before being included here. While, therefore, all essays appear in English, no attempt has been made to edit or update the earlier versions to account for relevant, subsequently published research or to achieve formal consistency (in matters of punctuation, transliteration, etc.). Only obvious misprints have been corrected and, in one or two instances, an example better suited for illustrating a particular point has been substituted for an earlier one. Also, footnotes have been updated where an original "in press" could now be replaced by a more specific reference.

It is gratifying to all his friends that this selection of Dean Worth's writings appears at a time when he is celebrating his fiftieth birthday and in the middle of an exceptionally dynamic and successful career in teaching, research, and service to the profession — the three areas in which an American university professor is supposed to perform. Obviously, however, only one facet of his many activities, his scholarship, can be presented here.

The essays comprised in this volume fall naturally into two groups, one treating synchronic facets of Russian (and some further Slavic) linguistic structure, the other elucidating diachronic aspects of Russian — or, more generally, East Slavic — linguistic evolution. Reflecting the proportions in the author's overall output to date, the studies on contemporary Russian outnumber the essays on the history of Russian also in the present collection.

The first study on "Transform Analysis of Russian Instrumental Constructions," already a classic and as such included (in Russian translation) in the Soviet serial publication of significant recent work in linguistics (*Novoe v*

lingvistike, 2, Moscow, 1962), represents, to my knowledge, the first formal demonstration of how transformations, conceived as a set of 'discovery procedures' (in the sense of Z. Harris), can be applied to Russian data. Specifically, they are used to reveal specialized syntactic functions and semantic shades ascertainable beneath the partly obliterating surface of a Russian case form. In the paper on "Grammatical and Lexical Quantification in the Syntax of the Russian Numeral," the author, keenly aware of the intricate interplay of formal and semantic factors in language, explores the potentials and limits of operating with syntactic features. Here, the particular, hierarchically determined combinability of these features is examined in the context of one of the more thorny problems of Russian syntax. Subsequently, Worth moves from the purely heuristic to the generative phase of transformational theory (as elaborated, above all, by Noam Chomsky and his followers). While continuing to resort to transformations as a formal device for uncovering meanings buried under syntactic surface structure, he tests this wider transformational approach in his inquiry into "The Role of Transformations in the Definition of Syntagmas in Russian and Other Slavic Languages." Commenting on its specific concepts and distinctions (linear vs. non-linear, simple vs. complex paradigms; temporal, spatial, modal restrictions; double-subject vs. single-subject transforms; rule ordering; parallels obtaining on syntactic and morphological levels; etc.), the author shows this approach to provide a deeper insight into the structured 'semantic space' underlying word combinations or syntactic phrases (i.e., syntagms up to the extent of the simple sentence) in Russian and some closely related languages.

In the balance of the synchronic studies in this volume, Worth further develops and refines methods of an undogmatic, pragmatically employed TG theory applied to Russian — and, for comparison and contrast, occasionally some other — linguistic structure. Here, he focuses "On the Representation of Linear Relations in Generative Models of Language" and, increasingly, on Russian (and, in part more generally, Slavic) morphology, its "'Surface Structure' and 'Deep Structure' ..." In particular, certain peculiarities of Russian morphophonemics are examined ("Grammatical Function and Russian Stress," "Vowel-Zero Alternations in Russian Derivation," "On Cyclical Rules in Derivational Morphophonemics"). Attention is further paid to the closely connected, hierarchically definable relationship between the inflectional and derivational components of Russian morphology. Specifically, the author has some keen observations to offer concerning word formation ("The Notion of 'Stem' in Russian Flexion and Derivation,"

"Ambiguity in Russian Derivation"; cf. also some of the previously cited work on derivation). Dean Worth combines an imaginative theoretical approach with a firm grasp of — and sound regard for — the relevant data (and not only such data as happens to fit the theory), which makes for the best kind of linguistic analysis today.

Of the four diachronic and, to some extent, philological and stylistic rather than narrowly linguistic studies chosen for inclusion in this volume, the first two ("Linguistics and Historiography: A Problem of Dating in the Galician-Volhynian Chronicle" and "Lexico-Grammatical Parallelism as a Stylistic Feature of the *Zadonščina*") are concerned with individual Old Russian texts which the author has dealt with elsewhere. Discussing the last portion of the Hypatian Codex, which is fascinating from a literary (and not only historical) point of view, Worth is able to adduce compelling linguistic evidence that only the border falling between the years 1260 and 1261, suggested by L. V. Čerepnin and D. Čiževskij, can be fully corroborated. It should be noted that other scholars have previously proposed numerous different borders for the division of the Galician and Volynian sections of this chronicle, recording the turbulent events in thirteenth-century Southwestern Rus'. In his essay on parallelism as an organizing stylistic principle in the *Zadonščina*, the author proposes, on good grounds it would seem, a positive reevaluation of that Old Russian tale whose fame until quite recently has primarily but undeservedly rested on its controversial affinity to the *Igor' Tale* of which it has been considered either a pale echo or a less sophisticated model.

The thought-provoking sketch which at least tentatively answers the intriguing question "Was There a 'Literary Language' in Kievan Rus'?" is clearly of a programmatic nature; it suggests further in-depth research in this much-debated, yet still highly controversial area. The line of reasoning formulated in the last paragraph is both original and attractive. Since the sociolinguistic situation of Old Rus' was polycentric and since a literary language can be defined as monocentric, with a neutral core and genre-bound deviations from this core, Worth concludes that there was indeed no literary language in Kievan Rus'. Instead, there was a language of literature, highly polished in its best specimens, and there were some normed, in part even refined, socially effective forms of speech and writing. The last paper in this volume, that "On Russian Legal Language," is devoted to one such kind of writing. As is well known, the language of the *Russkaja Pravda* and subsequent law books of medieval Russia, limited

in terms of its functional scope, frequently has been referred to, along with the language of the so-called *gramoty*, as virtually free of Slavonisms. It is this preconceived notion, as well as all dichotomizing schemas usually attributed to the written language of Old Rus', that Worth persuasively argues against. He does so by demonstrating how oversimplified the thesis of a complete isolation of legal Russian from Church Slavonic is, particularly as regards the earlier period.

It is hoped that, having acquainted himself with the essays presented here, the reader will concur with a distinguished colleague who once said that each of Dean Worth's studies contains at least *one* subtle observation, fresh thought, or novel insight. Personally, I am convinced that no one familiar with his writing can help but come away with that impression.

Los Angeles, June 1977

Henrik Birnbaum

TRANSFORM ANALYSIS OF RUSSIAN
INSTRUMENTAL CONSTRUCTIONS

0. Introduction. The traditional approach to the syntactic description of standard Russian has been based on the morphological definition of word classes and consisted primarily of a more or less exhaustive listing of the various types of word-combination (*slovosočētanie*) and sentence into which members of these classes can be combined, e.g. substantive in various cases modifying a substantive, modifying a verb, etc. Such morphologically defined phrases are tacitly assumed to be the smallest formally characterized class above the word level. The morphological description by itself, however, produces an obviously superficial picture of Russian syntax, since there are in most cases from a few to many intuitively recognized different kinds of relation expressed within one and the same morphologically defined phrase type, e.g. in English the difference between "John was eating all the cheese" and "John was eating all the time," or in Russian the following sets of verb + substantive in the instrumental case: *rukovodit batal'onom*¹ 'is in charge of a battalion', *mašet platkom* 'waves his kerchief', *priežžāet starikom* 'arrives an old man', *voet šakalom* 'howls like a jackal', *čitaet večerom* 'reads in the evening', *idet lesom* 'walks through the forest', *govorit šopotom* 'talks in a whisper'. With the concept of form thus restricted to that of morphological description, one is faced by a multiplicity of meanings expressed by a single form, and has only the choice between (1) relegating all differences among units of like morphological structure to the realm of the lexicon and thus (assuming the lexicon has nothing to do with grammar) considering these differences none of the linguist's concern,² and (2) attempting to account for the intuitively recognized relational varieties within the morphologically defined class by dividing the latter into subclasses on a purely semantic basis. The latter solution is adopted, for example, by the latest full syntactic treatment of Russian, the second volume of the new grammar of the Soviet Academy.³ For purposes of comparison we shall first outline the treatment of Russian instrumental constructions in this work.

0.1. Traditional Analysis. The Soviet Academy grammar divides word-combinations

of verb and instrumental substantive modifier into five major classes (one of which is as a matter of fact already archaic, cf. below), on the basis of the kind of relation expressed between verb and substantive. These five classes are labeled objective, temporal, spatial, determinative-circumstantial, and causative; most of them are divided into a number of subclasses determined by a variety of criteria, mostly semantic. The largest of the five major classes, in which objective relations are expressed, is defined as expressing "an action and the instrument by means of which this action is accomplished,"⁴ e.g. *rubit' toporom* 'chop with an axe', *pisat' čermilami* 'write in ink'. A subclass contains verbs "with the meaning of allotment, equipment, provision in the broad sense" and substantives "signifying the object with which someone is provided or not provided,"⁵ e.g. *nagradit' ordenom* 'confer a decoration', *snabdit' den'gami* 'provide with money', *obdelit' nasledstvom* 'deprive of an inheritance'. Another subclass contains verbs which "name a movement" and substantives which name "a part of the body or an object organically connected with the actor,"⁶ e.g. *maxat' rukoju* 'wave one's arm', *topat' nogami* 'stamp one's feet'. Should verb and substantive be of more abstract meaning, they form "combinations in which in the dependent word (= modifier) the meaning of instrument is somewhat weakened and is replaced by the more general meaning of indirect object,"⁷ e.g. *udivit' umom* 'astonish by one's wit', *ugrožat' vojnoj* 'threaten with war', *umorit' golodom* 'starve (someone) to death' ('to kill by hunger'). Combinations expressing the relation labeled "indirect object" are themselves divided into a number of subgroups, the first of which contains verbs "signifying filling, satiation" and substantives naming "the object with which something is filled,"⁸ e.g. *nabit' senom* 'stuff with hay', *ispolnit'sja nenavist'ju* 'become filled with hate', *nagruzit' poručenijami* 'burden with errands'; this subgroup is stated to contain words of both abstract and concrete meanings, which appears to contradict the subclass definition above.

A special paragraph is accorded those indirect object combinations in which the verb means "possession, internal enthusiasm, constant occupation,"⁹ e.g. *vladet' francuzskim jazykom* 'speak French', *vostorgat'sja druž'jami* 'be delighted with one's friends', *zanimat'sja sportom* 'engage in sport', *ljubovat'sja prirodju* 'admire nature'; in some cases, the instrumental substantive may at the same time name "the source of the feeling or experience expressed by the verb,"¹⁰ e.g. *gordit'sja pobedoj* 'be proud of a victory', *plenjat'sja krasotoj* 'be captivated by beauty'. A further subclass (presumably still, but not explicitly stated as,

expressing indirect objects) consists of substantives "upon which an activity is spent" and one of the seven verbs *vedat'* 'manage', *zavedovat'* idem, *komandovat'* 'command', *praviti'* 'rule, govern', *rasporjažat'sja* 'deal with, dispose of', *rukovoditi'* 'direct', *upravljati'* 'govern'. The final subclass of the class of objective relations consists of combinations formed with either "a verb in the form of the passive voice" or "a passive participle" combined with an instrumental substantive which "names the producer of the action – a person or thing,"¹¹ e.g. *Činy ljud'mi dajutsja* 'ranks are given by people' (Griboedov), *Vražda umiritsja vlijan'em godov* '(Your) enmity will be calmed by the influence of the years' (Nekrasov), *Vse pokryto bylo snegom* 'Everything was covered by snow' (Puškin), *Vse zdes' sozdano nami* 'Everything here has been created by us' (Nikolaeva). The awkwardness of including these obviously passive transforms in the objective class is apparently conceded by the remark that "in these cases the forms of combination are closely connected with the structure of so-called passive constructions and of a particular type of verbal sentence."¹²

The second major class in the Academy grammar consists of combinations expressing temporal relations. This class is divided into two subclasses, this time by purely morphological criteria. The first subclass contains substantives in the instrumental singular designating time of day or season of the year, and obligatorily accompanied by agreeing adjective or governed substantive modifiers, e.g. *on uexal glubokoj osen'ju* 'he left at the very end of autumn' ('in deep autumn'), *blučilos' pozdnej noč'ju* '(it) happened late in the night'.¹³ A subgroup contains substantives (animate, although this is not mentioned in the grammar) naming age, occupation, or social status in which the subject of the verb is placed at the time of the action, e.g. *on uexal rebenkom* 'he left a child' ('was a child when he left'), *rasstalis' soldatami, a vstretilis' polkovnikami* 'they parted as (simple) soldiers, and met (again) as colonels'; that this subgroup does not belong here is proved by the fact that it not only does not have to have, but in fact almost never does have, an adjective or substantive modifier of the instrumental substantive. The second subclass of temporal combinations contains substantives in the instrumental plural, which "name an action, repeated from time to time and lasting throughout the course of the period of time named by the substantive,"¹⁴ e.g. *Aleksej celymi dnjami prigljadivalsja k Komissaru*; it is not clear just what is different in this second subclass, apart from the plural morphemes and their meaning.

The third major class consists of combinations expressing spatial relations. These contain "a verb signifying motion (and) a substantive in the instrumental naming a place, a space, along which the motion is directed,"¹⁵ e.g. *probralsja ogorodami* 'he made his way through the back gardens', *exal lešom* 'he was riding through the forest'. Should the verb be other than a verb of motion, "the combination expressing spatial relations takes on the nuance of a temporal meaning,"¹⁶ e.g. *Doroguju stali bit'* 'Along the way they began to beat (him)' (Šoloxov).

The fourth major class, in which determinative-circumstantial (*opredelitel'-no-obstojatel'stvennye*) relations are expressed, contains substantives which "name the mode (*sposob*) of accomplishment of the action named by the verb,"¹⁷ e.g. *zapei vysočajšim fal'cetom* 'began to sing in a very high falsetto' (Turgenev), *Tanki goreli golubym plamenem* 'The tanks were burning in blue flame' (Ketlinskaja).¹⁸ A subclass contains substantives which "signify the mode of completion of the action, appearing for the sake of comparison;"¹⁹ here the grammar makes one of its few tentative steps toward the analytic use of transformations, e.g. *tečet rekoj* is compared with *tečet, kak reka* 'flows like a river'. In another subclass, the substantive "can characterize the mode of completion of the action from the quantitative side,"²⁰ e.g. *letjat stadami pticy* 'in flocks fly the birds' (Krylov), *kotorye sypal on meškami* 'which he poured by (whole) sacks' (Gogol'). Only a note mentions a particular type of determinative-circumstantial combination in which "the dependent substantive is by its lexical meaning close to the meaning of the governing verb,"²¹ e.g. *izučajuščim vzgljedom ogljadel* 'looked about with a studying glance' (Ketlinskaja), *Bystrymi šagami ona šla* 'With quick steps she went' (Nikolaeva).²²

The fifth major class, expressing causative relations, contains substantives which "signify a manifestation or state which has conditioned the action named by the verb."²³ Only two archaic examples are given, *Osel moj glupost'ju v poslovic vošel* 'My donkey by (his) stupidity has got into the fable' (Krylov), and *Slučalos' li, čtob vy... Ošibkoju dobro o kom-nibud' skazali?* 'Has it occurred that you... by mistake said (some) good of someone?' (Griboedov); it is noted that such combinations are being replaced in modern Russian by constructions with *po* and the dative or *iz-za* or *ot* and the genitive, e.g. *sdelat' po ošibke* 'do by mistake', *otstaet iz-za leni, ot nevnimanija* 'lags behind because of laziness, from inattention'.²⁴

0.2. Transformation Analysis. The haphazard quality of the traditional classifi-

cation outlined above is obvious. The present paper suggests an entirely different approach to this same problem of classification, an approach based nearly as exclusively on form as the traditional approach was based on meaning.²⁵ The technique offered here consists fundamentally of examining each unit to be classified from two points of view, first that of what it is (the traditional morphological classification, valid as far as it goes), and then that of what it can become, of what specific changes can and cannot be wrought upon it. These changes will be called transformations, conforming to the terminology used by Chomsky and Harris,²⁶ but it is to be noted that this paper attempts to use these transformations for one restricted purpose only, namely to classify otherwise identical phrases. It is not offered as one ready-made section of a complete transformation syntax of Russian. The working out of such a syntax is a different and more complicated operation than that attempted here, although it is hoped, of course, that the problems and solutions encountered in the present paper may contribute to the eventual development of such a full-scale syntactic description.

0.21. Morphological Classification. Transformation analysis proceeds in two steps: (1) a preliminary morphological classification of phrase types; (2) a transformation classification of subtypes within each morphologically defined phrase type. The preliminary morphological classification is based on a number of phrases occurring in a given corpus.²⁷ It presupposes that (1) we know all the major word classes of the language in question and (2) we can recognize the class membership of all words occurring in our given phrases.²⁸ Each phrase is described as a string of class members, each of which expresses certain grammatical categories (knowledge of which is also presupposed), e.g. the phrase "The dog is chewing the bone" might be described as NP_{sing.} animate + V_{sing.} past progressive + NP_{sing.} inanim.

0.211. Reduction. The phrases which actually occur in any given corpus contain many items (groups of words, or individual morphemes) which are superfluous to the particular constructions being investigated. To avoid cluttering the preliminary morphological classification with irrelevant details, all actually occurring phrases are first reduced to the structural essentials necessary for further analysis. There are two kinds of reduction. First, all modifiers are eliminated from endocentric constructions,²⁹ excepting only those very units which we are interested in classifying. For example, should we be interested in phrases containing "by + NP" in English ("by John," "by moonlight"), which we find to occur in the

sentences "The biggest fish of the season was caught by old John Davis last night" and "All the cargo was unloaded from the ships by moonlight because of the impending strike," we reduce these sentences to "The fish was caught by John" and "The cargo was unloaded by moonlight." Similarly, the Russian phrase *Bol'shaja gostinnaja komnata v dome Ivanovyx uže napolnjalas' tolpoj ženščin i detej* 'The big living room in the Ivanovs' house was already being filled by a crowd of women and children' can, if we are interested in the instrumental substantive *tolpoj* 'by a crowd', be reduced to *komnata napolnjalas' tolpoj* 'the room was being filled by the crowd' without losing anything essential to the construction we are trying to analyze.³⁰

The second step of reduction consists of eliminating from the description all those grammatical categories which can be shown to be irrelevant to the transformations to be effected. This second elimination, although in practice based on intuition in many cases, can always be justified by a rigorous procedure which puts the given phrase through all possible transformations and only then eliminates as irrelevant those categories which remain constant throughout all transformations and which can be varied freely without either increasing or restricting the number of possible transformations. We will find, for example, that the categories "tense" and "number" are irrelevant to the active-passive transformation in English, and if dissatisfied with our intuitive perception of this fact, we can prove it by letting F = an active sentence and F' = the passive transform thereof and noting that the relation between F and F' is identical in all cases of $F \rightarrow F'$ regardless of which morphemes of tense or number happen to occur, e.g.

John saw the boy \rightarrow The boy was seen by John

John will see the boy \rightarrow The boy will be seen by John

John saw the boys \rightarrow The boys were seen by John

etc. Similarly, the relation between F and F' remains constant in the Russian examples:

tolpa napolnjaet komnatu 'the crowd fills the room' \rightarrow *komnata napolnjaetsja tolpoj* 'the room is filled by the crowd'

tolpa napolnjaet komnaty 'the crowd fills the rooms' \rightarrow *komnaty napolnjajutsj tolpoj* 'the rooms are filled by the crowd'

tolpa napolnjala komnatu 'the crowd was filling the room' \rightarrow *komnata napolnjalas' tolpoj* 'the room was being filled by the crowd'

etc., which entitles us to eliminate tense and number from consideration as far as this particular transformation is concerned.

Once the phrase has been reduced to its structural essentials, it can be represented by a string of symbols expressing class membership and relevant grammatical categories,³¹ e.g. in English we will write:

John caught the fish → The fish was caught by John as S^1VS^2 → S^2 is Ven by S^1

and in Russian:

tolpa napolnjaet kommatu → *komnata napolnjaetsja tolpoj* as $S_n^1VS_a^2$ → $S_n^2V_sS_i^1$

All phrases which have been reduced and symbolized can then be classified into groups of like morphological form. This preliminary classification obviously throws together phrases of different structure and meaning, e.g. the class S^1 is Ven by S^2 includes "Mary was kissed by moonlight" as well as "Mary was kissed by John". It is the job of transformation analysis to describe the formal distinctions between such morphologically identical phrases.

0.22. Transformation Operations. All reduced phrases are then tested to see in which ways they can and cannot be transformed, and each class of morphologically identical phrases is divided into subclasses according to the various sets of transformation which obtain for the phrases of this class.³²

0.221. Types of Transformation. There are a number of different types of transformation, not all of which are equally pertinent to the present investigation. Most important for our purposes are what may be called intraclass transformations, effected within a morphologically determined form class, e.g. substitution of a group "preposition + substantive" for a substantive in English or substitution of one case for another in Russian, e.g. $T: S_n \rightarrow S_a$ *komnata* → *kommatu*, or the change of active to passive verb forms in either language, e.g. $T: V \rightarrow isVen$ "bit" → "was bitten" or $T: V \rightarrow V_s$ *napolnjala* → *napolnjalas'*. Addition and elimination of forms are most conveniently represented as transformations from and to zero units ($T: \emptyset \rightarrow F$, $T: F \rightarrow \emptyset$), since in such cases the presence of a form in one of two transforms is correlated with its absence in the other. Other types of transformation are of lesser importance for this paper.³³ Individual transformations will be described as they occur.

Transformations can be described either individually or, when they imply each other, as complete sets, or phrase transformations. The active-passive transfor-

mation in English, for example, consists of three individual transformations T : $V \rightarrow \text{isVen}$, $T: S^1 \rightarrow \text{by}S^1$, and the word-order transformation (difficult to symbolize) which has the effect of changing the places of S^1 and S^2 ; these three transformations imply each other and can be written as a single phrase transformation:

$S^1 V S^2$ The dog bit the man
 $\rightarrow S^2 \text{ isVen by}S^1 \rightarrow$ The man was bitten by the dog.³⁴

0.222. *Testing Procedures.* The method by which it is determined which transformations can and which cannot be applied to a given phrase can be formulated in rigidly systematic terms: given a phrase consisting of the words $X + Y + Z$, we apply each possible intraclass transformation to X and note what if any transformations must be applied to Y and Z if the result is to be a grammatical phrase; the same procedure is then repeated with Y and Z . For example, given the phrase "The dog bit the man", we can if necessary go through the procedure of applying, e.g. $T: S^1 \rightarrow \text{by}S^1$ ("the dog" \rightarrow "by the dog"), and note that if we also apply $T: V \rightarrow \text{isVen}$ and the word-order reversal of S^1 and S^2 , we obtain the grammatical phrase "The man was bitten by the dog", whereas transformations producing "from the dog", "with the dog", etc. cannot result in grammatical phrases no matter what is done to V and S^2 . Similarly, in Russian, given the phrase *tolpa napolnjala komnatu* 'the crowd was filling the room', we can apply $T: S^1_n \rightarrow S^1_i$ and obtain the grammatical phrase *komnata napolnjalas' tolpoj*, provided we also apply $T: S^2_a \rightarrow S^1_n$ and the same word-order reversal as in the English example above.³⁵ In practice, such rather tortuous procedures are often developed to explain the intuitive jump from one grammatical phrase to another; i.e., one usually proceeds by whole phrase transformations, not by accumulations of individual transformations.

As the analysis of individual phrases continues, these are found to undergo partially the same, partially different transformations. In English, for example we find many phrases which can undergo both the active-passive voice transformation and a transformation from non-progressive to progressive aspect, such as the

phrase	The dog bit the man
which can	\rightarrow The man was bitten by the dog (T_{pass})
and also	\rightarrow The dog was biting the man (T_{prog})
and even both	\rightarrow The man was being bitten by the dog ($T_{\text{pass}} + T_{\text{prog}}$)
although the apparently identical phrase,	
	The dog chewed the bone

can undergo T_{pass} only if it also undergoes T_{prog} , namely,
 it cannot \rightarrow *The bone was chewed by the dog³⁶ (T_{pass})
 but it can \rightarrow The dog was chewing the bone (T_{prog})
 and it can also \rightarrow The bone was being chewed by the dog ($T_{\text{pass}} + T_{\text{prog}}$).³⁷

0.3. *Form and Meaning.* Two phrases which are transforms of each other are correlated in meaning as well as in form. This is not to say that their meanings are identical (on the contrary, one assumes *a priori* that each difference in form corresponds to a difference in meaning), but rather that there is a constant difference between the meanings of individual units of correlated transform pairs, i.e. that in any series of transformations $F^1 \rightarrow F'^1, F^2 \rightarrow F'^2, \dots, F^n \rightarrow F'^n$, the referential meaning of F is related to (differs from) that of F' in exactly the same way in each of the series of pairs. Should this regular correlation of meaning fail to obtain for some pair $F^x \rightarrow F'^x$ formally belonging to this series, this fact is to be considered a danger signal indicating that the formal possibility of $T: F^x \rightarrow F'^x$ may in reality be a superficial or non-productive feature concealing (or, better, not uncovering) some more essential transformation feature which makes it impossible to consider $F^x \rightarrow F'^x$ a true instance of $F \rightarrow F'$.³⁸ For example, in the English progressive aspect transformation $S^1 \text{VS}^2 \rightarrow S^1 \text{isVing } S^2$, the regular meaning correlation obtaining in all cases of $F \rightarrow F'$ in the examples "John eats the apple" \rightarrow "John is eating the apple", "My wife cooks supper" \rightarrow "My wife is cooking supper", etc., suddenly fails to obtain in the instance "John sees the boy" \rightarrow "John is seeing the boy"; this is our clue to seek other transformation features distinguishing "John sees the boy" from "John eats the apple", "My wife cooks supper", etc.³⁹ Similarly, we find that in one type of passive-active transformation in Russian, namely $S^1_n \text{V}_s S^2_i \rightarrow S^2_n \text{V } S^1_a$, we find that the meaning of F differs from that of F' in exactly the same way in each of the instances of $F \rightarrow F'$: *kommata napolnjalas' tolpoj* 'the room was filled by the crowd' \rightarrow *tolpa napolnjala kommatu* 'the crowd filled the room', *zala osveščajetsja fonarikami* 'the room is lighted by lanterns' \rightarrow *fonariki osveščajut zalu*, *simfonija ispolnjaetsja orkestrom* 'the symphony is played by the orchestra' \rightarrow *orkestr ispolnjaet simfoniju*, but in the formally identical instance *Ivan vernulsja starikom* 'John came back an old man' \rightarrow *starik vernul Ivana* 'the old man brought John back' the expected correlation does not obtain, which is a signal that we must look elsewhere for differences between *Ivan vernulsja starikom* and the other $S^1_n \text{V}_s S^2_i$ phrases just cited.⁴⁰

0.31. *Directional Transformations.* The problem of meaning correlations discussed

in 0.3 is closely connected with that of the direction in which transformations proceed. It has been suggested that the rather awkward requirement that transforms be correlated in meaning as well as in form could be eliminated by stating that (1) transformations are unidirectional and (2) instrumental constructions are not basic but are derived from other kernels; this would permit the statement that *starik vernul Ivana* 'the old man brought John back' is a kernel and, because of the perfectivity-animation rule described in 1.112 below, one cannot derive *Ivan vernulsja starikom* (regardless of its meaning) therefrom.⁴¹ Now, while this viewpoint provides a welcome rule eliminating all formal connection between *Ivan vernulsja starikom* 'John came back an old man' and *starik vernul Ivana* 'the old man brought John back', it raises some broader theoretical problems which ought not to pass unnoticed. For one thing, while there is very probably a hierarchy of phrase structures in all languages, and while the relation between certain phrase types may be most economically described as sets of transformations proceeding in a certain direction (this seems to be the case with active-passive constructions in English as well as Russian⁴²), it is equally true that given the correlated transforms F and F' (i.e., given the existence of the phrase types F and F' and a storable procedure for deriving one from the other), there is no reason to assume *a priori* that the derivation proceeds in one direction rather than the other (the formal description is just as easy in terms of F' → F as in terms of F → F'). There is, as a matter of fact, no very good reason for assuming that the relation between correlated transforms must be that of unidirectional derivation (i.e., for positing automatic hierarchy between these phrase types). There are compelling historic reasons for asserting that this cannot always be the case.

0.311. *Diachronic Syntax.* If we look briefly at syntax from the diachronic rather than from the synchronic point of view, we see that (1) systems of correlated transforms provide the most convenient framework for discussing the historical evolution of syntactic forms, and (2) a description which considers all transformations to be unidirectional presupposes the demonstrable untruth that syntactic patterns are static. Assuming that a hierarchic distinction between kernel and derivative may but need not obtain between correlated transforms, and once it has been established that F and F' are correlated transforms, there are three possible transformational relations between them: (1) neither F nor F' can be shown to be the kernel from which the other is derived, i.e., F and F' are simply coexisting and interchangeable phrase types, not necessarily identical in meaning (type F ←

F'); (2) one type can be proved derivative from the other, namely either (2a) F is a kernel and F' a derivative ($F \rightarrow F'$) or (2b) F' is a kernel and F derived therefrom ($F \leftarrow F'$). The indisputable fact that with the passage of time constructions of one type succeed constructions of another type leads us to posit a succession of five stages (which, in actual historical fact, would flow imperceptibly each into the next):

- (1) F F exists alone (the type F' has not yet been used)
- (2) $F(\rightarrow F')$ F is the kernel, but can $\rightarrow F'$ (F is more common, but the type F' is growing)
- (3) $F \leftrightarrow F'$ F and F' are fully interchangeable
- (4) $(F \leftarrow) F'$ F' is the kernel, but can $\rightarrow F$ (F is felt as archaic, but still used occasionally)
- (5) F' F' exists alone (F is found in older texts only).⁴³

Conversely, any synchronic slice should try to fix the relation between two correlated transforms as one of the three stages $F \rightarrow F'$, $F \leftrightarrow F'$, or $F \leftarrow F'$; failure to do so is to further the outdated Saussurian equation of synchronic with static. The assumption that all derivational relations are of the type $F \rightarrow F'$ is therefore seen to be incompatible with historical fact and consequently unacceptable even in synchronic analysis.⁴⁴

0.4. Plan of Analysis. In what follows, the analytic technique outlined above has been applied to Russian constructions in which instrumental substantives modify finite verbal forms. Considerations of space require a degree of symbolization which is, at times, unfortunately high; often, only one example of the more common types of subclass is given.

With insignificant exceptions, there are after reduction (cf. 0.211) six morphologically distinct types of phrase in which instrumental substantives modify verbs:

1. $S^1_n V_s S^2_i$: *kommata napolnjalas' tolpoj* 'the room was being filled by the crowd', *luga zalilis' vodoj* 'the meadows were flooded with water', *sčet sostavljaetsja buxgalterom* 'the account is drawn up by the bookkeeper', *učreždenie rukovoditsja rabotnikom* 'the establishment is managed by a worker', *student zarezalsja britvoj* 'the student committed suicide with a razor', *Ivan vernulsja starikom* 'John came back an old man', *barži tjanulis' rjadami* 'the barges moved along in rows', *Boris vernulsja večerom* 'Boris came back in the evening'.⁴⁵

2. $S^1_n V S^2_i$: *robotnik rukovodit učreždeniem* 'the worker manages the establishment', *kapitan komanduet batal'onom* 'the captain commands the battalion', *Ivan pokačal golovoj* 'John nodded his head', *on povel broujami* 'he raised his eyebrows', *Ivan priexal starikom* 'John arrived an old man', *ona vyla šakalom* 'she howled like a jackal', *oni šli verenicej* 'they went in a row', *Boris čitaet večerom* 'Boris reads in the evening', *oni šli lesom* 'they were walking through the forest', *on govorit šopotom* 'he speaks in a whisper'.

3. $S^1_n V A_i S^2_i$: *on govorit nizkim tonom* 'he spoke in a low voice', *on kričal gromkim golosom* 'he shouted in a loud voice', *on smotrel ostorožnymi glazami* 'he looked with cautious eyes'.

4. $S^1_n V S^2_a S^3_i$: *oni vybrali ego prezidentom* 'they elected him president', *ja znal ego studentom* 'I knew him as a student', *ja sčitaju ego durakom* 'I consider him a fool', *on zakryl dver' rukoj* 'he closed the door with his hand', *on udivil nas otvetom* 'he astonished us by his answer', *rabočie pokryli ulicu asfal'tom* 'the workers covered the street with asphalt', *tetja nadelila menja nasledstvom* 'my aun left me an inheritance'.

5. $V_\emptyset S_i$: *zateklo krov'ju* 'blood began to flow', *popaxivaet dymom* 'it smells rather of smoke'.

6. $S^1_a V_\emptyset S^2_i$: *šljapu uneslo vetrom* 'the hat was carried off by the wind', *otca pereexalo avtomobilem* 'father was run over by a car', *luga zalilo vodoj* 'the meadows were flooded with water'.

Sections 1-6 below will discuss these six phrase types in some detail and point out many of the transformationally determined varieties within each type.

1. Phrase Type $S^1_n V_s S^2_i$.

1.1. Units of type $S^1_n V_s S^2_i$ can be classified as containing subjective, semi-subjective, and non-subjective instrumental modifiers. The subjectivity or non-subjectivity of S^2_i is formally expressed in the possibility or impossibility of the transformation $T: \rightarrow S^2_n V S^1_a$ or (rarely) $\rightarrow S^2_n V S^1_i$. Subjective and semi-subjective units appear to be derivative from correlated transforms.

1.11. Subjective instrumental modifiers occur in units where the transformation $T: \rightarrow S^2_n V S^1_{a/i}$ is possible, e.g. *komnata napolnjalas' tolpoj* 'the room was being filled up by the crowd' \rightarrow *tolpa napolnjala komnatu*, *luga zalivalis' vodoj* 'the meadows were flooded with water' \rightarrow *voda zalivala luga*, *sčet sostavljaetsja burgaltero* 'the account is made up by the bookkeeper' \rightarrow *burgalter sostavljaet sčet*, *učreždenie rukovoditsja robotnikom* 'the establishment is managed by a worker' \rightarrow *robotnik ruko*

vodit učreždeniem. These units can be divided into two groups, according to whether or not the verb can occur in the perfective aspect (formally, whether or not T: $V_S \rightarrow V_{SP}$ is possible).

1.111. Units in which both S^1 and S^2 are inanimate substantives are not restricted as to aspect, e.g. *kommata napolnjalas' tolpoj* 'the room was being filled up by the crowd' / *kommata napolnilas' tolpoj* '... was filled...', *luga zalivalis' / zalilis' vodoj* 'the meadows were being flooded / were flooded with water', nor are their $S^2_n V S^1_a$ transforms, e.g. *tolpa napolnjala / napolnila kommatu, voda zalivala / zalila luga*.

1.112. Units in which S^1 is an inanimate and S^2 an animate substantive can occur only in the imperfective aspect (i.e., T: $V_S \rightarrow V_{SP}$ is impossible), e.g. *sčet sostavljaetsja buxgalterom* 'the account is made up by the bookkeeper' cannot \rightarrow **sčet sostavitsja buxgalterom*, similarly in the past *sčet sostavljal'sja buxgalterom* cannot \rightarrow **sčet sostavilsja buxgalterom*. This restriction of aspect does not apply to the $S^2_n V S^1_a$ transforms of these units, e.g. *buxgalter sostavljaet / sostavit sčet* 'the bookkeeper makes / will make up the account', *buxgalter sostavljal / sostavil sčet*.⁴⁶ If we accept the statement, "Of two correlated transforms, the one having the lesser number of transformation restrictions is to be considered basic, and the other a derivative thereof," we will then consider the present (1.112) $S^1_n V_S S^2_i$ units to be derived from their correlated $S^2_n V S^1_a$ transforms.

1.113. In one infrequent type of subjective instrumental unit, the original T: $S^2_i \rightarrow S^2_n$ entails not $S^1_n \rightarrow S^1_a$ but $S^1_n \rightarrow S^1_i$, producing the transform $S^2_n V S^1_i$, e.g. *učreždenie rukovoditsja rabotnikom* 'the establishment is managed by a worker' *rabotnik rukovodit učreždeniem*. Cf. 2.1122.

1.114. One type of $S^1_n V_S S^2_i$ unit is characterized by the possibility of a further transformation T: $\rightarrow S^1_a V_\emptyset S^2_i$, e.g. *luga zalilis' vodoj* 'the meadows were flooded with water' \rightarrow *luga zalilo vodoj*. Cf. 6.12.

1.12. Semi-subjective instrumental modifiers occur in units where S^1 is an animate and S^2 an inanimate substantive. The subjective transformation T: $\rightarrow S^2_n V S^1_a$ is usually possible but awkward (i.e., less grammatical than in the case of the subjective units in 1.11 above), e.g. *student zarezalsja britvoj* 'the student committed suicide with a razor' \rightarrow *britva zarezala studenta*. This semi-subjective status of S^2 , however, is much less important than the fact that this type of unit can be transformed by T: $\rightarrow S^1_n V S^3_a S^2_i$, e.g. \rightarrow *student zarezal professora britvoj* 'the

student killed the professor with a razor'; this transformation is impossible for both subjective and non-subjective units. The $S^1_n V_S S^2_i$ unit is probably to be considered a derivative of the $S^1_n V S^3_a S^2_i$ transform; cf. 4.

1.13. In units with non-subjective instrumental modifiers the transformation $T: \rightarrow S^2_n V S^1_{a/i}$ is either impossible or involves such a shift in referential meaning (cf. 0.3 above) that the two units $S^1_n V_S S^2_i$ and $S^2_n V S^1_a$ cannot be considered correlated transforms of each other, e.g. *Ivan vernulsja starikom* 'John came back an old man' \rightarrow **starik vernul Ivana* 'the old man brought John back', *barži tjanulis' rjadami* 'the barges moved in rows' \rightarrow **rjady tjanuli barži* 'the rows (e.g. of men) pulled the barges'. These non-subjective units can be divided into two groups, containing predicative and non-predicative instrumental modifiers, according to whether or not the verb can be transformed to a form of the verb 'to be' (formally, whether $T: V_S \rightarrow \text{byl-}$ is possible).

1.131. In units with predicative instrumental modifiers the transformation $T: \rightarrow S^1_n \text{ byl- } S^2_i$ is possible, e.g. *Ivan vernulsja starikom* 'John came back an old man' \rightarrow *Ivan byl starikom* 'John was an old man'. This predicative instrumental unit can be derived from the combination of two simpler units *Ivan vernulsja* 'John came back' and *Ivan byl starikom* 'John was an old man' either directly or through some intermediate step such as *kogda Ivan vernulsja, on byl starikom* 'when John came back, he was an old man'. The non-subjectivity of S^2_i in these units finds further formal expression in the fact that it can usually be omitted ($T: S^2 \rightarrow \emptyset$), e.g. \rightarrow *Ivan vernulsja*; cf. **učreždenie rukovoditsja* 'the establishment is managed', etc. Cf. 2.1211.

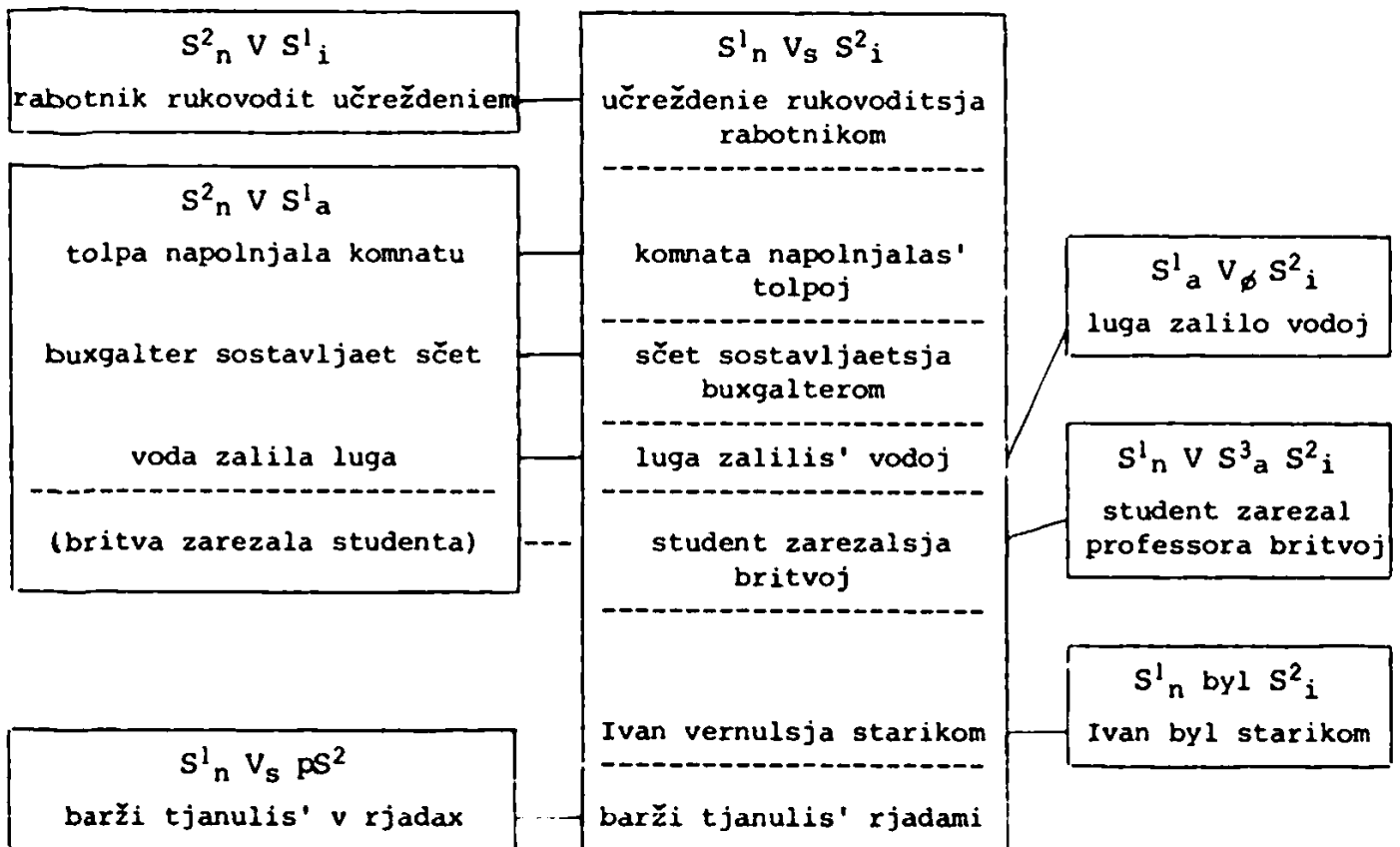
1.132. In units with non-predicative instrumental modifiers the transformation $T: \rightarrow S^1_n \text{ byl- } S^2_i$ is impossible, e.g. *barži tjanulis' rjadami* 'the barges moved in rows' \rightarrow **barži byli rjadami* 'the barges were rows', but one or more of a number of prepositional transformations $T: \rightarrow S^1_n V_S p S^2$ is possible, e.g. \rightarrow *barži tjanulis' v rjadax* 'the barges moved in rows'. S^2_i is always either a temporal or a spatial modifier; the individual words occurring as S^2_i can be listed as temporal or spatial according to other formal criteria (e.g. whether or not the word can be used in the accusative to modify verbs in *-sja*, etc.).

1.2. The possibility or impossibility of a particular units undergoing each of the set of possible transformations can be represented in tabular form as follows:

TABLE 1A: Transform Features of $S^1_n V_s S^2_i$ Units

T: +	$S^2_n V S^1_a$	$S^2_n V S^1_i$	V _{sp}	$S^1_a V \emptyset S^2_i$	$S^1_n V S^3_a S^2_i$	$S^1_n \text{ byl} - S^2_i$	$S^1_n V_s pS^2$	
	+	-	+	-	-	-	-	komnata napolnjalas' tolpoj
	+	-	+	+	-	-	-	luga zalivalis' vodoj
	+	-	-	-	-	-	-	sčet sostavljaetsja buxgalterom
	-	+	-	-	-	-	-	učreždenie rukovoditsja rabotnikom
(+)	-	+	-	-	+	-	-	student zarezalsja britvoj
(-)	-	+	-	-	-	+	-	Ivan vernulsja starikom
(-)	-	-	-	-	-	-	+	barži tjanulis' rjadami

1.3. The network of correlated transforms in which units of type $S^1_n V_s S^2_i$ participate can be represented schematically as follows:

TABLE 1B: Transform Network of $S^1_n V S^2_i$ Units

2. Phrase Type $S^1_n V S^2_i$.

2.1. Units of type $S^1_n V S^2_i$ can be classified as containing central or marginal instrumental modifiers,⁴⁷ according to whether the instrumental substantive cannot or can be omitted from the given unit (i.e., whether $T: S^2_i \rightarrow \emptyset$ is impossible or possible), e.g. on the one hand *on čítal večerom* 'he read in the evening' \rightarrow *on čítal*, *ona vyla šakalom* 'she howled like a jackal' \rightarrow *ona vyla*, but on the other *robotnik rukovodit učreždeniem* 'the worker manages the establishment' \rightarrow *robotnik rukovodit*, *on pokačal golovoj* 'he nodded his head' \rightarrow **on pokačal*. Units with central instrumental modifiers fall into two, and units with marginal modifiers into several, sub-groups.

2.11. Units in which $T: S^2_i \rightarrow \emptyset$ is impossible contain central instrumental modifiers, e.g. *robotnik rukovodit učreždeniem* 'the worker manages the establishment', *kapitan upravljaet batal'onom* 'the captain commands the battalion', *on pokačal golovoj* 'he nodded his head', *on podergival nosom* 'his nose twitched'. There are two obvious sub-groups, the principal formal distinction between which lies in the high vs. low number of restrictions upon the adjective modifiers which can be added to S^2_i (i.e., whether for certain types of A the transformation $T: \emptyset \rightarrow A_i$ is possible or not).

2.111. Units in which S^2_i can rarely be modified by an adjective, and never by a possessive pronominal adjective referring to other than S^1_n , contain as S^1_n animate substantives usually referring to persons, as V verbs expressing a motion of some kind, and as S^2_i inanimate substantives referring either to a part of the body of S^1_n or to an object which can be held in the hand of S^1_n , e.g. *on pokačal golovoj* 'he nodded his head', *ona ševelila gubami* 'she moved her lips', *on brosal kamnjami* 'he was throwing stones', *oni mazali platkami* 'they waved their kerchiefs'. There are two minor sub-groups.

2.1111. Units in which the instrumental substantive can be replaced by the same substantive in the accusative ($T: S^2_i \rightarrow S^2_a$) contain such units as e.g. *on pokačal golovoj* 'he nodded his head' \rightarrow *on pokačal golovu*, *ona brosala kamnjami* 'she threw stones' \rightarrow *ona brosala kamni*, *on razvel rukami* 'he spread his hands' \rightarrow *on razvel ruki*. The $S^1_n V S^2_a$ transforms are not limited in $T: \emptyset \rightarrow A_i$ transformations, e.g. *on razvel ruki* 'he spread (his) hands' \rightarrow *on razvel iz ruki* 'he spread their hands' (cf. *on razvel rukami* \rightarrow **on razvel iz rukami*).

2.112. Units in which $T: S^2_i \rightarrow S^2_a$ is impossible do not differ noticeably in

meaning from 2.1111 units, e.g. *on podergival nosom* 'his nose twitched', *on povel brovjami* 'he raised his brows'.

2.1121. Units in which S^2_i can with very few restrictions be modified by adjectives (i.e., where $T: \emptyset \rightarrow A_i$ is possible for many types of A) usually contain as S^1_n an animate substantive referring to a person, as V a verb with the general meaning of directing, exercising influence over, and as S^2_i an inanimate substantive most frequently referring to a collectivity, e.g. *robotnik rukovodit učreždeniem* 'the worker manages the establishment', *kapitan upravljaet batal'onom* 'the captain commands the battalion'. There are two sub-groups.

2.1121. In most cases no active \rightarrow passive transformation $T: \rightarrow S^2_n V_S S^1_i$ is possible (since there is no V_S form of V), e.g. *kapitan komanduet batal'onom* 'the captain commands the battalion' \rightarrow **batal'on komanduetsja kapitanom*.

2.1122. In a few cases $T: \rightarrow S^2_n V S^1_i$ is possible, e.g. *robotnik rukovodit učreždeniem* 'the worker manages the establishment' \rightarrow *učreždenie rukovoditsja robotnikom*. Cf. 1.113.

2.12. Units in which $T: S^2_i \rightarrow \emptyset$ is possible contain marginal instrumental modifiers (this label actually being only a restatement of the possibility of $T: S^2_i \rightarrow \emptyset$), e.g. *Ivan priexal starikom* 'John arrived an old man', *ona vyla šakalom* 'she howled like a jackal', *oni šli verenicej* 'they went in a row', *oni šli lesom* 'they walked through the forest', *Boris čital večerom* 'Boris read in the evening', *on govoril šopotom* 'he spoke in a whisper'. There are two principal and several smaller groups of unit with marginal modifiers.

2.121. Units in which the transformation $T: \rightarrow S^2_n V$ is possible, e.g. *Ivan priexal starikom* 'John arrived an old man' \rightarrow *starik priexal*, *ona vyla šakalom* 'she howled like a jackal' \rightarrow *šakal vyl*, *oni šli verenicej* 'they went in a row' \rightarrow *verenica šla* can be termed analogous units (in the sense that each contains an analogy), which express a temporary identity or similitude between S^1 and S^2 . Analogous units are subdivided into predicative and non-predicative units, and the latter further divided into comparative and metamorphic.

2.1211. Units in which the transformation $T: \rightarrow S^1_n \text{ byl- } S^1_i$ is possible contain predicative instrumental modifiers, e.g. *Ivan priexal starikom* 'John arrived an old man' \rightarrow *Ivan byl starikom* 'John was an old man'. The label 'predicative' is itself obtained from a form of this transform, e.g. $T: \rightarrow \text{kogda } S^1_n V, P_S^1_n \text{ byl-}$

S^2_{in} (where $P_{S^1_n}$ = a pronominal substantive referring to S^1_n), e.g. *kogda Ivan priexal, on byl starikom* 'when John came, he was an old man'. Predicative units can always be derived from a combination of two simpler units with common S^1_n , e.g. (*Ivan priezžet* 'John comes' + *Ivan starik* 'John is an old man') T_{past} = (*Ivan priexal* + *Ivan byl starik[om]*) = *Ivan priexal starikom*, cf. the similar derivations *Ivan zdes'* 'John is here' + *Ivan sud'ja* 'John is a judge' = *Ivan zdes' sud'ej* 'John is here as a judge' and perhaps even *Ivan durak* 'John is a fool' + *Ivan durak* = *Ivan durak durakom* 'John's an awful fool', although such mechanisms should not be insisted on too much. It is this combination of predication within predication that permits the addition of such degree modifiers as *sousem* 'completely' to S^2_i , e.g. *Ivan priexal sousem starikom* 'John arrived a real old man', whereas such modification is impossible in e.g. *Boris čital večerom* 'Boris read in the evening' → **Boris čital sousem večerom*. There may be a connection between the possibility vs. impossibility of such degree modification and the derivational framework of S^2_i : if, e.g., there exists for the given S^2_i the transformation $T: S \rightarrow A$ (*starik* 'old man' → *staryj* 'old') and for the resulting A the transformation $T: A_{pos} \rightarrow A_{comp}$ (*staryj* 'old' → *starše* 'older'), then one can add *sousem* to the $S^1_n V S^2_i$ unit (it is interesting to note that such degree modification is only possible at the extremes 'completely' and 'not at all'; although we have all degrees – *on sousem star* 'he's quite old', *on dovol'no star* 'he's rather old', *on nemnožko star* 'he's a bit on the old side', *on otnjud' ne star* 'he's not in the least old' – we can derive only *on priexal sousem starikom* 'he was quite an old man when he arrived' and *on priexal otnjud' ne starikom* 'he wasn't at all old when he arrived', but not **on priexal dovol'no starikom* 'he was rather an old man when he arrived' or **on priexal nemnožko starikom* 'he was a bit of an old man when he arrived'); such modification is impossible or unlikely in units for which no $T: S \rightarrow A$ is possible (e.g. when S^2_i = *verencej* 'in a row', *šopotom* 'in a whisper') or if such T is possible, where no degree transformation $T: A_{pos} \rightarrow A_{comp}$ is possible (e.g. *večer* 'evening' (noun) → *večernij* 'evening' (adj.), but no *večernij* → **večernee*). Note that in the very similar $S^1_n V S^2_a S^3_i$ units a case of constructional homonymity⁴⁸ obtains whenever the unit can be derived from two different sets of simpler units; e.g., the unit *Ivan znal Borisa studentom* 'John knew Boris as a student' can be derived from both *Ivan znaet Borisa* 'John knows Boris' + *Iva student* 'John is a student' and *Ivan znaet Borisa* 'John knows Boris' + *Boris student* 'Boris is a student', and consequently only the context can tell us whether *studentom* refers to *Ivan* or to *Borisa*.

In a broader sense of the term, many other $S^1_n V S^2_i$ units could be called predicative, since they too can be derived from pairs of simpler units, e.g. *oni šli lesom* 'they were walking through the forest' = *oni šli* 'they walked' + *oni v lesu* 'they are in the forest', *Boris čital večerom* 'Boris was reading in the evening' = *Boris čital* 'Boris was reading' + *bylo večerom* 'it was in the evening'; in none of these other cases, however, can the $S^1_n V S^2_i$ unit be derived from two simpler units with identical S^1_n , which is the case with *Ivan priexal starikom* 'John arrived an old man' = *Ivan priexal* 'John arrived' + *Ivan byl starikom* 'John was an old man'. Cf. 1.131.

2.1212. Units in which $T: \rightarrow S^1_n \text{ byl- } S^2_i$ is impossible, e.g. *ona vyla šakalom* 'she howled like a jackal' \rightarrow **ona byla šakalom* 'she was a jackal', *oni šli verencej* 'they went in a row' \rightarrow **oni byli verencej* 'they were a row', contain non-predicative modifiers, either comparative or metamorphic.

2.12121. Non-predicative units in which the transformation $T: \rightarrow S^1_n V \text{ kak } S^2_n$ is possible contain comparative instrumental modifiers, which describe V rather than S^1_n , e.g. *ona vyla šakalom* 'she howled like a jackal' \rightarrow *ona vyla kak šakal* (*kak* 'like, as'); note that $T: \rightarrow S^1_n \text{ byl- kak } S^2_n$ is not the same, e.g. *ona vyla kak šakal* = (i.e., can be transformed to) *ona vyla, kak byl by šakal* 'she howled as a jackal would howl', not *ona byla kak šakal kogda ona vyla* 'she was like a jackal when she howled'.

2.12122. In certain non-predicative units there obtains, in addition to the comparative $T: \rightarrow S^1_n V \text{ kak } S^2_n$ just mentioned, an additional, prepositional transformation $T: \rightarrow S^1_n V \text{ pS}^2$, e.g. *oni šli verencej* 'they went in a row' \rightarrow *oni šli v verence* (*v* 'in'). Such units can be called metamorphic, since S^1_n , in performing the action V , takes on temporarily the form of S^2 ; in other words, in metamorphic units S^2_i characterizes neither S^1 alone (as in 2.1211) nor V alone (as in 2.12121), but S^1_n as engaged in V .

2.122. Units in which the transformation $T: \rightarrow S^2_n V$ is impossible are non-analogous, e.g. *oni šli lesom* 'they were walking in the forest' \rightarrow **les šel* 'the forest walked', *Boris čital večerom* 'Boris read in the evening' \rightarrow **večer čital* 'the evening read', *on govoril šopotom* 'he spoke in a whisper' \rightarrow **šopot govoril* 'a whisper spoke'. They are divided into two groups, temporal-spatial and semi-tautological.

2.1221. Units in which some prepositional transformation $T: \rightarrow S^1_n V \text{ pS}^2$ is possible contain either temporal or spatial instrumental modifiers, e.g. *oni šli*

lesom → *oni šli v lesu* 'in the forest', *po lesu* 'through the forest', etc., *Boris čitaet večerom* 'Boris reads in the evening' → *Boris čitaet pod večer* 'towards evening', *po večerom* 'in the evenings', *v etot večer* 'this evening', etc. The further division into units containing temporal vs. spatial modifiers is made on the basis of formal features of S^2_i not directly connected with this paper, e.g. possibility or impossibility of modifying verbs in *-sja* by accusative substantives.

2.1222. Units in which no $T: \rightarrow S^1_n V pS^2$ is possible, but for which on the other hand an interclass transformation $T: \rightarrow S^1_n V S^2$ (where V_{S^2} is a verb derived from S^2) is possible, can be called semi-tautological, since the derived V_{S^2} is a form of the action expressed by V , e.g. *on govoril šopotom* 'he spoke in a whisper' cannot * → *on govoril v šopote*, but can → *on šeptal* 'he whispered', and *šeptat'* is a manner of *govorit'*. There are very few such units, all of which correspond to the more frequent constructions with obligatory adjective modifier of S^2_i , e.g. *on govoril tixim golosom* 'he spoke in a quiet voice' (cf. 3.1f.).

2.2. The transform features of $S^1_n V S^2_i$ units discussed above can be summarized in tabular form as follows:

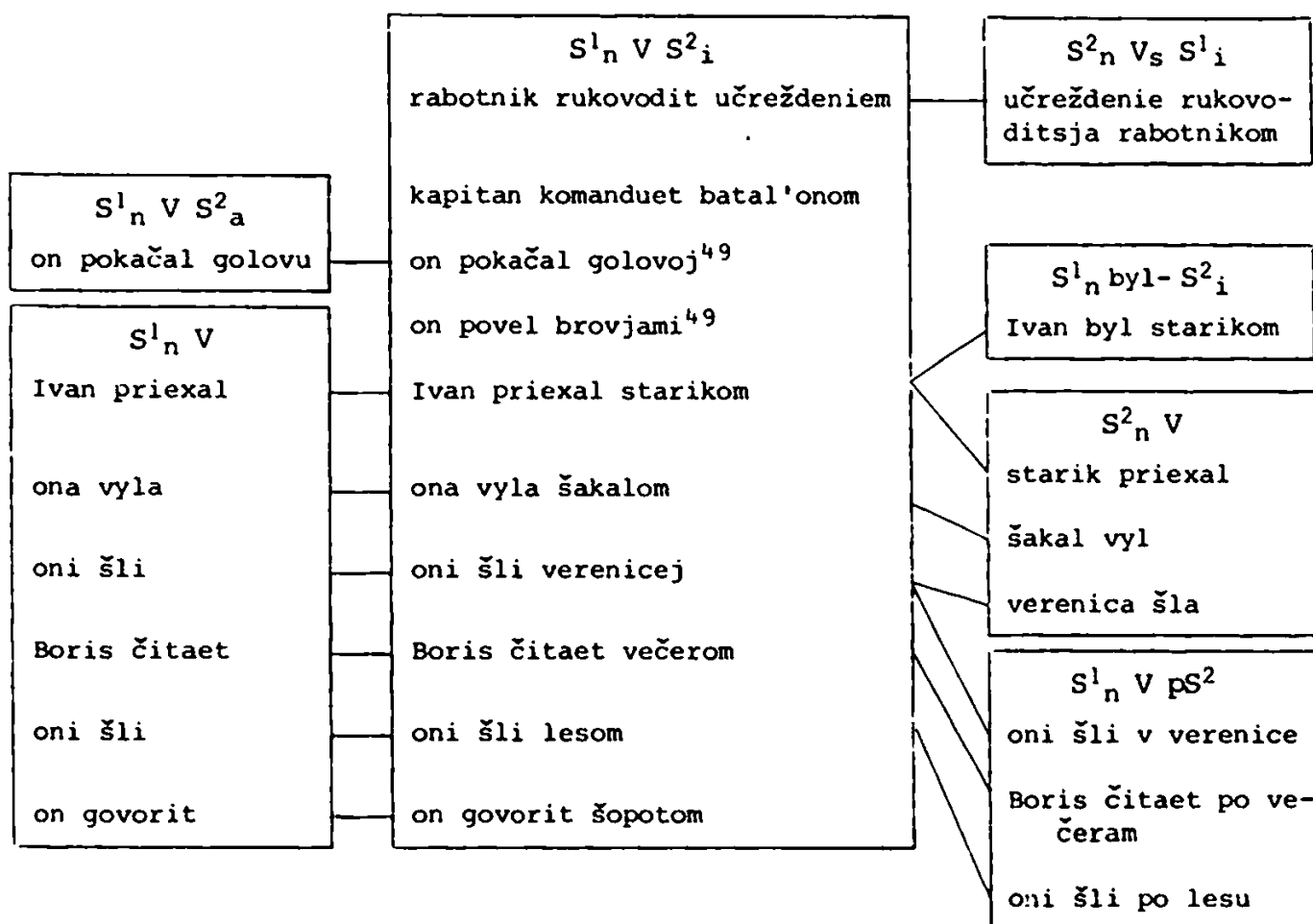
TABLE 2A: Transform Network of $S^1_n V S^2_i$ Units

T: →	$S^2_i \rightarrow \emptyset$	$\emptyset \rightarrow A_i$	$S^2_n V S^1_i$	$S^2_n V$	$S^2_i \rightarrow S^2_a$	$S^1_n \text{ byl-} S^2_n$	$S^1_n V \text{ kak } S^2_n$	$S^1_n V pS^2$	$S^1_n V_{S^2}$	$(V S^2_a)$	
-	-	+	+	-	-	-	-	-	-	-	rabotnik rukovodit učreždeniem
(-)	+	-	-	-	-	-	-	-	-	-	kapitan komanduet batal'onom
-	(-)	-	-	-	+	-	-	-	-	-	on pokačal golovoj
-	(-)	-	-	-	-	-	-	-	-	-	on povel brovjami
+	+	-	-	+	-	+	-	-	(+)	-	Ivan priexal starikom
+	+	-	-	+	-	-	+	-	-	-	ona vyla šakalom
+	+	-	-	+	-	-	-	+	-	-	oni šli verenicej
+	+	-	-	-	-	-	-	+	-	+	Boris čitaet večerom
+	+	-	-	-	-	-	-	+	-	(-)	oni šli lesom
+	+	-	-	-	-	-	-	-	+	-	on govorit šopotom

2.3. The network of correlated transforms in which units of type $S^1_n V S^2_i$

participate can be represented schematically as follows:

TABLE 2B: Transform Network of $S^1_n V S^2_i$ Units



3. Phrase Type $S^1_n V A_i S^2_i$.

3.1. Units⁵⁰ of morphologic type $S^1_n V A_i S^2_i$ (rarely, $S^1_n V_S A_i S^2_i$) are divided into two types, according to whether or not the adjective modifier of S^2_i can be omitted (formally, whether or not $T: A_i \rightarrow \emptyset$ is possible). Where A_i can be omitted (e.g., *kapitan komandoval pervym batal'onom* 'the captain commanded the first battalion' → *kapitan komandoval batal'onom*, *student zarezalsja ostroj britvojoj* 'the student killed himself with a sharp razor' → *student zarezalsja britvojoj*), such omission produces units of types $S^1_n V S^2_i$ or $S^1_n V_S S^2_i$, of which the original unit with A_i must be considered an expansion. Units in which $T: A \rightarrow \emptyset$ is impossible, however, form an entirely separate group, being in themselves minimal units, of which A_i is an integral part (e.g., *ona pogljadela svetlymi glazami* 'she looked with her clear eyes' → **ona pogljadela glazami*, *on govorit spokojnym tonom* 'he spoke in a calm tone' → **on govorit tonom*). In all such units there is

an obviously close semantic connection between V and S^2_i . Unless the meaning of the term 'metonymy' is stretched beyond its usual limits, there is no established term to describe such a connection; however, the semantic relationship between V and S^2_i is so close that this type of unit can be called 'semi-tautological'. The instrumental substantive adds no new information of its own, but instead serves simply as a sort of syntactic middleman, enabling the information content of A_i to be introduced into the unit.⁵¹

3.11. All units where $T: A_i \rightarrow \emptyset$ is impossible are predicative units. The difference between these units and those of the type *Ivan priexal starikom* 'John arrived an old man' (cf. 2.1211) is that whereas the latter derive from two predications with common subject (e.g., *Ivan priexal starikom* = *Ivan priexal* 'John arrived' + *Ivan byl starikom* 'John was an old man'), the former derive from two predications with separate subjects (e.g., *on govoril spokojnym tonom* 'he spoke in a calm tone' = *on govoril* 'he spoke' + *(ego) ton byl spokojnym* 'his tone was calm'); there is always a synecdochic relation between these two subjects and hence also between S^1 and S^2 of the derived unit (e.g., *on govoril serditym golosom* 'he spoke in an angry voice', *Tat'jana dikimi glazami oziraetsja* 'Tat'jana gazes about with wild eyes', *ona gljadela bol'simi glazami* 'she was looking with her big eyes'). This derivation of the $S^1_n V A_i S^2_i$ unit from two simpler units is formally demonstrable by the transformation $T: \rightarrow$ *kogda* $S^1_n V, A_p S^2_n$ *byl-* $A_{i/n}$ (where A_p is a possessive pronominal adjective *moj* 'my', *tvoj* 'thy', *naš* 'our', *vaš* 'your', or substantive *ego* 'his', *ee* 'hers', *ix* 'theirs' and *byl-* is any tense form of *byt*'), e.g. *kapitan smotrel ostorožnymi glazami* 'the captain looked with cautious eyes' \rightarrow *kogda kapitan smotrel, ego glaza byli ostorožnymi* 'when the captain looked, his eyes were cautious'. Various nonproductive sub-types of this transformation are possible, according to whether $A_{i/n}$ is in the short or long form (*svetly/svetlye*), nominative or instrumental (*svetlye/svetlymi*).⁵²

3.12. That the instrumental adjective modifies the substantive S^2_i is obvious. It is less obvious, however, that this same instrumental adjective either does or can modify (by implication, due to the transform correlations into which the given unit enters), in addition, the verb V , the subject S^1_n , or both. In fact, all distinctions within the group of $S^1_n V A_i S^2_i$ units are made on this basis, namely which of the other two items V or S^1_n the information content of A_i can and cannot be applied to. We will discuss the relation of A_i first to V , then to S^1_n .

3.121. Units of type $S^1_n V A_i S^2_i$ can be divided into two groups, according to whether or not the information content of A_i can be applied to the verb V (formally, whether or not the transformation $T: \rightarrow S^1_n A_\emptyset V$ is possible, where A_\emptyset is the zero or adverbial form of A_i).

3.1211. Units in which the adverbial transformation $T: \rightarrow S^1_n A_\emptyset V$ is possible can be said to contain semi-adverbial instrumental modifiers. This is the case with the majority of $S^1_n V A_i S^2_i$ units, e.g. *on kričal gromkim glasom* 'he shouted in a loud voice' \rightarrow *on gromko kričal* 'he shouted loudly', *kapitan smotrel ostorožnimi glazami* 'the captain looked with cautious eyes' \rightarrow *kapitan ostorožno smotrel* 'the captain looked cautiously', *on ušel bystryimi šagami* 'he went off with rapid steps' \rightarrow *on bystro ušel* 'he went off rapidly'. Adjectives occurring in units for which this adverbial transformation is possible can be called (if a general term is needed) 'qualifiers', since they are specifically opposed to the 'visible quantifiers' discussed just below.

3.1212. Units in which the adverbial transformation $T: \rightarrow S^1_n A_\emptyset V$ is impossible are fewer than the units just discussed; they can be said to contain non-adverbial instrumental modifiers. In all such combinations the adjective A_i is what can be somewhat clumsily called a 'visible bi-polar quantifier', by which is meant that such an adjective measures its modified substantive as being at one or the other end of some visible scale, such as big—little, wide—narrow, long—short, high—low. Examples of such units are: *ona gljadela bol'šimi glazami* 'she looked with big eyes' \rightarrow **ona veliko gljadela* 'she looked greatly', *on vzgljanul uzкими glazami* 'he glanced up with narrow eyes' \rightarrow **on uzko vzgljanul* 'he glanced up narrowly', *on ušel dlinnymi šagami* 'he went off with long steps' \rightarrow **on dlinno ušel* 'he went off lengthily': such transformations are impossible even when an originally visible quantifier is used figuratively, for example 'high', 'low' referring to voice tone, e.g. *on govoril nizkim tonom* 'he spoke in a low tone' \rightarrow **on nizko govoril* 'he spoke lowly', *ona otvečala vysokim glasom* 'she answered in a high voice' \rightarrow **ona vysoko otvečala* 'she answered highly'.

3.122. A second division of $S^1_n V A_i S^2_i$ units is made according to whether or not the information content of A_i can be applied to the subject S^1_n (formally, whether or not $T: \rightarrow S^1_n \text{ byl- } A$ is possible).

3.1221. Units in which the transformation $T: \rightarrow S^1_n \text{ byl } A$ is possible can be said to contain pseudo-predicative instrumental modifiers, in the sense that A_i rather

implies the statement $S^1_n A$ (e.g., *kapitan smotrel ostoporožnymi glazami* 'the captain looked with cautious eyes' implies *kapitan byl ostoporožen* 'the captain was cautious'), but does not make this statement outright; in fact, the implication can always be explicitly denied (e.g., *on govoril veselým tonom, xotja on sam vouse ne byl vesel* 'he spoke in a gay tone, although he wasn't in the least gay himself'). Examples of such units: *on govoril serditym golosom* 'he spoke in an angry voice' → *on byl serdit* 'he was angry', *on doložil uverennym golosom* 'he announced in a confident voice' → *on byl uveren* 'he was confident', *on skazal veselým tonom* 'he said in a gay tone' → *on byl vesel* 'he was gay', *on govoril spokojnym tonom* 'he spoke in a calm tone' → *on byl spokoen* 'he was calm'. This transformation is impossible for all units for which the adverbial transformation (cf. 3.1212) is impossible.

3.1222. Units in which the transformation $T: + S^1_n \text{ byl- } A$ is impossible imply nothing about the subject S^1_n and contain purely adjectival instrumental modifiers which describe only the semi-tautological instrumental substantive S^2_i , e.g. *ona pogljadela svetlymi glazami* 'she looked with her clear eyes' → **ona byla svetla* 'she was clear', *Gavrila tupymi glazami pogljadyval* 'Gavrila looked with dull eyes' → **Gavrila byl tup* 'Gavrila was dull', *on govoril nizkim tonom* 'he spoke in a low tone' → **on byl nizok* 'he was low'. This group includes all units for which the adverbial transformation $T: + S^1_n A_{\emptyset} V$ is impossible, e.g. *on ušel dlinnymi šagami* 'he went off with long steps' → **on dlinno ušel* 'he went off lengthily' and → **on byl dlinen* 'he was long', *on vzgljanul uzкими glazami* 'he looked up with narrow eyes' → **on uzko vzgljanul* 'he looked up narrowly' and → **on byl uzok* 'he was narrow'.

3.13. Another type of transformation, which can be called that of synecdochic inversion, is possible in certain cases (formally, $T: + A_n S^2_n V$ and variants thereof), e.g. *on doložil uverennym golosom* 'he announced in a confident voice' → *uverennyj golos doložil* 'a confident voice announced', *ona gljadit svetlymi glazami* 'she looks with clear eyes', → *svetlye glaza gljadjat* 'the clear eyes look'. The possibility or impossibility of synecdochic inversions depends primarily on the particular lexical units involved, e.g. *on ušel bystryimi šagami* 'he went off with quick steps' can probably not → **bystrye šagi ušli* 'the quick steps went off', but the very similar *on udaljaljsja bystryimi šagami* 'he moved off with quick steps' probably can → *bystrye šagi udaljalis* 'the quick steps moved off'. Since synecdoche always remains a device, a deliberate aberration from normal speech, the

acceptability of which is largely a matter of individual taste, it would probably be futile to seek structural rules underlying its use.

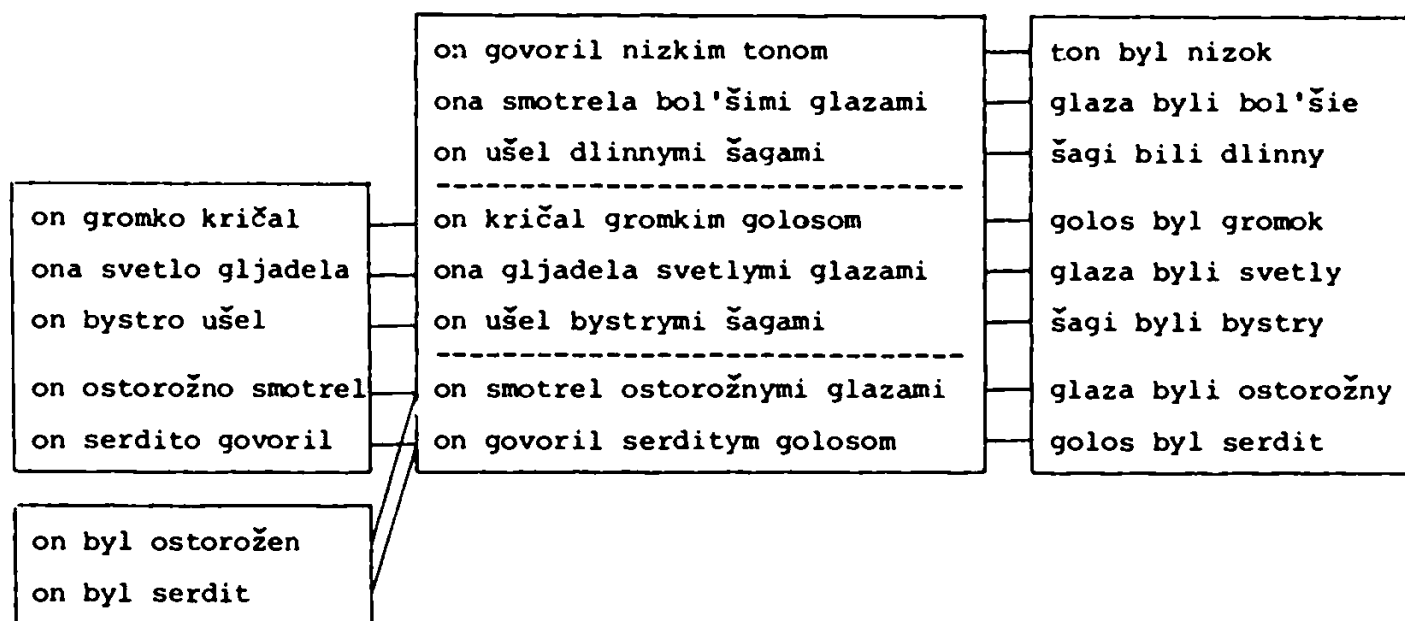
3.2. The transform features of $S^1_n V A_i S^2_i$ units can be summarized in tabular form as follows (synecdochic transformations are omitted):

TABLE 3A: Transform Features of $S^1_n V A_i S^2_i$ Units

T: →	S^2_n byl- A	$S^1_n A_i V$	S^1_n byl- A	
	+	+	+	kapitan smotrel ostorožnymi glazami, on skazal serditym golosom, etc.
	+	+	-	on kričal gromkim golosom, ona gljadela svetlymi glazami, etc.
	+	-	-	on govoril nizkim tonom, ona smotrela bol'šimi glazami, etc.

3.3. The network of correlated transforms into which units of type $S^1_n V A_i S^2_i$ enter can be represented schematically as follows:

TABLE 3B: Transform Network of $S^1_n V A_i S^2_i$ Units



4. Phrase Type $S^1_n V S^2_a S^3_i$.

4.1. Units of type $S^1_n V S^2_a S^3_i$ are divided into two groups, according to

whether or not the accusative direct object can be omitted (formally, whether or not $T: S^2_a \rightarrow \emptyset$ is possible). Where S^2_a can be omitted (e.g., *on govoril èto šopotom* 'he said that in a whisper' → *on govoril šopotom* 'he spoke in a whisper', *Ivan èital knihu večerom* 'John was reading a book in the evening' → *Ivan èital večerom* 'John was reading in the evening'), such omission produces units of type $S^1_n V S^2_i$, of which the original $S^1_n V S^2_a S^3_i$ must be considered an expansion. Units in which such omission of S^2_a is impossible, however, are themselves minimal units (at least from the point of view of the present analysis, which deals only with instrumental modifiers; a full transform syntax would consider many $S^1_n V S^2_a S^3_i$ units to be instrumental expansions of original $S^1_n V S^2_n$ units; cf. 4.1233 below).

$S^1_n V S^2_a S^3_i$ units for which $T: S^2_a \rightarrow \emptyset$ is impossible (e.g. *ja sèitaju ego durakom* 'I consider him a fool' → **ja sèitaju durakom* 'I consider a fool', *on zakryl dver' rukoj* 'he closed the door with his hand' → **on zakryl rukoj* 'he closed with his hand') are divided into predicative and non-predicative units, according to whether or not the unit posits an identity between S^2_a and S^3_i (formally, whether or not a transformation $T: S^2_n \# S^3_n$ is possible).

4.11. Predicative units are those in which $T: \rightarrow S^2_n \# S^3_n$ is possible, e.g. *oni vybrali ego prezidentom* 'they elected him president' → *on # prezident* 'he is president', *Petrovy nazvali syna Ivanom* 'the Petrovs named their son John' → *Ivan # syn* 'John is the son', *ja sèitaju ego durakom* 'I consider him a fool' → *on # durak* 'he is a fool', *ja znal ego studentom* 'I knew him as a student' → *on # student* 'he is a student'. There are a number of sub-types of predicative unit, all of which are highly restricted lexically.

4.111. Units of inceptive status contain verbs which themselves create the identity of S^2_a and S^3_i , e.g. *oni delali ego sekretarem* 'they made him secretary'; this inceptivity can be demonstrated by transformations containing a form of *stat* 'become', e.g. *oni vybrali ego prezidentom* 'they elected him president' → *on stal prezidentom* 'he became president', etc. Personal names are a special case within this group, e.g. *Petrovy nazvali syna Ivanom* 'the Petrovs named their son John' → *syn stal (nazyvát'sja) Ivanom* 'the son began to be called John'.

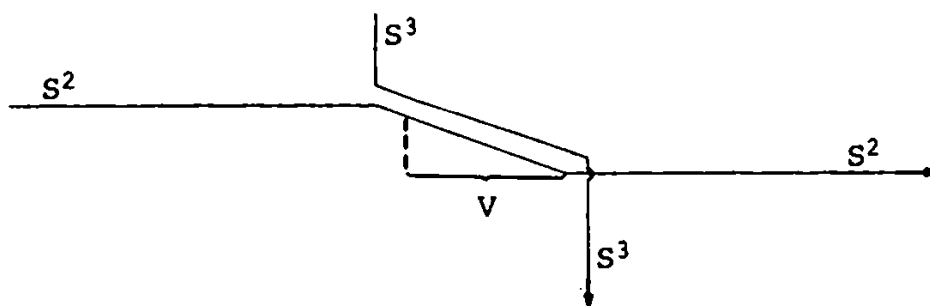
4.112. Pseudo-predicative units express a certain attitude on the part of S^1_n toward the predicative identity of S^2 and S^3 , but this identity is not posited as truth, e.g. *ja sèitaju ego durakom* 'I consider him a fool', *druz'ja veličali (ego.*

statejku (učeným) trudem 'his friends honored his little article with the name of scholarly opus'.

4.113. In temporal units the instrumental substantive S^3_i is predicated as identical to S^2_a during the time span in which the action V occurs, but only during this time, e.g. *ja znal ego studentom* 'I knew him as a student' (derived from *ja znal ego* 'I knew him' + *on byl studentom* 'he was a student', cf. 2.1211), *Ivan vstretil Petra (eště) lejtentantom* 'John had already met Peter as a lieutenant', *my uvideli ego (snova) docentom* 'we saw him again as a young professor'.

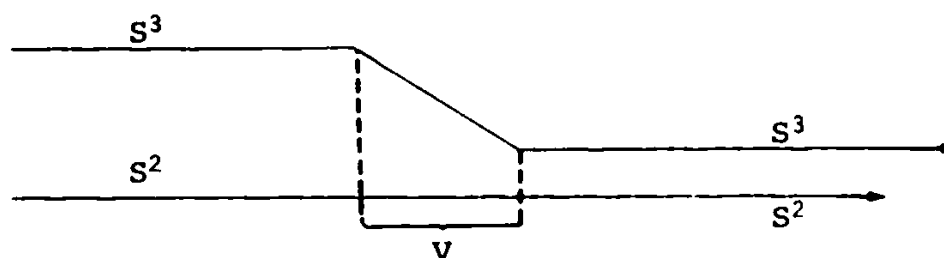
4.12. Non-predicative units of type $S^1_n V S^2_a S^3_i$ for which no $T: \rightarrow S^2_n \# S^3_n$ is possible, are the largest single group of units containing instrumental substantive modifiers, and contain what are generally if somewhat loosely referred to as "instrumentals of means," e.g. *on zakryl dver' rukoj* 'he closed the door with his hand', *ona nabíla podušku puxom* 'she stuffed the pillow with down'. Within this group there are two rather clearly opposed sub-groups, distinguished by the quite different relations between S^2 and S^3 expressed in the one and the other sub-group. These two sub-groups will be said to contain 'true instrumentals' on the one hand and instrumentals of 'resultant contiguity' on the other. These two sub-groups will be described briefly in 4.121 and 4.122; the transformation features which distinguish the one from the other will be taken up in 4.123.

4.121. In units containing true instrumental modifiers, S^3_i is really the means or instrument by which S^1_n accomplishes the action V , e.g. *on zakryl dver' rukoj* 'he closed the door with his hand', *roditeli portjat detej balovstvom* 'parents spoil children by over-indulgence', *Ivan vyčerknul slovo karandášom* 'John crossed out the word with his pencil', *publika vstretila ego aplodismentami* 'the audience greeted him with applause'. In all such cases the relation between S^3 and S^2 is temporally limited to the duration of the action V ; once the time span of V has passed, there is no further connection between S^3 and S^2 . This temporally limited relation between S^3 and S^2 can be represented graphically as:



In other words, S^3 is intimately associated with S^2 during the time occupied by V , but this association ceases with the cessation of V . Other examples of true instrumental modifiers include *tetja vyzyvala smjatenie (ložnymi) spletnjami* 'my aunt caused confusion with her false gossiping', *on pričinjaet besporjadok (svoimi) žalostjami* 'he causes disorder with his pranks', *Ivan pugal menja blefom* 'John scared me with his bluff', *kučer vzbodril kljaču (gromkim) ponukan'em* 'the coachman encouraged his nag with loud urgings-on', *on toptal pol sapogami* 'he got the floor dirty with his boots', *on obter lico platkom* 'he wiped his face with a cloth', *soldat prikoloľ ranenogo štykom* 'the soldier finished off the wounded man with his bayonet', *on udivil menja otvetom* 'he astonished me with his answer'.

4.122. In units containing instrumentals of resultant contiguity, the action V itself establishes a relation of spatial contiguity between S^2 and S^3 , and this contiguity continues indefinitely after the action of V has ceased, e.g. *rabočie pokryli ulicu asfal'tom* 'the workers covered the street with asphalt', *monax napolnil kuvšin vodoj* 'the monk filled his jug with water', *Ivan zakryľ lico vorotnikom* 'John covered his face with his collar', *oni posypali rel'sy peskom* 'they sanded the rails'. The establishment of this spatial contiguity can be represented graphically as:



4.123. This difference in the relations between S^2 and S^3 expressed in units containing true instrumental modifiers and those containing modifiers of resultant contiguity finds formal expression in a number of transform features, some of which are obvious and almost absolute, others of which are only more or less clear tendencies.

4.1231. The most obvious and consistent formal feature of units containing instrumentals of resultant contiguity is the possibility of forming prepositional transforms $T: + pS^2 S^3$, e.g. *rabočie pokryli ulicu asfal'tom* 'the workers covered the streets with asphalt' \rightarrow *na ulice asfal't* 'asphalt is on the street', *ona nabilila podušku puxom* 'she stuffed the pillow with down' \rightarrow *v poduške pux* 'there is

down in the pillow', *on zakryl lico vorotnikom* 'he covered his face with his collar' → *pered licom vorotnik* 'the collar is before his face'. Such transformations are usually impossible for units containing true instrumental modifiers, e.g. *on zakryl dver' rukoj* 'he closed the door with his hand' → **na dveri ruka* 'his hand is on the door', *roditeli portjat detej balovstvom* 'parents spoil children by over-indulgence' → **u detej balovstvo* 'children have over-indulgence', *on vyčerknul slovo karandašom* 'he crossed out the word with his pencil' → **na slove karandaš* 'on the word is a pencil', etc.

4.1232. The temporal limitation of the relation between S^3 and S^2 (to the time span during which the action V occurs) brings S^3 closer to the role of a subject in true instrumental units than in units with resultant-contiguity modifiers. This greater subjectivity is formally expressed in the relative ease with which such subjective transformations as $T: \rightarrow S^3_n S^1_q V S^2_a$ are effected, e.g. *roditeli portjat detej balovstvom* 'parents spoil children by over-indulgence' → *balovstvo roditelej portit detej* 'the parents' over-indulgence spoils the children', *publika vstretila ego aplodismentami* 'the audience greeted him with applause' → *aplodismenty publiki vstretili ego* 'the applause of the audience greeted him', *on zakryl dver' rukoj* 'he closed the door with his hand' → *ego ruka zakryla dver'* 'his hand closed the door' (with special WO rules for original pronominal S^1_n). Such transformations are usually much more awkward, if possible at all, for combinations with instrumentals of resultant contiguity, e.g. *rabočie pokrli ulicu asfal'tom* 'the workers covered the street with asphalt' → (*)*asfal't rabočix pokrly ulicu* 'the workers' asphalt covered the street', *ona nabila podušku puxom* 'she stuffed the pillow with down' → (*)*ee pux nabil podušku* 'her down stuffed the pillow', *on zakryl lico vorotnikom* 'he covered his face with his collar' → (*)*ego vorotnik zakryl lico* 'the collar covered his face'. This feature, of course, is not one of absolute possibility vs. impossibility of a certain transformation, but rather a relative feature of greater or less ease of transformation (which may equal a higher or lower degree of grammaticalness).

4.1233. The lack of any temporal limitation on the relation established between S^3 and S^2 in units with instrumentals of resultant contiguity (in other words, the permanency and hence the importance of this newly established relation) makes S^3 itself more essential to the $S^1_n V S^2_a S^3_i$ unit than in the case of units with true instrumental modifiers. This relatively greater importance of S^3 in the former case is expressed in the difficulty with which S^3_i can be omitted from such

units (formally, the quasi-impossibility of $T: S^3_i \rightarrow \emptyset$), e.g. *rabočie pokryli ulicu asfal'tom* 'the workers covered the street with asphalt' \rightarrow (*)*rabočie pokryli ulicu* 'the workers covered the street', *oni posypali rel'sy peskom* 'they sanded the rails' \rightarrow (*)*oni posypali rel'sy* 'they scattered the rails', *on naplnil sunduk bel'em* 'he filled the trunk with laundry' \rightarrow (*)*on naplnil sunduk* 'he filled the trunk'. Such omission of S^3_i is on the other hand almost always possible for units containing true instrumental modifiers, e.g. *on zakryl dver' rukoj* 'he closed the door with his hand' \rightarrow *on zakryl dver'* 'he closed the door', *roditeli portjat detej balovstvom* 'parents spoil children with over-indulgence' \rightarrow *roditeli portjat detej* 'parents spoil children', *on udaril menja palkoj* 'he struck me with a stick' \rightarrow *on udaril menja* 'he struck me'. As was the case in 4.1232, this is a relative, not an absolute feature.

4.124. A particular sub-group of resultant-contiguity units obtains with a lexically restricted number of verbs expressing the physical transfer of S^3_i to a person (more rarely a creation by a person) S^2_a , e.g. *on nadelil menja podarkami* 'he showered me with gifts', *autor snabdil knihu primečaniami* 'the author provided the book with notes', *žjuri nagradil ego premiej* 'the jury awarded him the prize', (expressing lack of such transfer) *tetja obdelila menja nasledstvom* 'my aunt deprived me of my inheritance'.

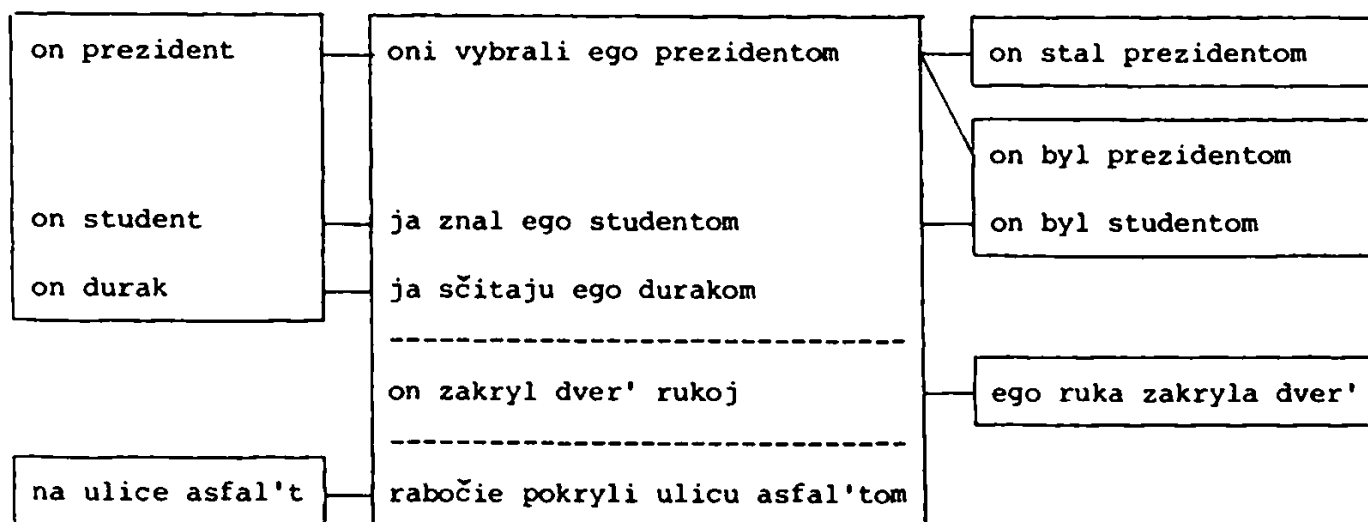
4.2. The transform features of $S^1_n V S^2_a S^3_i$ units can be summarized in tabular form as follows (units in which S^2_a can $\rightarrow \emptyset$ are omitted):

TABLE 4A: Transform Features of $S^1_n V S^2_a S^3_i$ Units

T: \rightarrow	$S^2_a \rightarrow \emptyset$	$S^2_n \# S^3_n$	$S^2_n \text{ stal-} S^3_i$	$S^2_n \text{ byl-} S^3_i$	$PS^2 S^3_n$	$US^2_g S^3_n$	$S^3_n S^1_g V S^2_a$	$S^3_i \rightarrow \emptyset$	
-	-	+	+	+	-	-	-	+	oni vybrali ego prezidentom
-	-	+	-	+	-	-	-	+	ja znal ego studentom
-	-	+	-	-	-	-	-	-	ja sčitaju ego durakom
-	-	-	-	-	-	-	(+)	+	on zakryl dver' rukoj
-	-	-	-	-	-	-	+	+	on udivil nas otvetom
-	-	-	-	-	+	-	(-)	(-)	rabočie pokryli ulicu asfal'tom
-	-	-	-	-	+	+	-	-	tetja nadelila menja nasledstvom

4.3. The network of correlated transforms into which units of type $S^1_n V S^2_a S^3_i$ enter can be represented schematically as follows (certain minor groups are omitted):

TABLE 4B: Transform Network of $S^1_n V S^2_a S^3_i$ Units



5. Phrase Type $V_\emptyset S_i$.

5.1. Units of the type $V_\emptyset S_i$, e.g. *zateklo krov'ju* 'blood began to flow', *sverknulo rjab'ju* 'a ripple flashed', *xolodom pašet* 'there's a breath of cold', *paxlo osen'ju* 'it smelled of autumn', are formally characterized by the fact that V can occur only in neuter past or third person singular non-past (formally, the transformation $T: V_\emptyset \rightarrow V$ is impossible, e.g. *produvalo vetrom* 'a puff of wind blew' \rightarrow **produvaem vetrom* 'we blow with the wind' or \rightarrow **produvali vetrom* '[they] blew with the wind', etc.). There are two sub-groups of type $V_\emptyset S_i$ unit, according to whether or not a personal transformation $T: \rightarrow S_n V$ is possible, e.g. *zateklo krov'ju* 'blood began to flow' \rightarrow *krov' zatekla*, but *popaxivaet dymom* 'it smells a bit of smoke' \rightarrow **dym popaxivaet* 'smoke smells a bit'.

5.11. Units for which the personal transformation $T: \rightarrow S_n V$ is possible occur with a small number of verbs expressing physical and usually visible actions, e.g. *zateklo krov'ju* 'blood began to flow' \rightarrow *krov' zatekla*, *produvalo vetrom* 'a puff of wind blew' \rightarrow *veter produval*, *sverknulo rjab'ju* 'a ripple flashed' \rightarrow *rjab' sverknula*, *skosilo gradom* 'the hail cut down' \rightarrow *grad skosil*.

5.12. Units for which $T: \rightarrow S_n V$ is impossible occur with verbs expressing the transfer through the air of (a) an odor, e.g. *degot'kom potjanulo* 'there was a

smell of tar', figuratively *paxnet vesnoj* 'it smells of spring' or (b) cold, damp or other touch-perceived sensation, e.g. *povejalo syrost'ju* 'there was a breath of dampness', *proxladoj dimulo* 'there was a puff of coolness'.

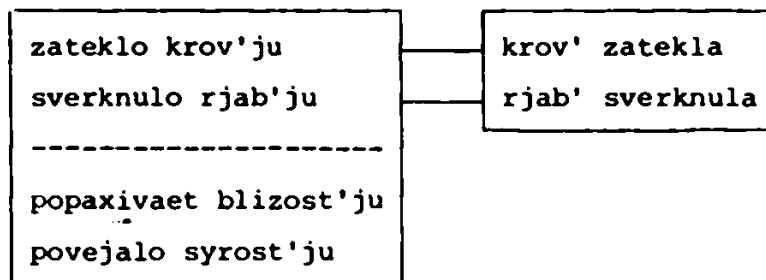
5.2. The transform features of $V_{\emptyset} S_i$ units can be summarized in tabular form as follows:

TABLE 5A: Transform Features of $V_{\emptyset} S_i$ Units

	\uparrow	\uparrow	\uparrow	
T:		V_{\emptyset}	S_n	
		-	+	zateklo krov'ju
		-	-	popaxivaet dymom

5.3. The network of correlated transforms into which units of type $V_{\emptyset} S_i$ enter can be represented schematically as follows:

TABLE 5B: Transform Network of $V_{\emptyset} S_i$ Units



6. Phrase Type $S^1_a V_{\emptyset} S^2_i$.

6.1. Units of type $S^1_a V_{\emptyset} S^2_i$, like the type $V_{\emptyset} S_i$ units discussed in 5., are impersonal constructions characterized above all by the impossibility of changing the verb to a personal form agreeing with a subject, e.g., *šljapu uneslo vetrom* 'the hat was carried off by the wind' + **šljapu unesut vetrom* 'they will carry the hat off with the wind', + **šljapu unesla vetrom* 'she carried the hat off with the wind', etc. In some cases, however (specifically, where S^2_i refers to an object which can be at the disposition of human beings), a transformation to what might be called an anonymous construction (with subjectless third person plural verb form) is possible, e.g. *otca pereexalo avtomobilem* 'father was run over by a car' ('it ran over father ...') + *otca pereexali avtomobilem* ('they ran over father ...').

6.11. In all units of type $S^1_a V_\emptyset S^2_i$ the personal transformation $T: \rightarrow S^2_n V S^1_a$ is possible, e.g. *otca ranilo oskolkom* 'father was wounded by a fragment' \rightarrow *oskolok ranil otca* 'the fragment wounded father', *lodku razbilo burej* 'the boat was smashed by the storm' \rightarrow *burja razbila lodku* 'the storm smashed the boat', *luga zalilo vodoj* 'the meadows were flooded with water' \rightarrow *voda zalila luga* 'water flooded the meadows'. Since all $S^1_a V_\emptyset S^2_i$ units can be derived from $S^2_n V S^1_a$ correlates, but not vice versa, the impersonal constructions must be considered derivations from the 'personals'.

6.12. In a few cases, the $S^1_a V_\emptyset S^2_i$ unit is characterized by the possibility of a further transformation $T: \rightarrow S^1_n V_s S^2_i$, e.g. *luga (acc.) zalilo vodoj* ('the meadows it flooded with water') \rightarrow *luga (nom.) zalilis' vodoj* 'the meadows were flooded with water' (cf. 1.114 above).

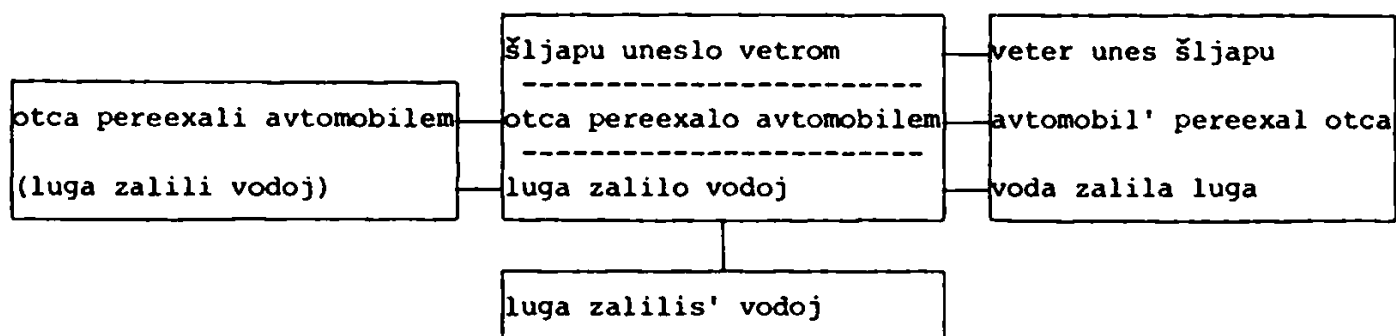
6.2. The transform features of $S^1_a V_\emptyset S^2_i$ units can be summarized in tabular form as follows:

TABLE 6A: Transform Features of $S^1_a V_\emptyset S^2_i$ Units

T: \rightarrow	$V_\emptyset \rightarrow V$	$S^2_n V S^1_a$	$S^1_a V_a S^2_i$	$S^1_n V_s S^2_i$	
-	+	-	-	-	šljapu uneslo vetrom
-	+	+	+	-	otca pereexalo avtomobilem
-	+	(+)	+	+	luga zalilo vodoj

6.3. The network of correlated transforms into which units of type $S^1_a V_\emptyset S^2_i$ enter can be represented schematically as follows:

TABLE 6B: Transform Network of $S^1_a V_\emptyset S^2_i$ Units



7.0. *Conclusion.* The traditional approach to Russian syntax, an example of which was given in 0.1, has a number of weaknesses, the most obvious of which is the absence of consistent classificatory criteria. Groups are described on the basis now of substantive meaning, now of verb meaning, now of some combination of the two; the presence or absence of other modifiers, the degree of concreteness or abstraction of verb and substantive, the morphology of the verb itself (reflexive or not, passive participle or not), and the degree of semantic identity between verb and substantive are all determining factors in one or the other group. To the very large extent to which this traditional approach is based on meaning clusters alone, it suffers from further weaknesses. For one thing, given the enormous variety of individual word meanings and the difficulty of labeling these with precision, a classification based on groups of similar meanings must employ labels which are themselves very imprecise; to attain an interesting degree of generalization (i.e., to set up large enough classes), this classification must use labels of almost meaningless imprecision (e.g., the class label "objective" covers such variegated combinations as *paxat' traktorom* 'cultivate with a tractor', *nadelit' talantom* 'endow with talent', *ševelit' gubami* 'move one's lips', *porāžat' krasotoj* 'astonish by one's beauty', *nabit' senom* 'stuff with hay', *ljubovat'sja prirodnoj* 'admire nature', *upravljat' buksirom* 'run a tugboat').⁵³ Further, a classification of word-combinations based on the meanings of the words contained therein would seem dangerously circular, since the meaning of each word itself depends at least partly on its context, the most important part of which are those very words with which it is syntactically connected.

Perhaps the major flaw in the traditional approach, however, has lain in the fact that it has divorced meaning from form, and in so doing has departed from the realm of the demonstrable fact to enter that of the unprovable assertion. The discussion of differences of meaning and of semantic clustering is surely a fascinating endeavor, but as long as such discussion does not occur within some statable formal framework, it is hard to see how it can culminate in a convincing description. Transformation analysis provides this formal framework, using a classificatory procedure which is uniform throughout the entire analysis, and all the class labels and semantic interpretations of which are firmly grounded in demonstrable formal features. It substitutes for semantic generalizations a genuinely formal description; this is accomplished by expanding the concept of form itself and by recognizing the existence of a different level of linguistic structure.

While the formal rigor of transformation analysis would by itself be a sufficient justification thereof, this approach has a number of further advantages. In some cases it produces more refined groupings, recognizing subtypes beyond the reach of traditional methods, e.g. the division of $S^1_n V A_i S^2_i$ phrases into semi-adverbial and non-adverbial (*on kričal gromkim golosom* 'he shouted in a loud voice' → *on gromko kričal* 'he shouted loudly', but *on vzgljanul uzкими glazami* 'he glanced up with his narrow eyes' cannot → **on uzko vzgljanul* 'he glanced up narrowly') in 3.121, or the establishment of the two categories "true instrumental" and "instrumental of resultant contiguity" (*on udivil menja otvetom* 'he astonished me with his answer' : *oni posypali rel'sy peskom* 'they sanded the rails'). In several cases transformation analysis permits a type of sentence analysis impossible with older methods, for example the derivation of certain predicative constructions from combinations of two predications, e.g. *Ivan vernulsja starikom* + *Ivan vernulsja* + *Ivan byl starikom* in 2.1211, and is apparently the only explanation of syntactic homonyms such as *ja znal ego studentom* 'I knew him as a student' (either 'when I was a student' or 'when he was a student'), cf. 2.1211, 4.113. It may provide additional syntactic characteristics of categories defined on other levels, e.g. the interrelation of perfectivity in verbs and animation in substantives expressed in the transform features of such phrases as *sčet sostavljaetsja burgalterom* 'the account is made up by the bookkeeper', 1.112, or demonstrate the syntactic parallelism of phrases of quite different morphological structure, e.g. the impossibility of $T: A \rightarrow \emptyset$ in certain types of $S^1_n V A_i S^2_i$ and $S^1_n V S^2_i S^3_g$ phrase (*on govoril spokojnym tonom* 'he spoke in a calm voice' = *on govoril tonom nastavnika* 'he spoke in the voice of a tutor'), 3.1, or the irrelevance of the presence or absence of *-sja* in such transformationally identical pairs as *Ivan priexal starikom* 'John arrived an old man' = *Ivan vernulsja starikom* 'John returned an old man' or *on govoril tixim golosom* 'he speaks in a soft voice' = *on vyražetsja tixim golosom* 'he expresses himself in a soft voice', cf. Tables 1a, 2a. Further, transformation analysis provides the most consistent formal framework for describing whether or not certain types of modifier are obligatory (by giving a yes-or-no answer to the question whether, e.g., $T: A_i \rightarrow \emptyset$ is possible for phrases like *ona govorila vysokim golosom* 'she spoke in a high voice') as well as for describing restrictions on the type of modifiers which can be added to certain phrase types (by answering whether or not $T: \emptyset \rightarrow A$ is possible, and if so, for which classes of A, etc.). Although deliberately chosen to avoid non-formalized

semantic generalities, it may even suggest the existence of new semantic categories, e.g. the "bipolar visible quantifiers" of 3.1212. Even where a classification by transformation features produces groups identical to those of traditional classifications, it provides those groups with specific formal characteristics, e.g. the restrictions on $T: \emptyset \rightarrow A$ transformations in the group containing *on poka-žal golovoj* 'he shook his head', 2.1111; the fact that there are a number of such cases suggests that the traditional semantic classifications were in part based on formal features unrecognized at that time and perhaps unrecognizable except through transformation analysis.

7.1. *Transform Potential.* Perhaps the greatest single advantage of an analysis in terms of possible and impossible transformations is that it reveals the existence of a level of linguistic form superior to that of mere morphological description. It has been shown that within each morphologically defined phrase type there exist from a few to several transformationally defined sub-types, each of which is characterized by a particular set of transformations. The possibility of being transformed to all and only the members of a particular set of correlated phrase types can be called the transform potential of a sub-type. This potential is inherent in the sub-type and is as much a formal characteristic thereof as, say, the fact of belonging to a particular set of correlated morphemes is characteristic of membership in a certain word class. Each of the individual transformational possibilities or impossibilities which make up the total potential can then be termed a distinctive feature of transform potential ("distinctive," of course, because one such feature is enough to distinguish between otherwise identical sub-types). As transformational analysis uncovers the sub-types of all morphological phrase types in Russian, there will probably appear certain transformations of fundamental importance, whereas others will be seen to be of secondary or even redundant nature. Only after such a complete analysis has been effected and the set of basic kernel phrases and fundamental transformations established will it be possible to begin building up a complete syntax of Russian. This complete syntax will have to describe (1) a set of minimal sentence types and (2) a set of transformations by which these minimal types can be expanded ($T: \emptyset \rightarrow F$), altered ($T: F \rightarrow F'$), and combined ($T: F + F' \rightarrow F''$) to form the actual sentences possible in the language. The present discussion is offered as a step in the direction of such a syntax.

FOOTNOTES

¹ Russian forms are given in the standard transliteration. The English translations are given as an aid to readers unfamiliar with Russian, but since, like all translations, they compromise between literalness and literacy, the reader is hereby warned against interpreting Russian syntactic structure on the basis of English translations. For example, one cannot equate the active-passive transformation in English with the $S^1_n V S^2_a \rightarrow S^2_n V_s S^1_i$ (see footnote 31 for symbols) transformation of Russian, since the latter turn out to be genuine passives only in a minority of cases (for a traditionally couched but penetrating discussion of this problem, see V. V. Vinogradov, *Russkij jazyk*, Moskva-Leningrad, 1947, pp. 629-641).

² The work that goes the farthest in the direction of eliminating nonformal categories is M. N. Peterson's concise *Sintaksis russkogo jazyka*, Moskva, 1930.

³ Akademija Nauk SSSR, Institut jazykoznanija, *Grammatika russkogo jazyka*, II, *Sintaksis*, parts 1-2, Moskva, 1954. The most important earlier works with the same general approach are A. A. Šaxmatov, *Sintaksis russkogo jazyka*, 2nd ed., Leningrad, 1941, and A. M. Peškovskij, *Russkij sintaksis v naučnom osveščenii*, 7th ed., Moskva, 1956. The latest syntactic works repeat on a smaller scale the same semantic approach, e.g. E. M. Galkina-Fedoruk, ed., *Sovremennyj russkij jazyk. Sintaksis*, Moskva, 1957, A. N. Gvozdev, *Sovremennyj russkij literaturnyj jazyk. Čast' II. Sintaksis*, Moskva, 1958. The Academy grammar discusses instrumental constructions in different sections: as word-combinations, i.e. *slovo-sočeta-nija* (*Grammatika russkogo jazyka*, II, 1, 132ff.), as parts of sentences (*predlož-enija*), especially after copulative and semi-copulative verbs such as *byt'* 'be', *kazat'sja* 'seem', *stat'* 'become', etc. (*op. cit.*, II, 1, p. 427ff.), and as various kinds of circumstantial description, i.e. *obstojaťel'stvo* (*op. cit.*, II, 1, p. 527ff.); some constructions appear in more than one section, e.g. *rasstalis' sol-datami* 'they parted as soldiers' (p. 137), *rasstalis' bol'simi prijateljami* '(we) parted great friends' (p. 433).

⁴ *Grammatika russkogo jazyka*, II, 1, 132.

⁵ *Op. cit.*, 133.

⁶ *Loc. cit.*

⁷ *Op. cit.*, 134.

⁸ *Loc. cit.*

⁹ *Op. cit.*, 135. The semantic unity of this group is not as obvious to this writer as it was to the compilers of this grammar.

¹⁰ *Loc. cit.* It is not clear how one is to distinguish between this type of combination and those of the fifth major class, labeled causative.

¹¹ *Op. cit.*, 136.

¹² All such combinations of passive participle and instrumental substantive are perfectly straightforward transforms of one of two types of phrase: (1) nominative substantive + transitive verb + accusative substantive, e.g. *Vse zdes' sozdano nami* 'Everything here has been created by us' + *My sozdali vse zdes'* 'we created everything here'; (2) phrases already containing instrumental substantives and discussed elsewhere in this paper, e.g., *kniga, prikrytaja trjapočkoj* 'the book, covered by a rag' + *X prikryl knigu trjapočkoj* 'X covered the book with a rag'.

The first of these two transformation types corresponds exactly to the active-passive transformation in English (on the latter, see Noam Chomsky, *Syntactic Structures*, The Hague [1957], pp. 77ff.; Robert B. Lees, review of Chomsky, *Language* 33.375-408 [1957], esp. 388, and Zellig S. Harris, "Co-occurrence and Transformation in Linguistic Structure," *Language* 33.283-340 [1957], esp. 325ff.; further literature will be found in these works) and differs from the second just as "The wine was drunk by the guests" differs from "John was drunk by midnight" (examples from Chomsky, 80).

¹³ Soviet linguists consider all such words to be adverbs when they occur without modifiers, e.g. *zimoj* 'in winter', *noč'ju* 'at night'. However, there seems to be no good reason for considering forms such as + *osen'ju*, + *večerom*, etc. to be adverbs but the second half of the forms *glubokoj* + *osen'ju*, *pozdnim* + *večerom* to be substantives, since these forms occur in identical environments and one is always free to add or subtract the adjective modifier (transformations of the type T: $\emptyset \rightarrow F$, T: $F \rightarrow \emptyset$, cf. 0.221). In our opinion they are obviously a special subclass of substantives, formally characterized by (1) the fact that they can modify in the accusative case non-transitive verbs in -*sja*, e.g. *on otdyvalsja vsju zimu* 'he rested all winter long' and (2) in certain environments they can be modified only by a limited number of quantifying adjectives (restrictions on the transformation T: $\emptyset \rightarrow A$, cf. 0.221), e.g. *on vernulsja pozdnej osen'ju* 'he returned in late autumn' cannot \rightarrow **on vernulsja pozdnej, xolodnoj, no vse-taki dovol'no prijatnoj osen'ju* 'he returned at a late, cold, but nonetheless rather pleasant time of autumn' (note that the English restrictions rather parallel the Russian).

¹⁴ *Grammatika russkogo jazyka*, II, 1, 138.

¹⁵ *Loc. cit.*

¹⁶ *Loc. cit.*, fn.

¹⁷ *Op. cit.*, 138-39.

¹⁸ The grammar does not mention the essential structural fact that in almost all such combinations there is an obligatory adjective modifier of the instrumental substantive. Note for example the impossibility of **tanki goreli plamenem* 'the tanks were burning in flame'. Cf. footnote 22 below.

¹⁹ *Op. cit.*, 139.

²⁰ *Loc. cit.*

²¹ *Loc. cit.*, footnote.

²² This time the need of modifiers is mentioned (cf. footnote 18 above).

²³ *Op. cit.*, 139f.

²⁴ On the applications of transformation analysis to diachronic syntax, see 0.31; and fn. 44 below.

²⁵ For further comparison of these two approaches, see 7.0.

²⁶ See footnote 12. The present writer made a few brief steps toward the use of transformations in syntactic analysis in his unpublished dissertation, "A Contribution to the Study of the Syntactic Binary Combination in Contemporary Standard Russian," Harvard University, 1956.

²⁷ The units analyzed here were culled from some 16,000 syntactic combinations excerpted from Soviet literature by collaborators on the Russian Language Research

Project directed by Professor Roman Jakobson of Harvard University and the Massachusetts Institute of Technology and supported by the Rockefeller Foundation, whose help is gratefully acknowledged. This material was supplemented by instrumental constructions taken from the works cited in footnote 3 above and from D. N. Ušakov, ed., *Tolkovyj slovar' russkogo jazyka*, I-IV, Moskva, 1935-40.

28 In a highly inflected language like Russian, class membership can in most cases be determined by purely morphological criteria; none of the cases where such determination is impossible is pertinent to the present investigation.

29 See Leonard Bloomfield, *Language*, New York, 1933, p. 194f.

30 Within the framework of transformation syntax, this process of reduction can itself be considered a series of transformations of the forms F^1 , F^2 etc. to zero ($T: F^1 \rightarrow \emptyset$ etc.); the opposite process can then be called expansion and considered a series of transformations $T: \emptyset \rightarrow F^1$, $T: \emptyset \rightarrow F^2$, etc. Cf. 0.221.

31 The following symbols are used in this paper: S_n , S_g , S_a , S_i = substantive in the nominative, genitive, accusative and instrumental cases respectively, pS = preposition + governed substantive; A = adjective (same case subscripts as for substantives), A_\emptyset = zero (adverbial) form of adjective; V = verb, V_s = so-called "reflexive" verb in *-sja* or *-s'*, V_p = perfective aspect verb, V_\emptyset = "impersonal" verb in neuter past or 3d sing. nonpast, V_a = "anonymous" or subjectless verb in plural past or 3d plural nonpast, $\#$ = zero nonpast form of *byt'* 'be' or any zero form, *byl-* = any past form of *byt'*; \emptyset = absence of a form (opposed to its presence in a particular construction); F = any form (single word, phrase, etc.), F' = a transformational variation of F ; F^1 , F^2 , F^3 = instances of F ; NP = noun phrase; superscript numerals = consecutive occurrences of members of a single class, e.g. S^1 , S^2 = consecutive substantives; \rightarrow = is transformed to, \leftarrow = is transformed from; $+$ and $-$ = dividers between members of a string (graphic device; no grammatical significance); $*$ = impossible form; WO = word order. Other symbols will be explained as they occur in the text.

32 Cf. 7.1 for some of the implications of these operations.

33 We shall mention interclass transformations, which shift a word from one form class to another (*kurit'* 'to smoke' \rightarrow *kuren'e* 'smoking', *zelenyj* 'green' \rightarrow *zelenet'* 'to show green', etc.) and are of great importance for problems of complete syntactic description (v. J. Kuryłowicz, "Dérivation lexicale et dérivation syntaxique (contribution à la théorie des parties du discours)," *Bulletin de la Société de Linguistique de Paris*, XXXVII, 2, [1952] pp. 79-92), but which have only occasional significance for this paper (cf. 2.1211, 2.1222); word-order transformations are of more importance in English than in Russian, where their use is primarily stylistic (*ja znal èto* 'I knew that' \rightarrow *èto ja znal* 'I knew that', etc.). It should perhaps be noted that all transformation operations in Russian presuppose a set of morphophonemic rules which (by making verb agree with subject, etc.) will produce grammatical phrases from the transforms produced by the transformation rules.

34 Tense is irrelevant in this transformation; cf. 0.211.

35 Such procedures are considerably less artificial in Russian, the elaborate case system of which makes possible many intraclass transformations for each substantive.

36 Barring some particular environment, this will usually be interpreted as a resultative (where "was chewed" could be substituted by "had been chewed," which

could not be done in the case of "The man was bitten by the dog"); this is a case of noncorrelation of meaning as explained in 0.3.

37 Such differences in the ability to undergo transformations are one of the most productive, if not the most productive, means of distinguishing between synonyms (if indeed such exist). For example, the verbs "like" and "enjoy" are probably considered synonymous by most English speakers. However, transformation analysis reveals a marked difference: whereas the phrase "The critic enjoyed the play" can undergo passive and/or progressive transformations (\rightarrow "The play was enjoyed by the critic", \rightarrow "The critic was enjoying the play", \rightarrow "The play was being enjoyed by the critic"), the superficially synonymous phrase "The critic liked the play" can undergo only T_{pas} , not T_{prog} (\rightarrow "The play was liked by the critic", but neither \rightarrow *"The critic was liking the play" nor \rightarrow *"The play was being liked by the critic").

38 One cannot of course have recourse to meaning alone, but a sharp difference in meaning may well be the clue to an equally sharp, if not equally obvious, difference in form. A good many seeming differences in meaning unaccompanied by formal distinctions may be due primarily to our as yet rather naive conception of linguistic form.

39 One finds such features, e.g., in the fact that "John eats the apple noisily" can \rightarrow "John is eating the apple noisily", but "John sees the boy clearly" cannot \rightarrow *"John is seeing the boy clearly"; such features will probably eventually separate out and formally characterize all verbs of perception.

40 The principal difference is that *Ivan vernulsja starikom* is a case of simultaneous double predication resulting from the combinatory transformation of two kernel sentences *Ivan vernulsja* 'John came back' and *Ivan starik* 'John is an old man' whereas the other phrases are simple passive transforms (e.g., one cannot derive *zala osveščetsja fonarikami* from a combination of *zala osveščetsja* and *zala fonariki*).

41 This argument goes on to say that had the kernel verb been imperfective (*vozvraščal*), the transformation would have been possible. This is not quite true, however, since the phrase *Ivan vozvraščalsja starikom* is, if not impossible, at least restricted to a few specific contexts, regardless of its meaning ('John came back an old man' or 'John was brought back by the old man'), i.e. regardless of its derivational history (\leftarrow *Ivan vozvraščalsja* + *Ivan starik* or \leftarrow *starik vozvraščal Ivana*). A more accurate statement might be that $S^1_n V S^2_a \rightarrow S^2_n V_s S^1_i$ is impossible wherever S^2 is animate; with inanimate S^2 and animate S^1 , e.g. *buržuafter sostavljaet sčet* 'the bookkeeper is making up the account', the same transformation is possible provided only V is not perfective; cf. 1.112. For other restrictions on this type of construction, see V. V. Vinogradov, *Russkij jazyk*, 6

42 For arguments concerning English, see Noam Chomsky, *Syntactic Structures*, 8

43 As an example of this process, consider the replacement of the "instrumental of cause", e.g. *sdelat' ošibkoju* 'do by mistake', by various analytic constructions of the type $\bar{p}S$, e.g. *po ošibke* 'by mistake', *iz-za gluposti* 'because of stupidity', *ot ustalosti* 'from tiredness'. Taking one of the latter, we let $F = t$ phrase type $V S$ and $F' =$ the phrase type $V iz-za S_g$, and we can fix the broad outlines of the historical development as follows:

- | | |
|----------------------------|-----------------------------------|
| (1) F | Old Russian, through 16th century |
| (2) $F(\rightarrow F')$ | 17th century |
| (3) $F \leftrightarrow F'$ | 18th century |

- (4) (F \leftrightarrow)F' 19th century
 (5) F' Modern Russian

For details of dates and examples, see T. P. Lomtev, *Očerki po istoričeskomu sintaksisu ruskogo jazyka*, Moskva, 1956, pp. 247f., 386f.

⁴⁴ The second half of the suggested solution to the problem posed by *Ivan vernul'sja starikom* \rightarrow *starik vernul Ivana* is also open to criticism. There is no good reason to assume that instrumental constructions are *per se* secondary forms, derived from kernels of different structure. This assumption, which may be based on a faulty equation of the Russian instrumental substantive S_i with the English "passive actor" byS (cf. footnote 1), fails to take into account the many instrumental constructions which cannot, to my knowledge, be derived from other phrase types, e.g. *kapitan komanduet batal'onom* 'the captain commands the battalion', *on povel broujami* 'he raised his eyebrows', *student zarezal professora britvoj* 'the student killed the professor with a razor'. Eventually it will probably prove to be the case that, within a morphologically defined phrase type, some of the units will be kernels and others secondary transforms derived from other phrase types. The present paper cannot go into this problem of categorial hierarchies in any detail.

⁴⁵ All examples given for this and the following morphologically described classes are distinguished from each other by transformation features described in the individual sections to follow.

⁴⁶ It was Roman Jakobson who first called this fact to the author's attention; cf. also V. V. Vinogradov, *Russkij jazyk*, 633.

⁴⁷ In another sense all instrumentals can be considered marginal; see Roman Jakobson, "Beitrag zur allgemeinen Kasuslehre: Gesamtbedeutungen der russischen Kasus", *Travaux du Cercle Linguistique de Prague*, VI (1936), pp. 240-288.

⁴⁸ Cf. Chomsky, *Syntactic Structures*, 85f.

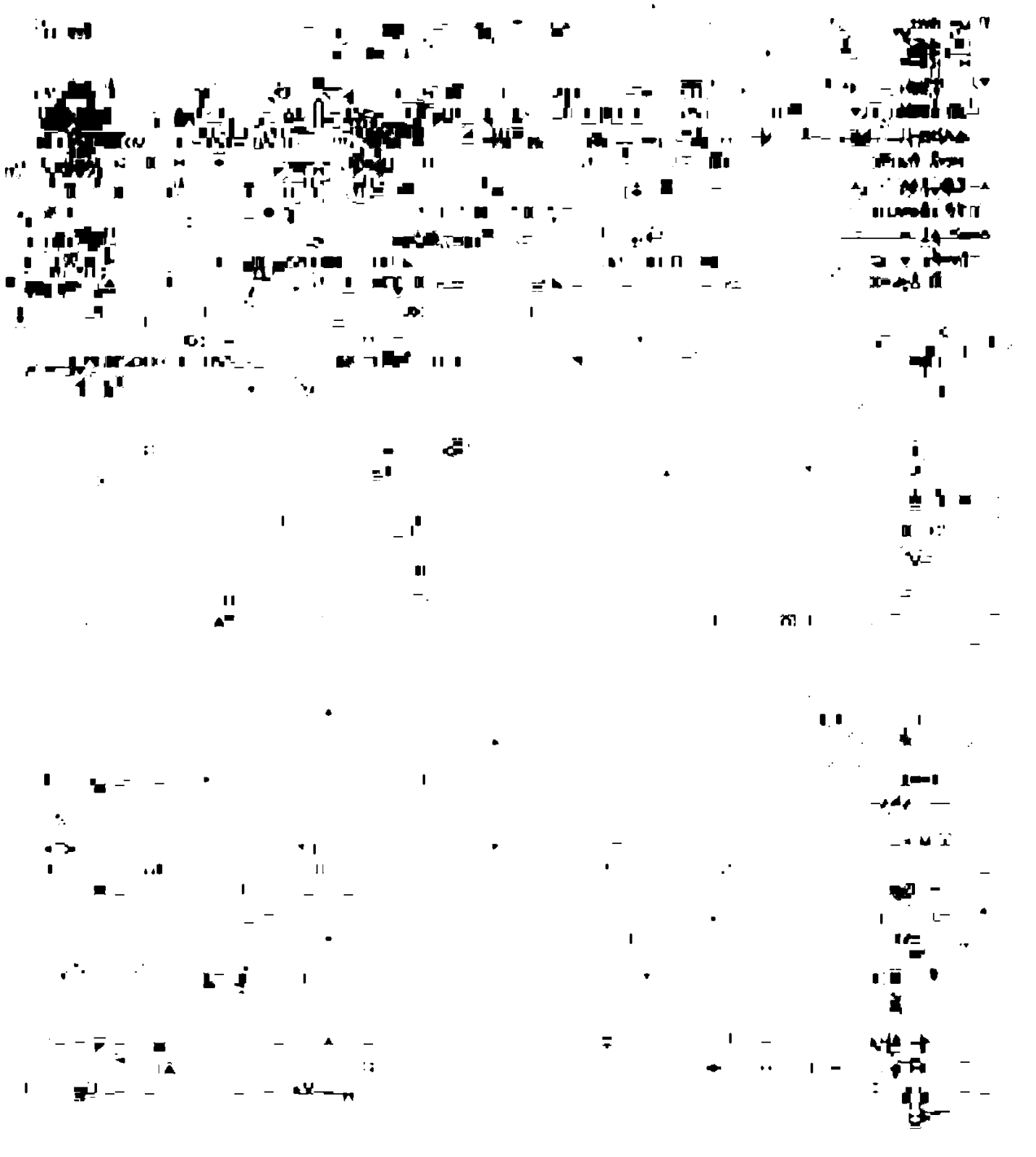
⁴⁹ Units characterized by many restrictions on T: $\emptyset \rightarrow A$; these restrictions cannot conveniently be represented schematically.

⁵⁰ Some of the transformations discussed in this section were first worked out in conversation with Professor Morris Halle of M.I.T. in 1955-56.

⁵¹ These units are closely related to units of phrase type $S^1_n V S^2_i S^3_g$, e.g. *on govoril tonom nastavnika* 'he spoke in the tone of a tutor'; the essential is that S^2_i be modified, and just how it is modified is a secondary matter. This is one of the cases where transformation classification cuts across the lines of, and even contradicts, morphological phrase-type classification.

⁵² Cf. Morton Benson, "Predicate Adjective Usage in Modern Russian," *Word*, 15 (1959), no. 1, pp. 89-100.

⁵³ One suspects that this is a catch-all category consisting mostly of combinations which cannot be squeezed into the rubrics "temporal" and "spatial," the meanings of which are more homogenous and the formal characteristics of which more obvious.



GRAMMATICAL AND LEXICAL QUANTIFICATION
IN THE SYNTAX OF THE RUSSIAN NUMERAL

The normal rules and methods of combining words into groups (binary syntactic combinations or more complicated groups) sometimes undergo special restrictions or complications. This is especially the case when one and the same concept can be expressed grammatically and/or lexically in both of two words belonging to normally combinable word classes (parts of speech). By "concept" I mean a semantic field or general conception more comprehensive than that expressed in any one grammatical category or lexical cluster, and expressed in several otherwise unlike categories and clusters. The concept by its very generality defies precise description, and yet finds very precise and demonstrable formal expression in syntax, creating an almost systematic series of exceptions to general syntactic rules. The concept of time, for example, whether relative or durative, expressed grammatically in verb tense and lexically in certain adverbs, prevents the formation of such combinations as **včera pridět*, **zavtra prišël*,¹ and on the other hand, expressed lexically in such substantives as *den'*, *noč'*, permits such otherwise impossible combinations as that of nontransitive verb and accusative substantive (*on bojal'sja vsju noč'*) or transitive verb combined simultaneously with two accusative substantives (*Ves' den' on čital knigu*). A concept which causes unusual complications in contemporary Russian is that of quantity (by which I mean any form of counting, of limitation in time, degree, etc.).

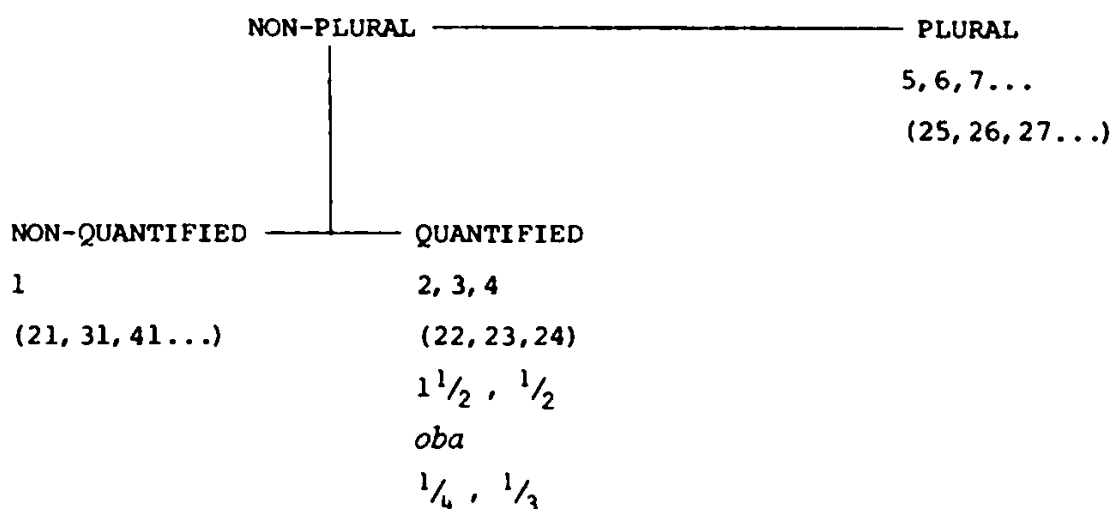
Quantifiers. Any word which expresses the concept of quantity is a quantifier. There are both lexical and grammatical quantifiers. Lexical quantifiers are words whose non-grammatical, referential meaning (*signatum*) is not an object, quality of an object, action, or quality of an action (i.e., none of the usual *signata* of substantives, adjectives, verbs, and adverbs respectively), but rather some quantitative limitation, some specification of number, order, temporal sequence, degree, etc., applied to other, non-quantifying words. Lexical quantifiers include series of substantives, which define how much or how many of other substantives is or are present (*dva*, *troje*, *massa*); adjectives, which define the order in a sequence or

relation of part to whole of a substantive (*pervyj, poslednij, ostal'noj, sledujuščij*); verbs, which limit the action of another verb in respect to its beginning, continuation, end, etc. (*načat', končit', prodolžat'*), and adverbs, which limit in time or degree an action or quality (*často, inogda, dolgo, očen'*). Grammatical quantifiers include such diverse grammatical categories as number (the most obvious quantifier, marking plurality), case (with the genitive marking a limitation on the connection of the substantive to other units), aspect (with perfective limiting an action with respect to its completion),² degree (with the comparative marking a higher development of action or quality), negation (with *ne* – opposed to the absence thereof – marking the non-connection of substantive, verb, adjective, etc. with other units), and even word order (with reversed word order limiting the precision of the numeral contained in numeral combinations, see p. 47 below).

These lexical and grammatical quantifiers often interact in such a way as to permit the formation of otherwise impossible combinations (see above) or, more often, to hinder the formation of otherwise productive types of combination. For example, aspect is usually irrelevant in combinations of verb and governed infinitive (*xoču pit' / xoču vypit' / zaxoču pit' / zaxoču vypit'*), but if the head word marks quantity lexically the subordinate term cannot do so grammatically (*načal pit'* but not **načal vypit'*). Similarly, aspect is irrelevant in most combinations of verb and modifying adverb (*gromko skazal / gromko govoril*), but within the group of lexically quantifying adverbs there are several sub-groups which are not always combinable with all aspects (*často prišedil* but not **často prišel, odnaždy šel* or *xodil* but not **odnaždy xožival*, etc.). It should be noted that restrictions due to lexical quantification alone (incompatibility of lexical morphemes) can never be absolute, but only relative, rendering a particular combination unlikely (statistically highly infrequent), but not forbidding it entirely (e.g. *gromadnyj karlik, nočnoj den'*); absolute restrictions (**načal vypit'*) occur only when the limiting concept finds grammatical expression in at least one of the two words.

The Russian Numeral System. Complications due to this interaction of lexical and grammatical quantifiers are particularly evident in syntactic structures combining the lexically quantifying numerals with substantives and adjectives expressing grammatical quantification in genitive case and/or plural number. These complications, however, are not as chaotic as often pretended, and the syntax of the Russian numerals forms a more coherent system, more understandable in purely synchronic terms, than is often supposed.³ The structural outlines of this system, :

terms of the mutually opposed marked and unmarked categories and the general meanings thereof,⁴ are as follows: plurality is opposed not to singularity, as our usual thought habits might suggest, but to unmarked non-plurality; singularity is but a special case of non-plurality. Within the unmarked non-plural category there obtains in certain cases a further opposition which can be called – in the absence of a better term – that of quantified and non-quantified categories. The cases in which this opposition obtains are those in which the numeral + substantive (N S) combination can be substituted by a single substantive in the nominative or, if the substantive S is inanimate, in the accusative (i.e., when the N S combination functions as subject or object respectively). The quantified category is marked as such syntactically by a particular combination of plural and genitive morphemes in the substantive and adjective (if present) entering the numeral combinations; the general meaning of this category is non-unity, non-singularity opposed to unmarked unity or singularity. The numerals which occur in combinations of this category are 2, 3, 4 and compounds thereof, $1\frac{1}{2}$, $\frac{1}{2}$ (*pol-*, but not *polovina*), and to a more limited extent *oba*, *obe* and the fractions $\frac{1}{4}$, $\frac{1}{3}$. In schematic form this system of oppositions appears as:



It is this expression of non-unity (whether greater or less than one), this insistence on quantity in spite of non-plurality, that explains the grouping together by common syntactic (and occasionally morphologic) features of such seemingly disparate series as fractions, small whole numbers, and compounds of the latter. This paper will discuss briefly the syntactic peculiarities of the combinations in which numerals of this quantified category occur.

The particular types of N S combination are best understood against a background of general rules which obtain for all such combinations. The numeral, in

the nominative-accusative function mentioned above, is a substantive⁵ which cannot itself express grammatical quantity (plurality), but which absolutely requires such expression of quantity (by genitive and/or plural morphemes) in all substantives and adjectives syntactically combined with it.⁶ The particular forms of grammatical quantification vary according to the particular types of combination (type of numeral, whether or not a modifying adjective is itself a lexical quantifier, etc.) and to the sentence function (subject or object, etc.) of the combination itself. With a few possible exceptions, however⁷: any non-pronominal substantive combined with a numeral must express genitive case and may in some cases also express plural number; conversely, any adjective combined with a numeral must express plural number and may in some cases also express genitive case.

Numerals of the quantified category are (with the partial exception of the fractions $\frac{1}{4}$, $\frac{1}{3}$, see pp. 53-54 below) syntactically distinguished from all other substantives, numeral and non-numeral, by the fact that they can combine with genitive singular but never with genitive plural substantives (*kommata / vos'muška / četvert' / mnogo / pjat' / dvoe studentov*, but not **pol- / poltora / oba / dva / tri studentov*). They are opposed to the non-numeral (*stol, student ...*) and fractional ($\frac{1}{8}$, $\frac{1}{5}$; $\frac{1}{4}$, $\frac{1}{3}$) series, and joined to the adverbial (*mnogo, malo ...*), collective (*dvoe, troe ...*) and plural cardinal series (*5, 6, 7 ...*) by the three facts that (1) they cannot be modified by singular adjectives in combinations of the type *bol'soj stol, pervaja vos'muška*, (2) they cannot be modified by cardinal numerals in combinations of the type *dva stola, dve treti*, and (3) they cannot be modified by non-neuter singular past tense verb forms in combinations of the type *stol stojal, ostalos' pjataja*. Each set of numerals of the quantified category has, in addition, its own specific syntactic features.

Structures with 2, 3, 4. The numerals 2, 3, 4 and their compounds are syntactically distinguished from the plural series 5, 6, 7 ... by the facts that (1) substantives combined with 2, 3, 4 can never express both plural number and genitive case whereas substantives combined with 5, 6, 7 ... must do so, and (2) combinations with 2, 3, 4 which can be substituted by a single accusative substantive distinguish the categories animated-non-animated in the substantive S (*Ja videl dva stola / dvux studentov*), whereas combinations with 5, 6, 7 ... do not do so (*Ja videl pjat' stolov / studentov*); this is another way of saying that combinations with 2, 3, 4 have different forms in the different sentence functions of subject and object, provided S is animate (*Ostalos' dva studenta / Ja videl dvux studentov*),

whereas combinations with 5, 6, 7 ... maintain the same form in both functions regardless of the animation or non-animation of S (*Ostalos' pjat' studentov / stolov* // *Ja videl pjat' studentov / stolov*). Structures with 2, 3, 4 are distinguished from all other structures of the quantified category, and joined to those of the plural category, by the fact that their syntactic features are repeated in compounds (2 / 22 / 32 *studenta*), whereas the features of combinations with $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $1\frac{1}{2}$ are not so repeated (*čtvrt' časa*, but *dvadcat' s čtvrt'ju časov*; *poltory versty*, but *dvadcat' odna (-nu) s polovinoj versta (-tu)*, etc.).⁸

The simplest type of numeral combination is that of quantifying numeral (N) with non-numeral substantive (S). With a few exceptions,⁹ the substantive is in the genitive singular (*dva mesjaca, tri okna, četyre knigi*¹⁰). Neutral word-order is N S; the reversed word-order S N quantifies the combination as such and means „approximately" (*dva mesjaca nazad* "two months ago" / *mesjaca dva nazad* "about two months ago"). If the combination contains an adjective functioning as substantive, this adjective is always in the genitive plural if masculine (*dva portnyx*) but occasionally nominative plural if feminine (*tri prostornye kladovye, dve bol'sie masterskie*¹¹).

The simple N S combination can be expanded by the addition of an adjective or participle (A). There are two types of adjectivally-expanded combination, corresponding to two essentially different types of adjective. A non-pronominal non-quantifying adjective (i.e. a qualifying adjective) modifies the substantive S and stands just before S (type N A S, *dva xorošix studenta, tri ploxie knigi*); it usually agrees in case with S (see pp. 48-49 below). On the other hand, a lexical quantifier or a pronoun modifies either the numeral or the N S combination as such (if a pronoun) and stands before N (type A'NS, *poslednie tri dnja, ostal'nye četyre knigi, eti dva studenta*); it usually agrees in case with N. The two types of expanded combination are then N A S and A'N S, containing non-quantifying and quantifying adjectives respectively; a change in word-order (to A N S or N A' S) cannot of course change the nature of the adjective, but it can and does change the presentation. A quantifier can be presented as a qualifier and vice versa. In such reversals the adjective usually takes the case of the type it is presented as. *Novye dva studenta* does not qualify the students as new but isolates them from the remaining non-new students; *dva pervyx studenta* are not isolated from the remaining students as is the case with *pervye dva studenta* but rather joined by the "quality" of being first just as *dva wmyx studenta* are joined by the quality

of intelligence. It is to be noted that pronominal adjectives, which modify the entire N S combination as such, and which are for the most part outside the opposition of quantifier – non-quantifier, can almost never be presented as qualifiers, placed between N and S (*vse tri dnja*, but not **tri vse dnja* or **tri vse dnja*; with possessives, however, *tri moix studenta* beside *moi tri studenta*). Most examples of vacillation between nominative and genitive case, and between the word-orders N A S and A'N S, are explainable as these two basic types or presentational inversions thereof.

Pronominal and lexically quantifying adjectives in A'N S combinations are almost always in the nominative plural (*svoi tri procenta* DS 320,¹² *eti četyre dnja*, *poslednie dva mesjaca*, *ostal'nye tri vagona*); only the indefinites *kakoj-to*, *kakoj-nibud'* and the quantifier *celyj* occur frequently in the genitive plural, and then usually when the combination serves as a temporal modifier (*kakix-nibud' dve minuty*, *celyx dva mesjaca*). Qualitative adjectives are almost always in the genitive plural if S is a masculine or neuter substantive (*tri bol'six okna*, *dva xorošix studenta*). If S is a feminine substantive, two factors influence the case of A: (1) the specific numeral, A occurring in the nominative more often with 2 than with 3, 4:

NUMERAL	NOM. PL. ADJ.	GEN. PL. ADJ. ¹³
2	21	8
3	3	3
4	1	2

(2) the sentence function of the combination, A occurring more often in the nominative plural when the combination functions as subject of a sentence and more often in the genitive plural when the combination functions as object:

FUNCTION	NOM. PL. ADJ.	GEN. PL. ADJ.
Subject	16	4
Object	5	8
Other ¹⁴	4	1

Combinations of types N A S and A'N S can be further expanded in two ways, by the addition of like or unlike adjectives, creating combinations of the types N A A S and A'A'N S with the addition of like adjectives and A'N A S with the addition of unlike adjectives. All like adjectives in like position must be in the same case (*tri odnotipnyx*, *noven'kix avtomobilja* DS 307, *dve lunnye*, *golubye figury* ZT 442,

use èti tri dnja), but unlike adjectives in different position (type A'N A S) must not necessarily agree in case, but instead follow the rules for quantifiers and non-quantifiers described above (*te ètyre šturmovyx gruppy* DN 219; cf. with plural numerals *use ètyresta èstnyx sposobov* ZT 466); this demonstrates clearly enough that the N S combination is not an indivisible quasi-idiomatic unit.¹⁵

N S and N A S combinations can also be expanded by the addition of one or more apposed participles or (more rarely) adjectives, creating combinations of the types N S,P or N A S,P etc. (*dve malen'kie figurki, podymavšiesja po nasypì* ZT 566). Like all adjectival forms syntactically connected with numerals, the apposed participle or adjective must be in the plural. Participles apposed to N S combinations are usually (7/8) in the nominative plural (*ètyre risunka, podpisannye slavjanskoj vjaz'ju* DS 36), but occasionally in the genitive (*V kabinete ... prižilis' dva pufika, obityx ... šelkom* ZT 336). Participles apposed to N A S combinations usually (7/9) agree in case with A. If A is in the nominative plural, P is always nominative plural (*dve obyknovennye bočki, napolnennye* ZT 533), but if A is in the genitive plural, P can be either nominative or genitive (*napisat' pro dva strašnyx slučaja, proiššedšix so mmoju* DS 260; *tri neftjannyx barži, svjazannye v rjad* DS 255); the farther removed P is from the genitive S, the more likely is it to be in the nominative, cf. the two appositions in *vydeljalis' čut' vidnye v temnote tri bol'šix zdanija, zanjatyx nemeami* DN 33.

If the N S or N A S combination functions as subject of a sentence, the verb is almost always in the plural¹⁶ (*proexali na automobile tri komsomol'ca* DS 105, *dve surovye staruxi razgovarivali po-francuzski* ZT 333). Statements of age, however, require the singular (*emu bylo tri goda*, but not **emu byli tri goda*). Statements of the passage of time are usually in the singular (*dva dnja ušlo na ras-klepku vorot* DS 77), but can be in the plural if there is insistence on the procession of individual units of time (*mučitel'no medlenno proxodili èti ètyre nedeli*). General statements of existence are indifferently in the singular or the plural, with of course a presentational difference, emphasizing the collectivity or the individuality of the units counted (*U lejtenanta bylo tri syna* ZT 341, *v gorode bylo dve Sovetskix ulicy* DS 43; *U Varvary byli dva suščestvennyx dostiženija* ZT 445).

Structures with Oba, Obe. The quantifier *oba* (masculine and neuter), *obe* (feminine) is often lumped together with the cardinal *dva, dve* not only because both distinguish gender (*dva / oba stola, dve / obe knigi*) or refer to two objects, but

also because it is assumed, and sometimes even explicitly stated,¹⁷ that the syntax of these two pairs is identical. This is far from being the case. There are, in fact, many more features which oppose *dva* to *oba* than there are which join them. *Dva* and *oba* are joined primarily by the fact that they can both combine with genitive singular substantives.¹⁸ Further, they both distinguish animation – non-animation in the accusative (*dva / oba studenta prišli // Ja videl dvux / oboix studentov*), can combine with verbs in the plural (*dva / oba studenta sideli*), and can combine with qualitative adjectives in N A S combinations (*dva / oba xorošix studenta*). An interesting fact is that neither *dva* nor *oba* can be modified by the pronominal adjective *vse*¹⁹ (**vse dva stola, *vse oba stola*), this apparently being the only syntactic feature which opposes *dva* and *oba* to all higher numerals (cf. *vse tri, četyre stola; vse pjat' stolov*, etc.) and the only formal vestige of the category of duality. Some of the more important syntactic differences between *dva* and *oba* are: (1) *oba* can combine with the nominative plural pronoun *oni*, which *dva* cannot (*oni oba prišli*, but **oni dva prišli*); (2) N S combinations with *oba* cannot be expanded by adding quantifying adjectives as can combinations with *dva* (*pervye dva studenta* but **pervye oba studenta*); (3) *oba* cannot occur in general statements of existence as can *dva* (*U nix bylo dva syna* but **U nix bylo oba syna*); (4) combinations with *oba* cannot be quantified to mean 'approximately' by reversing the word-order, as can combinations with *dva* (*dva mesjaca / mesjaca dva* but *oba mesjaca / *mesjaca oba*), nor can *oba* be substituted for *dva* in such expressions as *dva mesjaca nazad*; (5) *oba* cannot combine with neuter singular past tense verb forms in statements of the passage of time as can *dva* (*dva mesjaca prošli / prošlo* but *oba mesjaca prošli / *prošlo*); (6) *oba* usually precedes the pronominal adjective *ěti* whereas *dva* usually follows it (*oba ěti raznorodnye predprijatija* DS 74, but *ěti dva raznorodnye predprijatija*; cf. *ěti dva studenta* but **dva ěti studenta*)²⁰; (7) *oba* is more autonomous than *dva* and is consequently used more often elliptically, without substantive (*oba ne mogli govorit' DN 259*); (8) the feminine *obe* is used more often than the feminine *dve* with the plurals *rúki, ščěki stórony*.

Oba, obe can combine with non-pronominal substantives in the genitive singular (*oba studenta, obe knigi*) and with the nominative plural pronoun *oni*,²¹ usually preceding the former and following the latter, in combinations of types N S (*oba brata, obe sestry*) and pS N or N pS (*oni oba, oba oni*).

N S combinations can be expanded by adding a qualifying adjective (type N A S

oba vnešnix posta DN 249, *obe perednie nožki* DS 72), the pronoun *èti* (types N A'S and A'N S, *èti oba proisšestvija* DS 260, *oba èti tipa* ZT 496), or both types of adjective together (*oba èti raznorodnye predprijatija* DS 74); combinations with *oni* cannot be expanded in this way. Combinations with both S and pS, however, can be expanded by apposition (types N S,P and pS N, P, *oba brata, utomlënnye; oni oba utomlënnye*). The case of adjectives and participles in both internal and appositionive expansions follows the same rules as given for *dva, dve* (cf. p. 47 ff. above).²²

Combinations with *oni* occur with either *oba* or *obe*, depending on the antecedent of *oni*; the masculine – feminine gender hierarchy of Russian is manifested in the use of *oba* when there is one masculine and one feminine antecedent. Such combinations are usually in the order pS N (*oni oba sideli tak* DN 259), but occasionally in the order N pS (*oba oni grustno pokačali golovami* ZT 489), whereas non-pronominal combinations are almost exclusively in the order N S (*obe storony ostalis' na meste* DN 263; cf. **storony obe ...*). Combinations with the nominative *oni* can of course function only as subject of a sentence (*Oni oba videli menja but Ja videl ix oboix*), whereas combinations with non-pronominal substantives can function as subject (*oba tela ležat nogami k jugo-zapadu* DS 281), object (*Panikovskij soedinil obe linii tret'ej* ZT 435), or marginal modifier (*vzjala ego za obe ruki* DN 169, *proletali po obe storony* DS 224).

When combinations of types N S and pS N function as subject, the verb is almost always in the plural (*Oba brata iskosa pogljadyvali na predsedatelja* ZT 338, *Oni oba na mig ostanovilis'* ZT 550). *Oba* cannot be used in statements of age or general statements of existence (**Emu bylo oba goda, *U nego bylo oba syna*); with statements of the passage of time only the plural verb is possible (*oba mesjaca prošli / *prošlo*). In pronominal combinations *oba* occasionally follows the verb, especially if there follows a second verb form subordinated to or coordinated with the first (*Oni uspeli oba vermut'sja* DN 45; *tak oni sideli oba i molčali* DN 56). *Oba* frequently occurs alone as subject of a sentence; in the rare cases where the prior context has not made clear the antecedents, an explanation can be interpolated (*Oba – i neznakomec, i kommisar – podymalis'* DN 96).

Poltora, Poltory. The quantifier *poltora* (masculine and neuter), *poltory* (feminine) "one and one half", often ignored in descriptions of the Russian numerals,²³ is grouped with the non-plural quantifiers by the basic syntactic features of combining with genitive singular substantives and plural adjectives (*pervyx pol-*

tora kilometra, celyx poltory minuty). As is the case with 2, 3, 4, but not with *oba*, the word-order of combinations with *poltora* can be reversed to add the meaning 'approximately' (*kilometra na poltora niže* "about $\frac{1}{2}$ Km. lower"). *Poltora* is like the other fractions $\frac{1}{4}$, $\frac{1}{3}$ in that its syntactic structure is not repeated in compounds (*poltora mesjaca* but *dvadcat' odin s polovinoj mesjac*), but is unlike them in that it cannot combine with singularia tantum (*tret' muki*, but **poltory muki*). On a different level one also notes that, when the N S combination is placed in an environment requiring the genitive, the substantive combined with *poltora* can remain in the genitive singular, which is never the case with combinations containing 2, 3, 4 (*tri časa / v tečenie trëx časov* but *poltora časa / v tečenie polutora časa*); in other words, the opposition of nominative-accusative to all oblique cases does not obtain in combinations with *poltora*, which is therefore much closer than 2, 3, 4, *oba*, etc., to the class of non-numeral substantives (*mešok muki, iz meška muki*, etc., where the syntactic relation of the two substantives each to the other is quite independent of the relation of either one to outside units). Perhaps the most obvious specific feature of *poltora*, however, is that it combines almost exclusively with lexically quantifying substantives, whether temporal (*poltora mesjaca, poltory minuty*), spatial (*poltora kilometra, poltory versty*), or other (*tolčok v poltory tonny vesom* DS 67). *Poltora* occurs particularly frequently with quantifiers expressing only the concept of quantity, uncomplicated by other concepts such as time, space, etc. - i.e., with numerals (*desjatok, tysjača*). Such combinations are themselves combined with a genitive plural substantive, and therefore function exactly as compound numerals (*srazu načalo bit' desjatka poltora tjaželyx minometov* DN 251, *sideli v kružok desjatka poltora seden'kix starušek* DS 58²⁴; cf. *trista dvadcat' šest' seden'kix starušek*). Among the consequences of this inability of *poltora* to combine with other than quantifying substantives are the facts that, unlike 2, 3, 4 and *oba*, *poltora* cannot usually combine with animate substantives, and therefore cannot distinguish animation-non-animation in the accusative, as do 2, 3, 4, and *oba* (*tri studentki / trëx studentok* but **poltory studentki*²⁵), and that combinations with *poltora*, like the pronominal combinations with *oba* (*oni oba*), can only rarely be expanded by non-quantifying adjectives; even such a typical qualifier as *dobryj* "good" can modify *poltora* only when presented as a quantifier with the meaning "full", "complete" (*dobryx poltora kilometra*, cf. *celyx p. k.*), see however *Vy ukrali u menja lišnix poltory minuty* ZT 553. When combined with the "pure" quantifiers *desjatok*

tysjača, poltora does not admit any modifier (*Pozadi, odna za drugoj, razorvalis' desjatka poltora min DN 175*). With initial stress *póltora* can combine with the genitive plurale tantum *sutok (póltora sutok)*²⁶; this feature joins *póltora* to *mного, двое*, and opposes it to all other numeral and non-numeral substantives.

Pol-. Combinations whose first element is the morpheme *pol-* and second element a substantive in the genitive singular have features which can be considered both morphologic and syntactic. Although usually represented graphically as a single word (*polgoda, polbutylki, polslova*),²⁷ these units have morphologic and syntactic features characteristic not of single words but of numeral combinations. This is apparent not only in the great freedom with which such combinations can be formed,²⁸ but also in their declension, where the nominative-accusative is opposed to a single oblique-case form (*pol-goda / pol-u-goda* like *pol-tora-goda / pol-u-tora-goda*²⁹; cf. also *sorok / soroka, sto / sta* etc.), and particularly in their syntactic relation to other units. Units in *pol-...-a (-y)* in the nominative-accusative combine with plural adjectives (usually quantifiers or pronouns) in the nominative or genitive, just as do combinations with 2, 3, 4, etc. (*každye polčasa, celyx polgoda, èti polbutylki*); here one sees a syntactic opposition of nominative-accusative to oblique cases, in which units with *pol-* combine with singular adjectives (*posle ètogo polugoda, s ètoj polubutylkoj*). The dual status of these units as word and as combination is underlined by the fact that they can be used in the plural (*polučasy, polubutylki, etc.*).

Tret', četvert'. The fractions *tret' "1/3"*, *četvert' "1/4"* are peculiar in that they can function as numerals of the quantified category or as non-numeral quantifiers; in the one case they form combinations with the same syntactic features as combinations formed with 2, 3, 4, etc. (namely, genitive singular substantive and plural adjective), and in the other are in no way different from other fractions or adverbial quantifiers (*vos'muška, mnogo, skol'ko, etc.*). They are unlike numerals in that they have a full set of plural forms (*treti, tretej, etc.*) and can themselves be modified by cardinal numerals (*dve treti, tri četverti*); if the first unit of such two-numeral combinations is lower than the second, the combination as such can combine with substantives in the genitive singular or plural (*tri četverti komnaty / tri četverti komnat, but *sem' tretej komnaty*). *Tret', četvert'*, and the non-quantified fractions such as *vos'muška, pjataja, etc.*, can, unlike all other numerals (2, 3, 4, 1¹/₂, 5, *двое, много, etc.*), combine with both singular and plural genitive forms of the same substantive (*tret' komnaty / tret'*

komnat) or adjectives (usually inanimate) used as substantives (*čtvrt' stolovoj / stolovyx*). This vacillation between numeral and non-numeral status — or, more exactly, this simultaneous participation in two different systems, numeral and non-numeral — is reflected in the feminine/plural vacillation of adjectives and the feminine/neuter vacillation of past tense verbs combined with these fractions (*dobryx / dobraja čtvrt' časá; ostalos' čtvrt' časá / takix soldat u nego byla tret' batal'ona* DN 110), and in the stress vacillation *čtvrt' časá / čtvrt' čása*.

Conclusion. As has been made clear in the discussion of separate types of combination above, the number of syntactic features which distinguish between various numeral and non-numeral substantives is large, and these features themselves are obviously of varying importance for purposes of classification. The classification of substantives into numerals and non-numerals,³⁰ and within the numerals into plural and non-plural, quantified and non-quantified, has been made on the basis of the most important features, namely the number and case (i.e., the marking or non-marking of quantity grammatically) of substantives and adjectives with which the substantives being classified can combine, regardless of the history of any particular numeral or numeral construction. The following table of syntactic features distinguishing among the numeral and non-numeral word classes, which is intended to be illustrative rather than exhaustive, demonstrates the not always obvious fact that there are many syntactic features which cut across the lines of usual classifications (including the one presented here), joining words of different classes and making subdivisions within one or the other class. While this by no means invalidates the classification into syntactically determined groups, its importance must be emphasized, since it is probably just such as yet ungeneralized (or not yet disappeared) syntactic peculiarities, such unsystematized or contradictory features, which provide the starting point for the migration of words from one class to another, and ultimately for the decay of old and the rise of new syntactic categories.

Table of Features. The abbreviation "Ccw" used in the list of features means "can combine with". The plus means "yes", the minus "no", and the parentheses "with certain restrictions" (most of which have been discussed in the text above). The zero means that the particular criterion is not applicable to the word in question (e.g., since the morpheme *pol-* is bound to the genitive singular substantive it combines with, the question cannot be put, whether or not a qualitative adjective

can be interspersed between N and S). The syntactic features themselves are grouped not in relation to each other, but in an order which brings out as clearly as possible the classes or groupings within the numeral class. Other groupings of these features would of course emphasize other similarities and differences.

	<i>stol</i>	$\frac{1}{8}, \frac{1}{5}$	$\frac{1}{4}, \frac{1}{3}$	<i>mogo, malo</i>	<i>dvoe, troe</i>	5, 6, 7	<i>pol-</i>	<i>pol'tora (-ry)</i>	<i>oba, obe</i>	2	3, 4
Ccw singular adjective.	+	+	(+)	-	-	-	-	-	-	-	-
Ccw cardinal numeral.	+	+	(+)	-	-	-	-	-	-	-	-
Ccw non-neut. sing. verb.	+	+	(+)	-	-	-	-	-	-	-	-
Ccw gen. sing. subst. (except singularia tantum).	+	+	+	-	-	-	+	+	+	+	+
Ccw gen. plur. subst.	+	+	+	+	+	+	-	-	-	-	-
Ccw animate sing. subst.	+	(-)	(-)	(-)	-	-	(-)	(-)	+	+	+
Ccw non-quant. adj. (N A S).	+	+	+	+	+	+	0	-	+	+	+
Distinguishes animate-inanimate in the accusative (N S).	-	-	-	(-)	(+)	-	-	-	+	+	+
Ccw <i>oni</i>	-	-	-	-	-	-	-	-	+	(-)	-
Ccw quant. adj. (A'N S).	+	+	+	-	+	+	+	+	-	+	+
Ccw neut. sing. verb.	(-)	-	+	+	+	+	+	+	-	+	+
Wd. order reversible.	-	-	-	-	-	+	0	+	-	+	+
Ccw <i>eti</i>	-	-	(+)	-	+	+	+	+	(-)	+	+
Ccw <i>vse</i>	-	-	-	-	+	+	-	-	-	-	+
Ccw plural verb.	-	-	+	(+)	+	+	(-)	+	+	+	+
Ccw singularia tantum.	(-)	+	+	+	-	-	-	-	-	-	-
Ccw pluralia tantum.	(-)	+	+	+	+	-	-	-	-	-	-
Same structure in compounds.	0	-	-	0	0	+	-	-	0	+	+
Ccw end-stressed <i>časá, žagá</i>	-	-	+	-	-	-	+	+	+	+	+

FOOTNOTES

- ¹ An asterisk will be used throughout this paper to indicate that a particular combination cannot occur.
- ² On the genitive case as a quantifier see R. Jakobson, "The Relationship between Genitive and Plural in the Declension of Russian Nouns", *Scando-Slavica*, III, p. 181 f., on aspect as quantifier idem, *Shifters, Verbal Categories, and the Russian Verb* (Harvard University, 1957), pp. 3-6.
- ³ The peculiarities of numeral syntax, as was pointed out by V. V. Vinogradov, *Russkij jazyk. Grammaticeskoe učenje o slove* (Moskva-Leningrad, 1947), pp. 296-297, are usually considered explainable *only* in terms of their historical development; cf. this point of view in A.M. Peškovskij, *Russkij sintaksis v naučnom osveščeníi*, 7th ed. (Moskva, 1956), p. 438, and more recently E. A. Zemskaja in Akademiya Nauk SSSR, *Grammatika russkogo jazyka*, II, Sintaksis, 1 (Moskva, 1954), p. 343; this historical approach is particularly apparent in the only recent special study of the Russian numerals, Arne Gallis, "Tallordenes syntaks i russisk", *Festschrift Olaf Broch* (Oslo, 1947), p. 63 f.
- ⁴ See the discussion by R. Jakobson of marked and unmarked categories in "Zur Struktur des russischen Verbuns", *Charisteria Guilelmo Mathesio* (Prague, 1932), and "Signe zéro", *Mélanges Bally* (Geneva, 1939); there is a summary of this discussion in his *Shifters, Verbal Categories ...*, p. 5.
- ⁵ In other functions the numeral is of course an adjective, agreeing in case with the modified substantive (*okolo trex studentov, s tremja studentami*, etc.); references to the numeral as a hybrid part of speech, e.g. by Peškovskij, *Russkij sintaksis*, p. 437, are based on this functional distinction.
- ⁶ It must be noted that the word *odin* "one", as was pointed out by Jury Šerech, *Probleme der Bildung des Zahlwortes als Redeteil in den slavischen Sprachen* (Lund, 1952), p. 56 et al., and despite the Academy *Grammatika russkogo jazyka*, II, 1, 343, or more recently E. M. Galkina-Fedoruk et al., *Sovremennyj russkij jazyk* (Moskva, 1957), pp. 295 f., is not a numeral at all: *odin* expresses neither plurality nor quantification lexically, but does express plurality grammatically (*odni sideli, drugie stojali*, etc.), and is therefore the very opposite of a numeral.
- ⁷ In particular the suggestion, advanced among others by Vinogradov, *Russkij jazyk*, pp. 303-304, that combinations with fixed-stress feminines (*tri bednye devuški*) are felt as plural; cf. also the exceptions in fn. 9 below.
- ⁸ There is an interesting (and of course purely synchronic) type of syntactic vigesimality in the fact that structures of both non-plural categories (quantified and non-quantified) repeat the unit structure only in the twenties and above: 1, 21, 31, 41 ... (but not 11) *student*; 2, 22, 32, 42 ... (but not 12) *studenta*. In plural, however: 5, 15, 25, 35, 45 ... *studentov*.
- ⁹ There are two series of stress-conditioned exceptions, both perhaps influenced by plural forms: (1) the end-stressed masculines in *-/á/* (*dva časá, žagá, rjadá*, marginally *razá*), perhaps connected with the nominative plural forms in *-/á/* (see N. van Wijk, "Der slavische Dual auf -a und der russische Nom.-Akk. Pl. Mask. auf -á", *Indogermanische Forschungen*, LI (1933), pp. 200 f.; the discussion of intonation is summarized by Šerech, *Probleme der Bildung des Zahlwortes*, p. 56, f.n. 1, cf. further literature there), seem to be bound to the numeral (*pervye dva časá* but *dva pervyx časá*; cf. the vacillation in *četvert' časá / četvert' časá*); (2)

the initially-stressed feminines in *-i/* fall into two groups, (2a) two fixed forms with the preposition *za* and the quantifier *obe* (*za obe rúki, za obe ščěki*) and (2b) a slightly less restricted but hardly productive group of polnoglasie forms with original long rising intonation in the nom. sing., combined with the pronominal adjective *vse* and the numerals 3, 4 (*vse tri pólasy, vse tri gólavy, vse četyre stórony*, cf. Vinogradov, *Russkij jazyk*, 303); the form *próstyni* (*Otdaj pračke vse tri próstyni*) is probably from dial *prostyn'*, not *prostynja*. For some of these examples I am indebted to Valerie Tumins, whose help I acknowledge with thanks.

¹⁰ Šerech, *Probleme der Bildung des Zahlwortes*, p. 56, correctly refutes the unfounded treatment by Šaxmatov and others of these forms as other than genitive singular; admitting the quantifying function of the genitive case makes it impossible to agree with Vinogradov, *Russkij jazyk*, pp. 302-303, that the numerals 2, 3, 4 are combined with "takoj formoj imeni suščestvitel'nogo, kotoraja ne naxodit semantičeskogo opravdanija v sisteme živyx padežnyx form i funkcij suščestvitel'nyx".

¹¹ V. Tumins informs me that the nom. pl. occurs with (1) fem. animates (*tri starye gorničnye*, Puškin), and (2) completely substantivized inanimates (*tri prostornye kladovye*, but not **dve bol'sie detskie*), cf. Galkina-Fedoruk et al. *Sovremennyj russkij jazyk*, p. 304.

¹² Illustrative examples have been taken from: DN = Konstantin Simonov, *Dni i noči* (Moskva, 1951); DS = Il'ja Il'f and Evgenij Petrov, *Dvenadcat' stul'ev* (Moskva, 1956); ZT = Il'f and Petrov, *Zolotoj telenok* (Moskva, 1956) (the latter two bound together). Other numeral combinations upon which this paper is based were taken from M. Zoščenko, *Povesti i rasskazy* (New York, 1952); Konstantin Fedin, *Pervye radosti* (Moskva, 1946); K. A. Trenev, *P'esy* (= *Izbrannye proizvedenija*, II) (Moskva, 1947); V. Dudincev, *Ne xlebom edinyx* (Moskva, 1957).

¹³ Arne Gallis, "Tallordenes syntaks i russisk", gives the following figures: with *dva, oba* nom. pl. 28, gen. pl. 36; with *tri* nom. pl. 10, gen. pl. 20; with *četyre* nom. pl. 2, gen. pl. 11; no distinction is made between masc.-neut. and fem., and 40% of the examples are from 19th c. literature or byliny.

¹⁴ Temporal modifiers, etc.

¹⁵ As stated or implied, for example, in the Academy *Grammatika russkogo jazyka*, II, 1, p. 343 n.; Vinogradov, *Russkij jazyk*, p. 295 n., p. 302; A. A. Šaxmatov, *Sintaksis russkogo jazyka*, § 582 (reprinted in *Iz trudov A. A. Šaxmatova po sovremennomu russkomu jazyku*, Moskva, 1952, p. 128); Galkina-Fedoruk et al., *Sovremennyj russkij jazyk*, p. 296, etc.

¹⁶ The preponderance of plural verb forms in such combinations lends further support to Vinogradov's refutation (*Russkij jazyk*, pp. 300 f.) of Šaxmatov's view of the cardinal numerals as "syntactic adverbs", since the adverb - *ceteris paribus* - combines with neuter singular forms.

¹⁷ For example, Paul Boyer and N. Spéranski, *Manuel pour l'étude de la langue russe* (Paris, 1951), p. 32 f.n.

¹⁸ Even here there is no complete equality: the fem. *obe* has a greater tendency to combine with nom. plural substantives than has *dve*; see B. O. Unbegaun, *Russian Grammar* (Oxford, 1957), pp. 141-42.

¹⁹ Exceptions occur with lexically quantifying substantives, usually in combinations containing *ěti*, e.g. *vse ěti dva dnja*.

- 20 This feature lends support to the interesting suggestion of Galkina-Fedoruk et al., *Sovremennyj russkij jazyk*, pp. 299-300, that *oba*, *obe* be considered a pronoun.
- 21 The fact that *oba* combines with a substantive not in the genitive supports the assertion of Galkina-Fedoruk et al., *Sovremennyj russkij jazyk*, pp. 299-300, that *oba* is not a numeral at all; against this are the constructions with the genitive singular (*oba stola* etc.).
- 22 If nom. pl. adjectives are somewhat more frequent with *oba* than with *dva*, this may be attributed to the fact that *oba* occurs more often than *dva* in combinations functioning as subject; cf. the figures for *dva* etc. on p. 48.
- 23 For example by Gallis, "Tallordenes syntaks i russisk", and Peškovskij, *Russkij sintaksis v naučnom osveščeni*.
- 24 The reversed word order S N is usual in such combinations, and has the meaning "approximately"; *desjatka poltora* is opposed not to *poltora desjatka* but to *pjatanadcat'*, as the Fr. *quinzaine* / *quinze*.
- 25 The only exception seems to be the idiomatic expression *poltora čeloveka*, "almost nobody", called "kalamburnyj" by Galkina-Fedoruk et al., *Sovremennyj russkij jazyk*, p. 310.
- 26 D. N. Ušakov, ed., *Tolkovyj slovar' russkogo jazyka*, III (Moskva, 1939), p. 542, gives the regular *polútor-a* as standard for the oblique cases (*po proisšestvii polútor-a sutok*), but Boyer and Spéranski, *Manuel de langue russe*, p. 269, note that the colloquial language uses the invariable *póltora* in all cases (*ne men'še póltora sutok, proživi on póltora sutkami bol'she*).
- 27 There is a tendency to preserve graphically the independence of *pol-* in the hyphenated spellings before *-l* and vowels (*pol-lista*, *pol-oborota*, etc.); see Ušakov, *Tolkovyj slovar'*, III, p. 510.
- 28 Ušakov, *Tolkovyj slovar'*, *ibid.* This freedom of formation, creating as it does a large productive class of words in masc.-neut. *pol-...-a*, fem. *pol-...-y* makes it difficult to agree with Vinogradov, *Russkij jazyk*, pp. 292-93, that the "okončanija *-a*, *-y*... dlja sovremennogo jazykovogo soznanija v *poltora - poltory* grammatičeski ne osmysleny"; given the series *pol-stol-a*, *pol-kirpič-a*, *pol-čas-a*, *pol-tor-a* and *pol-verst-y*, *pol-ruk-i*, *pol-sten-y*, *pol-tor-y*, and granting that the origin of *-tor-* (< *vbtor-*) is no longer obvious for speakers, one might say that it is not the grammatical *-a*, *-y*, but rather the lexical *-tor-*, which is incomprehensible. This morphologic parallelism is of course to some extent counterbalanced by syntactic differences.
- 29 The specifically numeral end-stress of *časá*, *šagá* etc. usually reverts to *čása*, *šága* in the genitive (*polučása*, *polušága*), although Boyer and Spéranski, *Manuel de langue russe*, p. 268, also note *polučasá* and even *polučasa*, cf. *polúdnja*.
- 30 Space does not permit a syntactic examination of the degree to which the concept of quantity is extended throughout the lexical system of non-numeral substantives (e.g., the syntactic features of *stol* vs. *mešok* etc.).

THE ROLE OF TRANSFORMATIONS IN THE DEFINITION
OF SYNTAGMAS IN RUSSIAN AND OTHER SLAVIC LANGUAGES

The structural varieties of sentence which can be observed in the Slavic languages, like those of many other language families, obviously range from very simple types (e.g., to mention only one widespread type in Slavic, the mononuclear verbal sentence like Polish *Błyska* 'There is lightning', Russian *Morosit* 'It drizzles', and Bulgarian *Gŭrmi* [sɛ] 'It thunders') to extraordinarily complex constructions with nested series of subordinate clauses. Even the best of the traditional syntactic descriptions, e.g. that of the Soviet Academy of Sciences,¹ have been concerned largely with cataloguing this variety of sentence types and some of their constituent elements, especially the word-combination. Lately, the term "taxonomic" has been applied to descriptions of this type,² although an accurate taxonomy would as a matter of fact seem to imply the existence of a far more consistent set of hierarchically organized classificatory criteria than these traditional studies have generally manifested. Syntax often appears to be an ill-defined area floating midway between morphology and semantics, without any generally accepted set of structural units or even any generally accepted terminology of its own. In the absence of genuine syntactic criteria for the classification of utterances and their constituents, such works as the Soviet Academy Grammar have recourse to criteria from the neighboring but only indirectly related realms of morphology and semantics. Morphological details and vague semantic "relations" are treated as if they were the expression and content planes of the syntactic level of language, instead of the marginal (though not entirely irrelevant) areas they obviously are. The inadequacies of this kind of syntax have been discussed in some detail in another article;³ here it need only be said that it is the concept of a syntactic SYSTEM that has been missing from most traditional studies. In our opinion, the transformational approach to syntax may help to uncover some of the systematic aspects of this linguistic level, i.e. it may help to delimit some of the structural entities and patterns of arrangement of the syntactic system itself. In the present paper, we shall attempt to show how this approach can

result in a revised definition of the syntagma. It is to be emphasized, however, that transformational syntax is only one approach among many, that it is still very new and almost entirely in the realm of theory (that is, it has yet to be tested to any appreciable extent on the concrete material of many languages), and that much time must still pass before its strengths and its weaknesses can finally be evaluated.⁴

There are quite disparate types of operation which have presented themselves under the label "transformation" in recent years, but all of them share the basic view that the syntax of any given language is to be seen as an internally coherent system which consists of a rather small inventory of basic units and a certain number of operations which can or must be performed upon these basic units (sometimes in a certain order, and sometimes recursively), in order to result in the extremely large number of actually occurring sentences. Just which units are to be taken as basic, and which types of operation are to be placed at which stages of the developing structure, has yet to be decided,⁵ but it seems clear already that the transformational approach has given rise to a new and broader concept of syntactic form based on the hierarchical organization of sentence types and sentence constituents which goes beyond the often banal details of morphology without, however, losing itself in the still uncharted reaches of semantic space.⁶ Transformational descriptions of syntactic structures are also much closer to mathematical models than the more traditional descriptions. There is, of course, no necessary advantage in a rapprochement of linguistics and mathematics, and the mere transposition of linguistic facts into symbols borrowed from mathematics obviously does nothing to deepen our understanding of these facts; there may, in fact, be some danger of oversimplifying and overlooking the enriching complexities of real language.⁷ The great advantage of such modeling is that it imposes a rigid internal consistency on whatever descriptive framework may have been adopted, and concentrates attention on the structural relations among the various components of the system without being distracted by irrelevant factors from levels other than the one under consideration. It goes without saying that there will always be problems connected with the interpretation of such symbolic models, problems, that is, of correlating the coherent but abstract model with the real but sometimes incoherent facts of living speech.⁸ In the remainder of this paper, we shall investigate one type of model which can be abstracted from the linguistics units arising in the course of a transformational grammar, namely SYNTACTIC PARADIGMS. Syntactic paradigms arise

in the course of the generation of sentences, both in the process of filling in the final symbols of a phrase structure tree with specific morphemes (e.g., in the process of converting the structural framework "Noun_{nominative} + Verb_{finite}" to the actual sentence *Solnce vsxodit* in Russian), and in the process of transforming one type of string to another (e.g., in Russian, *On genij* + *On slyvet geniem*). Syntactic paradigms consist of either the correlated results of alternative choices at some node in the phrase structure tree (*solnce vsxodit* ~ *solnce vsxodilo*) or the correlated set consisting of an original unit and the result of some operation performed on this unit (*burja unesla lodku* ~ *lodku uneslo burej*). The syntactic paradigm is, then, some set of correlated syntactic structures which share certain lexical and grammatical morphemes, but which differ in at least one grammatical morpheme, and often in more essential ways. The simplest syntactic paradigms are little more than ordinary morphological paradigms in a given syntactically defined setting, but the more complicated syntactic paradigms show structural relations clearly beyond the realm of morphology. We shall look first at the simpler and then at the more complicated types of paradigmatic relationship, first as they are illustrated in certain frequent sentence types in the Slavic languages, and then in terms of more abstract models. These models will then be compared to the models which can be abstracted from the morphological level of language, and the generalizations resulting from the comparison of syntactic and morphological paradigms will be used to provide a suggested definition of the syntagma.⁹

Simple Linear Paradigms. The simple linear paradigm, which as was just mentioned is really only a segment taken from a flexional paradigm and placed in a fixed syntactic setting, consists of the total of all possible replacements for some grammatical symbol in the string of symbols representing a sentence, e.g. the choice of person in a pronominal object noun phrase as in Russian *Student vidit nas* ~ *vas* ~ *ix*, or of tense as in *Ja pišu* ~ *pisal* ~ *budu pisat'* *pis'mo*. The simplicity or complexity of such paradigms obviously depends on the number of correlated oppositions of marked and unmarked sub-categories within the grammatical category in question; cf. the simple Russian tense system (past :: non-past, and within the latter inchoative :: non-inchoative)¹⁰ with the extraordinarily rich oppositional network of the same system in Bulgarian (sentences containing *piša*, *pišex*, *pišax*, *pisál* [sŭm], *pišel* [sŭm], *pisál bex*, *pisál* [sŭm] *bil*, *šte piša*, *šte sŭm pisál*, etc.).¹¹ The variation in such simple linear paradigms takes place within some grammatical category, and includes concomitant shifts in agreeing forms (e.g.,

Student čitaet ~ Studenty čitajut), but it does not involve anything beyond this category itself, that is it does not involve any of the rules governing the other forms, and the arrangements thereof, within the paradigm. The following are examples of such simple linear paradigms:

Russian		Polish	
<i>Ja ego videl</i>	<i>My ego videli</i>	<i>Widziałem go</i>	<i>Widzieliśmy go</i>
<i>Ty ego videl</i>	<i>Vy ego videli</i>	<i>Widziałeś go</i>	<i>Widzieliście go</i>
<i>On ego videl</i>	<i>Oni ego videli</i>	<i>Widział go</i>	<i>Widzieli go</i>

In these simple examples, the paradigms vary horizontally in number and vertically in subject person. They could be made multidimensional by adding the variant tens or object person forms, but all such variation is strictly linear, i.e. all such variation is restricted to a particular grammatical category expressed by a particular word in a particular position within the sentence. Such variation is of little interest for the study of syntax, and is described here only in order to contrast with the more complicated types of synparadigmatic variation below.

Simple Non-Linear Paradigms. A somewhat more complicated type of syntactic paradigm obtains in cases where variation within a grammatical category of some given item has an effect reaching outside the given item, i.e. affects somehow the rules governing the structure of the paradigm itself. As a simple example, consider the singular half of the Serbocroatian paradigm corresponding to the Russian and Polish paradigms above:

Serbocroatian
Ja sam ga video
Ti si ga video
On ga je video (not **On je ga video*)

in which the paradigmatic variation in subject person is not linear, but affects the word-order rules as well. If the object pronoun is feminine rather than masculine, there obtains the even more complicated paradigm

Ja sam je video
Ti si je video
On ju je video

in which the shift from first or second person subject to third person requires not only a reversal of word order, but also the form *ju* rather than *je* of the feminine

object pronoun. In such cases, the paradigmatic relations are no longer purely morphological. Whereas, in the Polish paradigm above, the choice of the forms *widziałem*, *widziacieś*, *widział* depended only upon the choice of 1st, 2nd or 3d person subject, the choice of Serbocroatian *je* vs. *ju* cannot be made without taking syntactic factors into account: a symbol such as "3d person sing. fem. acc. pronoun" must be rewritten as *je* in one set of syntactic environments (including *Ti si ... video*), but as *ju* in another set of syntactic environments (including *On ... je video*).

Another example of the difference between linear and non-linear syntactic paradigms is furnished by the treatment of case in predicate nouns in Serbocroatian, Polish and Russian. This treatment will also serve to demonstrate the often ignored fact that exact correspondence of individual linguistic elements is by no means an indication of corresponding linguistic systems. If we consider first the Serbocroatian and Polish paradigms with variable tense

Serbocroatian	Polish
<i>On je profesor</i>	<i>On jest profesorem</i>
<i>On je bio profesor</i>	<i>On był profesorem</i>
<i>On će biti profesor</i>	<i>On będzie profesorem</i>

we note that these two languages are different in one respect, but alike in another and structurally more important respect. Serbocroatian requires the nominative case *profesor* in the predicate noun, the instrumental being archaic in such sentences of definition,¹² whereas Polish requires the instrumental *profesorem*, the nominative being archaic except for definitions containing proper names and certain fixed expressions containing *to*.¹³ However, the synparadigmatic structures of these two languages are identical in this case, since, both in Polish and in Serbocroatian, tense is an independent paradigmatic variable, a linear variable with no effect on the remainder of the sentence. An essentially different situation obtains in the corresponding Russian paradigm:

Russian
<i>On professor</i>
<i>On byl professorom</i>
<i>On budet professorom</i> ¹⁴

Individual units (sentences) within the Russian paradigm correspond to individual units in both Serbocroatian and Polish paradigms (Russian *On professor* = Serbo-

croatian *On je profesor*, whereas the past *On byl profesorom* = Polish *On był profesorem*), but the paradigmatic structure of Russian is basically different from that of the other two languages taken together, since tense in Russian is not an independent linear variable, but an interdependent variable, i.e. a category, variation within which affects rules outside of the form in which the category itself is expressed, namely the rules for case in the predicate noun: the same rule which inserts a past tense morpheme into the basic sentence *On profesor* must also permit a facultative change of nominative to instrumental.¹⁵ We have, then, an instance where the syntactic structure of Russian differs in an essential way from that of Polish and Serbocroatian together; this syntactic structure is evident only in the syntactic paradigm, and exists quite independently of whether, in the individual sentences comprising the paradigm, certain morphemes (nom. or instr. case) are the same or different in these languages. We shall see similar distinctions of synparadigmatic structure in the complex paradigms below.

Complex Paradigms. The simple paradigms examined above were all alike in one way; variation within the paradigm was restricted to grammatical categories expressed in every member of the paradigmatic set. Further, all the above paradigms consisted of fixed lexical sets, i.e. no unit in a paradigm contained any lexical morpheme not found in every other unit of the same paradigm. These simple paradigms are generated within the phrase structure component of a grammar, coupled perhaps with certain elementary transformations (to account for word order and *ju* in the Serbocroatian sentence *On ju je video* and similar cases). More complicated transformations will obviously generate more complicated sets of correlated sentences and hence more complicated syntactic paradigms. We shall examine a simple and widespread type of double-base transformation (i.e., a transformation which combines two simple sentence structures into one more complicated structure) in Serbocroatian, Polish and Russian, attempt to define some of the similarities and differences among these languages in their complex synparadigmatic relations, and the point out one way in which the simple non-linear paradigms of Russian resemble the complex paradigms of all three languages.

The grammars of many Slavic languages must contain rules for combining simple equation-like sentences of the type $X = Y$ with a number of factitive and other verbs meaning 'make', 'consider', 'nominate', 'elect', etc. to produce sentences of the type 'Z considers (makes, elects, etc.) $X = Y$ '. If we begin with such simple equation-like sentences as 'He is a teacher' and 'He is a substitute (replacement,

surrogate)', e.g.

Serbocroatian	<i>On je učitelj (zamenik)</i>
Polish	<i>On jest nauczycielem (zastępcą)</i>
Russian	<i>On učitel' (zamestitel')</i>

we shall have to posit in all three languages one double-base transformation which has the effect of making a "shifter"¹⁶ out of the predicative connection between X and Y, and the result of which are sentences meaning 'I consider X to be my Y', e.g.

SCr.	<i>Smatram ga svojim učiteljem</i>
(or)	<i>Smatram ga za svog učitelja</i>
Pol.	<i>Ja go uważam za swojego nauczyciela</i>
Russ.	<i>Ja sčitaju ego svoim učitelem</i>

and another, more clearly factitive double-base transformation in which the action of Z itself creates the predicative connection between X and Y, e.g. sentences with the meaning 'He named him (as) his surrogate':

SCr.	<i>On ga je proglasio svojim zamenikom</i>
(or)	<i>On ga je proglasio za svoga zamenika</i>
Pol.	<i>On go ogłosił swoim zastępcą</i>
Russ.	<i>On ob"javił ego swoim zamestitelem¹⁷</i>

In Serbocroatian one and the same transformation will generate both the sentences with *smatram* and those with *je proglasio*; this transformation must permit a choice of either of the two constructions (instrumental, or *za* + accusative) in both cases. Polish, on the other hand, has polarized the functions of the instrumental and *za* + accusative: only the shifter *uważam* requires a change in the structure of the predicate noun, whereas the factitive *ogłosił* preserves the instrumental of the original kernel *On jest zastępcą*; Polish therefor requires two distinct transformations. Finally, Russian requires only one transformation to generate both the *sčitaju* and the *ob"javił* sentences, and in this it is like S.-Cr.; on the other hand, Russian is obligatory in requiring the instrumental whereas S.-Cr. was, as we have seen, only facultative, and permitted *za* + accusative as well. Furthermore, the changes occasioned by the Russian transformation with *sčitaju* and *ob"javił* are identical with those occasioned by the tense variation from unmarked present to marked past (*był*) or inchoative (*budet*), whereas tense variation in Polish and Serbocroatian shows nothing in common with the *smatram* / *uważam* and *proglasio* /

ogłosit transformations in these languages.

One can summarize in tabular form the synparadigmatic differences among these three Slavic languages:

TABLE I

		Subject Pronoun ¹⁸	Predicate Noun
Polish	K:	nom	instr
	K _{past} :	nom	instr
	F:	acc	instr
	S:	acc	za + acc
Serbocroatian	K:	nom	nom
	K _{past} :	nom	nom
	F:	acc	instr (or) za + acc
	S:	acc	instr (or) za + acc
Russian	K:	nom	nom
	K _{past} :	nom	instr
	F:	acc	instr
	S:	acc	instr

K = kernel sentence, SCr. *On je učitelj*, etc.; K_{past} = the same kernel in the past as discussed under "Simple non-linear paradigms" above; F = factitive transform, SCr. *proglasiti*, etc.; S = shifter, SCr. *smatram*, etc.

It is clear from this table that the function of the instrumental is quite different in the three languages.¹⁹ In Polish, the instrumental simply marks the predicate, whether this predicate is in a present or past kernel, or in a factitive complex transform; only the shifter-type complex requires that the instrumental become *za* + accusative. In Serbocroatian, the instrumental carries a very low functional load, since it is used only facultatively, along with *za* + accusative, to mark complex transforms of both types. In Russian, the function of the instrumental has been specialized in a very interesting way. It is often said that the instrumental in Russian is developing as a mark of the predicate, but this is only partially true. There is no tendency to develop the instrumental in the direction of Polish i.e., for simple equation-like X = Y sentences to develop an instrumental predicate noun (e.g. **On studentom*, etc.), but there is already a highly developed and specialized function of the instrumental as the marker of what might be called a restriction upon the validity of the predicative connection between X and Y. Russia

has, as a matter of fact, two distinct types of equation-like sentence: (1) an unmarked, unrestricted predicative equation $X = Y$, e.g. *On student, Brat inženier*, etc., and (2) a marked, restricted-validity predicative equation $X (=)^r Y$, with Y at least facultatively and usually obligatorily in the instrumental, e.g. *On byl studentom, Brat stal inženerom*. The restriction or restricting element $()^r$ can be of several kinds (temporal, spatial, semi-modal) and arises in the course of both single-base and double-base transformations of an original unrestricted kernel of type $X = Y$. Following are brief illustrations of some of the principal types of $()^r$ restrictive transformations of $X = Y$ predicative equations in Russian:

I. $()^r$ restrictions in single-base transformations

These are of three types, depending on whether the restricting element r is temporal, spatial, or modal; a first rule would rewrite r as one of three subtypes r_{temp} , r_{spat} , r_{mod} , and further rules would specify items from the lists of which samples are:

A. *Temporal restrictions*. — $()^r$ is expressed by a marked tense form of *byt'*, by any form of such verbs as *stat'*, *ostavat'sja*, or combinations such as *prodolžat' byt'*, the primary meaning of which is temporal, or by one of the so-called adverbial modifiers like *teper'*, *snova*, *vse ešče*.

Examples:²⁰ *On byl rebenkom, Otec stal voennym, Ja snova posudnikom na paroxide "Perm'" (Gor'kij), Ved' on teper' u nee velikim vizirem (Turgenev), I budeš' ty caricej mira (Lermontov), Ostavajsja polnoj xozjajkoj vsego, čto ja imeju (Lermontov), ètot kusoček perestanet byt' Rossiej i stanet nemeckoj zemlej (Simonov).*

B. *Spatial restrictions*. — $()^r$ is expressed by one of the so-called spatial adverbs or by a combination of preposition + substantive. These restrictions are less frequent than the temporal restrictions above.

Examples: *Ja starostuju zdes' nad vodjanym narodom (Krylov), U menja mat' zdes' učitel'nicej (Fedin), A u našego soldata Adresatom belyj svet (Tvardovskij), On v štabe divizii svjazistom (Kazakevič).*

C. *Modal restrictions*. — $()^r$ is expressed by one of a number of semi-copulative verbs, the general meaning of which is to restrict the validity of the predicative connection between X and Y , e.g. *slyt'*, *prikidyvat'sja*, *kazat'sja*, etc.

Examples: *On slyvet gor'kim p'janicej, Sperva on kazalsja otličnym studentom, On prikidyvaetsja bol'nym, Pes družestva slyvet primerom s davnix dnei (Krylov).*

There are a number of sentence types which by their external form appear to belong to this group, but which upon closer inspection appear to be passive transforms of the double-base restrictives in II. A. below, e.g. sentences of the type *X delaetsja Y, nazyuvaetsja Y, sčitaetsja Y*, etc., which are transforms of sentences like *Z delaet X Y*.

Examples: *Pod starost' oni delajutsja libo mirnymi pomeščikami, libo p'janičami* (Lermontov), *Rodinki na levoj ščeke počitajutsja na Rusi xudoj primetoj* (Turgenev), *[gimnazija] školj teper' nazyuvaetsja* (Fedin).

II. ()^r restrictions in double-base transformations

There are two basic types of double-base transformation which generate predicative restrictions causing the predicative noun to go into the instrumental. The first type combines into one sentence two sentences with different subjects, and the second type combines into a single sentence two kernel sentences with the same subject.

A. *Double-subject transforms.* — In transforms of this type the predicative restriction is imposed from outside, as it were. The sentence containing ()^r, with the instrumental predicate noun, is a combination of the simple unmarked predicative equation $X = Y$ and a factitive sentence of the type *Z makes (X = Y)*, *Z calls X Y*, etc., containing verbs such as *delat'*, *zvat'*, *nazyvat'*, *sčitat'*, in which the object of the verb is not a single noun, but the first predicative kernel $X = Y$.

Examples: *My sčitaem ego lučšim studentom, Tovarišči vybrali ego prezidentom organizacii, Professor naznačil ego svoim assistentom.*

As was mentioned above, the passive transforms of such sentences coincide in external form with the single-base modal sentences containing *kazat'sja*, etc., e.g., *My sčitaem ego xorošim studentom → On sčitaetsja (u nas) xorošim studentom*, etc. Cf. also such passive participial transforms as *Polkovnik rožden byl xvatom* (Lermontov), *Ja byl zapisan v Semenovskij polk seržantom* (Puškin).²¹

B. *Single-subject transforms.* — In transforms of this type the predicative restriction arises from within, as it were; both kernels contain the same subject, and the effect of the combination of these kernels is to limit the validity of the $X = Y$ equation to the context in which this same X is subject of some action or in some state.

Examples: *Ivan živet bednjakom, On uže poltora goda kak sidit voevodoj v Dubne* (Gogol'), *Čto, Akulina, niščenkoj živeš'?* (Gor'kij), *Nikto ne roditsja geroem*

(Ošanin), *My rasstalis' bol'simi prijateljami* (Puškin), *On ... priexal ottuda mladšim lejtenantom* (Simonov), *U nego-to vot ja kučerom i ezdil* (Turgenev), *Do vojny on rabotal agentom po snabženiju* (Simonov).

It should be clear from this cursory survey, which of course does not pretend to exhaust all types of predicative restriction in Russian, that unlike Polish and Serbocroatian, tense in Russian is only one of a complicated set of restrictions on the validity of the predicative connection of simple, equation-like kernel sentences. This structural difference between Russian on the one hand and Polish and Serbocroatian on the other hand could not have been derived from a comparison of individual sentences in these languages, but only from the paradigmatic sets which arise in the course of generating first the phrase structure and then the transformational component of the grammar.²²

Before proceeding to examine the internal structure of some of the paradigmatic types discussed above, we shall look briefly at one other way in which a transformational grammar brings to light a difference in the syntactic structure of Russian and Polish.

The Ordering of Rules. If a generative device in either syntax or morphology is required to produce actual sentences, suffixal derivatives, etc., then it will have to work on real material (kernel sentences, word-family heads, etc.) and apply its rules to this material in a stated order. The order of application of grammatical rules may be either arbitrary or motivated. It is arbitrary if for any two rules R, S there is no difference in clarity or insight between the results of applying the rules in the two orders R, S and S, R;²³ it is motivated if one of these two orders permits some significant generalization or some new insight in the temporal or spatial planes (i.e., if this ordering helps to explain the historical development of a language or language group, or helps to establish typological relationships among the structures of various languages).²⁴ As an example of motivated ordering of rules, consider the following case of word-formation in Russian and Polish.²⁵

As is well known, deverbative nouns in *-anie*, *-enie* can be formed in Polish from so-called reflexive verbs in *się* as well as from non-reflexives, e.g. *upominać* 'admonish, warn' → *upominanie*, *upominać się* 'claim, demand' → *upominanie się*. In Russian, on the other hand, the corresponding deverbative nouns never occur with the suffix *-sja*, *-s'*. Considering the Russian facts alone, it might at first seem that the deverbatives in *-enie* etc. simply represent a neutralization of the

opposition non-reflexive :: reflexive, e.g., that *razmnoženie* is a deverbative of both *razmnožit'* and *razmnožit'sja*; n.b. that such nominalizations also either neutralize (in most cases) or lexicalize (rarely) the aspectual opposition of the parent verbs. If this were the case, the deverbative noun could be generated from both *-sja* and non-*sja* verbs, with a rule requiring that *-sja* be dropped whenever nominalization occurs. This solution is unsatisfactory, however, because there are many cases in which the deverbative is clearly correlated only with the non-reflexive verb, whereas the *-sja* verb has a specific meaning of its own (*span'e*, for example, is obviously a nominalization of *spat'*, and has little to do with the semantics of *spat'sja*). A somewhat more sophisticated approach might be to note that the non-*sja* verb is the unmarked member of the oppositional pair (e.g., *razmnožit'* is unmarked as to reflexivity, reciprocity, etc.) and, while it does not specify the category marked by *-sja*, it does not specify the absence of this category either; the deverbative would then simply remain unmarked as to the *-sja* category, neither specifying nor denying its presence.²⁶ Although adequate for Russian, this approach will obviously require a separate set of rules for Polish, where the *się* :: non-*się* opposition is maintained in the deverbative nouns (*upominanie* :: *upominanie się*, etc.). On the other hand, the rules for the formation of these deverbatives are so similar in Russian and Polish that it is obviously desirable to describe the facts of both languages in the same framework if possible. Such a description is in fact possible, providing that we permit the rules to occur in different orders in the two languages.

Nearly identical rules can be formulated for the generation of both reflexive verbs and deverbative nouns in Russian and Polish (such differences as exist are on the allomorphic level, e.g. the *-sja* ~ *-s'* alternation in Russian, and do not affect the description in any significant way). These rules, which can be considered either as parts of more elaborate transformations operating on entire strings, or as independent operations within the derivational apparatus, can be summarized as follows: T_{nom} is a nominalization transformation operative on verbs (finite or infinite, with or without the reflexive markers *-sja/-s'*, *się*) to produce deverbative nouns in *-anie*, *-enie*, etc.; T_{ref} is a reflexive or reciprocal²⁷ transformation operating on verbs (only!) to produce derived verbs in *-sja*, etc. There is no one order in which these rules can be applied to both Polish and Russian without doing violence to one or the other language. The order (1) T_{nom} , (2) T_{ref} will generate the necessary forms in Russian (*pisat'* → *pisanie*, *pisat'* →

pisat'sja), but only some of the necessary forms in Polish (*spotkać* → *spotkanie* and *spotkać* → *spotkać się*, but not *spotkanie się*, since T_{ref} must operate only on verbs in order to conform to the Russian facts). The opposite order, (1) T_{ref} , (2) T_{nom} will generate all the necessary Polish forms (*spotkać* → *spotkać się*, *spotkać* → *spotkanie*, *spotkać się* → *spotkanie się*), but will also generate one spurious Russian form (*pisat'* → *pisat'sja*, *pisat'* → *pisanie*, *pisat'sja* → **pisanie-sja*), since T_{nom} operates on all verbs. Obviously, in order to give an accurate description of both languages, one must either change the rules themselves (specifying, for example, that T_{ref} apply to both verbs and nouns in Polish but only to verbs in Russian), or specify the order (1) T_{nom} , (2) T_{ref} for Russian but (1) T_{ref} , (2) T_{nom} for Polish. The former solution (changing the rules) permits only differentiation (the rules for Russian are different from those for Polish), whereas the latter solution (differently ordered rules) permits both generalization and differentiation (Russian and Polish have the same rules, but apply them in a different order). Since, in any case, the rules must obviously occur in some order in each language, the advantage gained by adopting the latter solution seems obvious. A description which provides for both significant generalization and accurate differentiation is of particular value for typological studies.

After this slight digression concerning ordered rules, let us return to the discussion of syntactic paradigms and attempt to examine the structural relations which obtain within these paradigms.

The Structure of Syntactic Paradigms. We have already looked at several examples of syntactic paradigm types, both simple and complex, and have pointed out that different types of paradigm arise at different points in a generative process. Each of these paradigm types is characterized by a certain internal structure, independent of the particular classes of words by which it happens to be represented in any given instance. The internal structure of syntactic paradigms is very much like that of paradigms found on other linguistic levels, and this parallelism of paradigmatic structure can be used to help define the syntagma. In the remainder of this paper, we shall examine first the abstract structure of syntactic paradigms in terms of syntactic units (U), the forms (F) of which these units consist, and the grammatical categories (g) which are expressed by these forms. The structures of these syntactic paradigms will be compared with those of morphological paradigms (both flexional and derivational). The conclusions drawn from the analogies between the syntactic and morphological levels will then lead to a new

definition of the syntagma, or (more accurately) to a suggestion that the term "syntagma" itself be abandoned in favor of a more accurate set of terms.

Any syntactic paradigm consists of some syntactically defined unit U (sentence, noun phrase, etc.), which is made up of a certain number of lower-level forms (words, word combinations, etc.) F^1, F^2, \dots, F^n . Each of the units F^1 etc. expresses one or more grammatical categories (tense, gender, number, aspect, etc.) g^1, g^2, \dots, g^n .

The simplest type of syntactic paradigm is that in which variation is restricted to some single grammatical category g of one form F , within the limits of the syntactically defined unit U. Such simple paradigms have the internal structure:

Paradigm type A-1

$$U = \dots F (g) \dots \\ \dots F' (g') \dots,$$

e.g., with U = sentence, Russ. *Student pil* ~ *Student vypil*, Pol. *Błyska* ~ *Błysnęła* or, with U = noun phrase within verb phrase, SCr. *On nas vidi* ~ *On vas vidi* ~ *On ih vidi*, in which the variant category = aspect, tense, and person respectively. In the case of agreeing forms, a single category g will vary in both of two forms F^1, F^2 , as in

Paradigm Type A-2

$$U = \dots F^1 (g) \dots F^2 (g) \dots \\ \dots F^{1'} (g') \dots F^{2'} (g') \dots,$$

e.g., Russ. *Sobaka laet* ~ *Sobaki lajut*. Despite the fact that such paradigms are defined in terms of the syntactic units within which variation occurs, they are almost exclusively of morphological interest, and are relevant to the study of syntax only as they provide a type of paradigmatic structure contrasting with the more complicated types below. Somewhat more complicated is that type of paradigm in which variation in one grammatical category g^1 of some form F^1 requires either (B-1) concomitant variation in a different grammatical category g^2 of some other form F^2 , or (B-2) some rearrangement in the structural relationship of F^1 and F^2 (in, say, word order or intonation contour), but still within the limits imposed by the unit U. Such paradigms have the structure

Paradigm Type B-1

$$U = \dots F^1 (g^1) \dots F^2 (g^2) \dots$$

$$\dots F^1 (g^1) \dots F^2 (g^2) \dots,$$

e.g., Russ. *On pil čaj ~ On napilsja čajju* (variation in g^1 , non-quantitative \rightarrow quantitative, requiring concomitant variation in g^2 , accusative \rightarrow genitive case), or Pol. *Widzę książkę ~ Nie widzę książki* (g^1 : non-negative \rightarrow negative, g^2 : acc. \rightarrow gen.), or (with word order change)

Paradigm Type B-2

$$U = \dots F^1 (g^1) \dots F^2 (g^2) \dots$$

$$\dots F^2 (g^2) \dots F^1 (g^1) \dots,$$

e.g., SCr. *Ja sam ... (or) Ti si ga video ~ On ga je video* (g^1 : 1st or 2nd \rightarrow 3rd person, requiring reversal in order of enclitics) or Russ. *Ja znaju studenta ~ Ja ego znaju* (with pronominalization reversing the usual word order). A paradigm like SCr. *Ja sam ... (or) Ti si je video ~ On ju je video*, in which the shift to 3rd person subject requires both reversed word order and the form change *je* \rightarrow *ju* in the fem. acc. enclitic, combines types B-1 and B-2. Although paradigm types (A) and (B) differ from one another in some ways, they are identical in one important respect, namely that no matter what kind of paradigmatic variation occurs, this variation takes place within the limits imposed by the structure of the syntactically defined unit U. A considerably more complicated type of paradigm structure obtains when the variation is not internal to (i.e., independent of) the unit U, but rather causes one type of unit U^1 to change to a different type U^2 . In such paradigms, the variation which obtains in the components F^1 , g^1 etc. has an effect on the nature of the predefined unit U itself, thus creating a paradigm of paradigms or "hyperparadigm", of which the component parts are paradigms themselves. Such hyperparadigms have the structure

Paradigm Type C
(*Hyperparadigms*)

$$U^1 = \dots F^1 (g^1) \dots, \text{ etc.}$$

$$U^2 = \dots F^2 (g^2) \dots, \text{ etc.}$$

e.g., Russ. *čitat' knigu ~ čtenie knigi, knižnaja trgovlja ~ trgovlja knigami*, etc. Type C paradigms arise in the course of transforming kernel sentences to more complicated types of sentence, and can themselves be of various degrees of complexity; cf. the paradigm formed by *On prezident Akademii Nauk* and *ego prezidentom Akademii Nauk*, as in *Vybrali ego ...*, *Naznačili ego ...*, etc. All such paradigms can be described precisely, in terms of the morphologically definable

changes undergone by their constituent parts. They are of many kinds, but they all share the common structural feature that their paradigmatic change is not internal to some given unit, but involves changes in the nature of this unit itself.

Morphological Parallels. The distinction which has just been discussed between syntactic paradigms internal to a given linguistic unit on the one hand (types A, B) and consisting of different units on the other hand (type C) finds a parallel on the morphological level, where there is a major qualitative difference between the paradigmatic types of the flexional system on the one hand and the derivational system on the other. Syntactic paradigms of types A and B are very much like intraword or flexional paradigms (e.g., the paradigm of *dom* "house": *dom* + \emptyset , *dom* + *a*, *dom* + *u*, etc.), in which the given unit U (now morphologically defined, the word) remains constant and the forms comprising the individual instances of this word vary within the limits imposed by the paradigm type, i.e. within the limits of the noun declension, verb conjugation, etc. Syntactic units of type C, on the other hand, are comparable, *mutatis mutandis*, to interword or derivational paradigms (e.g., the paradigm of the word-family head or "hyperword" DOM "house": *dom* ~ *domik* ~ *domišče* ~ *domašnij* ~ *domovyj* ~ *domovničat'* ~ *doma* ~ *domoj*, etc.), in which the proportion of variant to invariant elements is greater than in the simple flexional paradigm, and in which the (here, morphologically defined) linguistic units themselves (the U's) undergo change (in the examples just adduced, change from neutral to marked diminutive or augmentative noun, from noun to adjective or adverb, from adjective to verb or noun), as the individual pre- and suffixal forms (the F's) comprising the individual paradigmatic elements are added, subtracted, or exchanged. In both the syntactic and the morphological paradigms there are some variant and some invariant elements, and all distinctions among the various paradigm types in both morphology and syntax are made on the basis of those elements which remain invariant, and those which are variant, respectively. This high degree of parallelism between the internal structures of paradigms on the morphological and the syntactical levels makes it possible to use the clearer and better-known structural relations of the morphological level in order to define the corresponding structural relations on the syntactic level. Furthermore, since the morphological level contains not one but several discrete linguistic units (allomorph, morpheme, word-form or "alloword", word, word-family or "hyperword", etc.),²⁸ it will not be surprising to discover that the syntactic level too contains several distinct units; in other words, the concept of the syntagma as a

global term for any combination of items above the word level is too undifferentiated to describe this most complicated part of linguistic structure.

Given the striking parallelism of paradigmatic structures on the morphological and syntactic levels, we might well expect to find one type of syntactic unit corresponding to the morphological word, and another corresponding to the word-family or hyperword. Such is indeed the case: the syntactic stratum contains both flexional and derivational syntagmas. To avoid any confusion with other uses of the term syntagma, of which there are many,²⁹ we shall take the liberty of introducing a slightly different terminology here. The syntactic unit corresponding to the morphological word is the tagma. Just as the word is an abstraction derived from and serving as a label for the totality of individual word-form occurrences ("allowords") of which its paradigm consists (e.g., the word *dom* "house" abstracted from the individual allowords *dom + ∅*, *dom + a*, *dom + u*, *dom + om*, etc.), so is the tagma an abstraction derived from and serving as a label for the totality of the individual tagma-form occurrences ("allotagmas") of which its paradigm consists. The syntactic unit "Nominative noun subject + finite transitive verb + accusative noun object", e.g. *Student čitaet knigu*, is a tagma abstracted from the totality of its individual allotagmas, some of which are (in the given case) *Studenty čitajut knigu*, *Student čital knigu*, *Student pročitaet knigu*, etc. Just as the allowords *doma* (gen.), *domu* (dat.), etc. are contextually conditioned variants of the basic morphological unit, the word *dom* 'house', so are the allotagmas *Student čitaet knigu*, *Student budet čitat' knigu*, etc., contextually conditioned variants of the basic syntactic unit, the tagma.³⁰ Just as the word is abstracted from its paradigm of allowords without being identical with any one of the latter, so is the tagma abstracted from its paradigm of allotagmas without being identical with any one of the latter. Both the word and the tagma are paradigms of types A and B; they are the U's of which their individual paradigmatic occurrences are the F's. There are obviously many kinds of tagma, just as there are many kinds of word; the individual types of tagma are defined by their paradigms, as are the individual types of word. Some tagmas, like the one just adduced, are sentences, others are not, e.g. noun + genitive noun, adjective (agreeing) + noun, etc.

Both the word and the tagma are flexional paradigms, on the morphological and syntactic level respectively. They are relatively simple, and since there are no tagmic types which have not already been thoroughly discussed in traditional syntactic studies (as word-combinations and sentences), there is no need to enter

into further detail here. These flexional syntactic paradigms, or tagmas, have been adduced primarily in order to provide contrast with the other and more complicated syntactic paradigm, the derivational, which corresponds to the derivational "nest" or word-family in morphology. The structure of these derivational paradigms on the syntactic level has, to our knowledge, hardly been mentioned in the literature.³¹

The word family or hyperword BELYJ 'white' is an abstraction derived from and serving as a label for the derivational paradigm of which the individual constituent elements are the words *belyj*, *belet'*, *belet'sja*, *belit'*, *belizna*, *belila*, *belil'sčik*, *belil'nyj*, etc., i.e. all the words derived from *bel-* which are synchronically and not merely etymologically related. Each of the individual items of which such a derivational paradigm consists is itself an entire flexional paradigm: the word *belyj* is a paradigm of allowords *belyj*, *belogo*, *belomu*, *belaja*, etc.; the word *belit'* is a paradigm of allowords *belju*, *beljat*, *belil*, etc. The word-family thus represents a paradigm of paradigms or hyperparadigm on the morphological level. The corresponding unit on the syntactic level is the syntactically derivational paradigm (generated in the course of transforming kernel sentences into passives, nominals, etc.), i.e. the syntactic hyperparadigm or hypertagma. There are many kinds of hypertagma, just as there are many kinds of hyperword (derivational family); as an illustrative example, consider the various transformations undergone by a simple kernel sentence such as

(1) *Studenty čitajut knigu*

which consists of a substantive in the nominative, a finite verb agreeing with this substantive, and a second substantive in the accusative governed by the verb, i.e.,

$S^1_{\text{nom}} V S^2_{\text{acc}}$.

The rules for Russian must contain a passive transformation which converts sentence (1) to sentence

(2) *Kniga čitaetsja studentami*

$S^2_{\text{nom}} V_{\text{sja}} S^1_{\text{inst}}$

Russian grammar also contains several types of nominalization transformation which operate on the kernel (1) to produce nominal phrases of which the headwords are the same as or derivationally related to the items within (1):

$T_{\text{nom}}(S^1)$ is a nominalization transformation "centered" on the subject of (1) which produces the nominal phrase

(3) *čítajúščiie knihu studenty*

$A_{<v} S^2_{acc} S^1_{nom}$

$T_{nom} (S^2)$ is a nominalization transformation centered on the object of (1) which produces another nominal phrase of which the headword is S^2

(4) *čítaemaja studentami kniga*

$A_{pass} < v S^1_{inst} S^2_{nom}$

$T_{nom} (V)$ is a nominalization transformation centered on the verb of (1) which produces a nominal phrase the headword of which is a deverbative substantive based on V of (1)

(5) *čtenie knigi studentami*

$S^3 < v_{nom} S^2_{gen} S^1_{inst}$

Finally, a nominalization transformation very much like $T_{nom} (S^1)$ will operate on the passive transform (2) to produce a nominal phrase centered on the first substantive of this passive transform, namely

(6) *čítajúščajasja studentami kniga*

$A < v S^1_{inst} S^2_{nom}$

Other transformations will generate such forms as, e.g., (6a) *kniga, čítajúščajasja studentami*, (3a) *studenty, čítajúščiie knihu*, (2b) *kniga, kotoraja čítaetsja studentami*, (1b) *studenty, kotorye čítajut knihu*, (5c) *kniga, čtenie kotoroj studentami*, (5c') *kniga, č'e čtenie studentami*, etc., etc. There is no space and no need to describe all such sentences and phrases in detail here. Each of these transforms is of course itself a tagma, with its own paradigm of allotagmas. It is important to insist on the fact that all these varied transforms share not only certain lexical morphemes, but also a common element of syntactic structure, namely the original syntactic structure of the kernel sentence, which can be summarized as the subject-verb-object relationship. This particular syntactic structure is present in all the transforms which, taken together, form the hyperparadigm of the kernel *Studenty čítajut knihu*, in exactly the same way as the "whiteness" and "qualitativeness" of the hyperword BELYJ is present in all the individual words (*belyj, belit'*, etc.) which, taken together, form the morphological hyperparadigm of BELYJ. The concept of such syntactic structures as the subject-verb-object relation, which remains constant throughout such different tagmas as sentences (1) and (2), nominal phrases (3) - (6), etc., is an abstraction of a

higher degree than that which joins, say, the allotagmas *Student žitaet knigu*, *Student žital knigu*, *Studenty žitajut knigi*, etc., into the single tagma *Studenty žitajut knigu*; similarly, on the morphological level, the concept of such morphological structures as the hyperword (derivational nest, word-family) is an abstraction of a higher degree than that which joins the various allowords *žitaju*, *žitaeš'*, *žitaet*, etc., into a single word. It is the contention of this paper that a transformational grammar, which organizes such syntactic units as sentence and phrases into hierarchal order and specifies the structural relations among these units, offers the possibility of describing such higher-level abstractions on the syntactic level, and thus contributes to our understanding of the systematic aspects of syntactic structure.

There remain, quite naturally, a great many problems connected both with the theoretical basis and the concrete application of the synparadigmatic concept outlined here. The foregoing paper has only touched upon certain selected problems, and suggested only a few of the possible applications of this method. The extent to which this method will prove useful cannot of course be predicted at this time. This paper has been intended as a stimulus to further discussion of synparadigmatic structures.

FOOTNOTES

- ¹ Akademiya Nauk SSSR, Institut jazykoznanija, *Grammatika russkogo jazyka*, Tom II, *Sintaksis*, parts 1-2 (Moskva, 1954; 2nd ed. 1960).
- ² E.g., by N. Chomsky at the IXth International Congress of Linguists, Cambridge, Massachusetts, 1962; Chomsky's paper, "The logical basis of linguistic theory", will appear in the *Proceedings* of this Congress.
- ³ D. S. Worth, "Transform analysis of Russian instrumental constructions", *Word*, XIV (1958), pp. 247-290 (Russian translation: "Transformacionnyj analiz konstrukcij s tvoritel'nym padežom v russkom jazyke", *Novoe v lingvistike*, Vol. II, ed. V. A. Zvegincev, Moskva, 1962, pp. 637-683). This view is shared by F. Papp in "Transformacionnyj analiz russkix prisubstantivnyx konstrukcij s zavisimoj čast'-ju-suščestvitel'nym", *Slavica* (Debrecen, 1961), pp. 55-83; cf. also his shorter "Transformacionnyj analiz russkix prisubstantivnyx konstrukcij s zavisimoj čast'-ju-suščestvitel'nym v roditel'nom padeže", *Studia slavica Academiae scientiarum Hungaricae*, VII, 1-3 (1961), pp. 195-206.
- ⁴ Of the considerable literature which has accumulated on transformational theory in the past six years, one may note especially Noam Chomsky, *Syntactic Structures* ('s-Gravenhage, 1957); Zellig S. Harris, "Co-occurrence and transformation in linguistic structure", *Language*, XXXIII (1957), pp. 283-340; Robert B. Lees, *The grammar of English nominalizations* (Bloomington, Ind., 1960); S. K. Šaumjan, "Nasuščnye zadači strukturnoj lingvistiki", *Izvestija AN SSSR, Otdel. lit. i jazyka*, XXI (1962), 2, pp. 103-111; R. P. Stockwell, "The place of intonation in a generative grammar of English", *Language*, XXXVI (1960), pp. 360-367; Paul Schachter, review of Lees' *Grammar of English nominalizations*, in *International journal of American linguistics*, XXVIII (1962), pp. 134-146; cf. also his "Kernel and nonkernel sentences in transformational grammar", to appear in the *Proceedings* of the IXth International Congress of Linguists; on recent work in the USSR see P. [A.] S[oboleva], "Konferencija po strukturnoj lingvistike, posvjaščennoj problemam transformacionnogo metoda", *Izvestija AN SSSR, Otdel. lit. i jazyka*, XXI (1962), 2, pp. 188-192; transformational grammar has been subjected to criticism by several eminent linguists, e.g., Roman Jakobson in "Boas' view of grammatical meaning", *American Anthropologist*, LXI (1959), 2, pp. 139-145; A. A. Hill, "Grammaticality", *Word*, XVII (1961), pp. 1-10; D. L. Bolinger, "Linguistic science and linguistic engineering", *Word*, XVI (1960), pp. 374-391; cf. also his "Syntactic blends and other matters", *Language*, XXXVII (1961), pp. 366-381; Chomsky has replied to some of this criticism in "Some methodological remarks on generative grammar", *Word*, XVII (1961), pp. 219-239 (Russian translation, together with that of Hill's "Grammaticality", in *Voprosy jazykoznanija*, XI, 1962, No. 4, pp. 104-122). This brief list by no means exhausts the studies which have already appeared, and one may confidently expect a considerable increase in the flow of this literature in the next few years, since (according to the observation of one scholar at the IXth International Congress of Linguists) "Transformational grammar is like an iceberg; it is still nine-tenths out of sight".
- ⁵ This problem is discussed with great insight by Paul Schachter in the two studies mentioned in fn. 4 above.
- ⁶ The term is borrowed from Uriel Weinreich's witty and penetrating review (*Word*, XIV, 1958, pp. 346-366) of *The measurement of meaning* by C. Osgood, G. Suci and P. Tannenbaum (Urbana, Ill., 1957).

- 7 Academician V. V. Vinogradov has often warned against such oversimplification, e.g. in his "Nekotorye zadači izučeniya sintaksisa prostogo predloženiya (Na materiale ruskogo jazyka)", *Voprosy jazykoznanija*, 1954, No. 1, p. 14.
- 8 The difficulties of correlating models with real speech have been discussed by I. I. Revzin, *Modeli jazyka* (Moskva, 1962), pp. 9 ff.
- 9 Another type of paradigm which might profitably be investigated in a syntactic setting is that in which lexical rather than grammatical morphemes vary; one might expect the study of lexical paradigms to cast some light on the interrelations of lexical and grammatical systems, but this is a problem beyond the scope of this paper.
- 10 For a different view of these oppositions, set within the system of aspectual oppositions, see Roman Jakobson, *Shifters, verbal categories, and the Russian verb* (Cambridge, Mass., 1957), esp. pp. 6-7.
- 11 The full paradigms are given in all standard grammars, e.g., L. Beaulieux *Grammaire de la langue bulgare*, 2nd ed. (Paris, 1950).
- 12 A. Schmaus, *Lehrbuch der serbokroatischen Sprache* (München-Beograd, 1961) pp. 250-252. A rich historical and synchronic survey of the problem will be found in Milka Ivić, *Značenja srpskošrvačkog instrumentalā i njihov razvoj (sintaksičko-semantička studija)* (= *Srpska Akademiya Nauka, Posebna izdanja, CCXXVII*) (Beograd, 1954); cf. esp. pp. 147-158.
- 13 H. Grappin, *Grammaire de la langue polonaise* (Paris, 1949), pp. 125-127.
- 14 The instrumental is not absolutely obligatory in such cases in Russian, but its use in marked-tense forms is becoming more and more frequent. Those instances where the nominative is preserved are lexically conditioned (e.g., *Ona byla Amerikanka*), and can be accounted for by recursive rules to reestablish the nominative in special cases.
- 15 The nominative and instrumental predicate nouns are discussed with many examples in AN SSSR, *Grammatika ruskogo jazyka*, II, 1, pp. 423-436.
- 16 According to R. Jakobson, *Shifters, ...*, p. 2: "The general meaning of a shifter cannot be defined without a reference to the message." We use the term somewhat more loosely here, to mean that the predicative connection $X = Y$ is presented as valid only within the framework of the utterance with subject Z.
- 17 These two types of transformation are given only as illustrative examples. A full description of predicative restrictions in the three languages would require more finely differentiated rules; cf. the more detailed discussion of Russian on pp. 67 ff. below, and of the individual verbs used with and without the instrumental in Milka Ivić, *Značenja srpskošrvačkog instrumentalā ...*, pp. 147-150.
- 18 This original subject pronoun of course becomes an object pronoun in the transforms.
- 19 The validity of these comments is of course limited to the sample structures discussed in this paper. For a many-sided discussion of the instrumental in Slavic, see S. B. Bernštejn, ed., *Tvoritel'nyj padež v slavjanskix jazykax* (Moskva, 1958).
- 20 Some of the examples here and below are taken from AN SSSR, *Grammatika ruskogo jazyka*, II, 1, pp. 427 ff.
- 21 Examples from *Grammatika ruskogo jazyka*, p. 483.

22 This statement may require some amplification, since the paradigms discussed in this paper could of course be assembled from the stock of known sentence types, without any appeal to generative grammar. The concept of the transformational and paradigmatic structure of syntax is, in fact, quite independent of the concept of generative grammar. The latter, however, imposes a hierarchical order on what would otherwise be an unordered set of interrelated sentence and phrase types. Whether the advantages inherent in such a hierarchical ordering will ultimately be found to outweigh the cumbersome mechanisms necessary to generate it remains to be seen.

23 The importance of the economy criterion has been, in our opinion, greatly exaggerated in recent works. This criterion is in fact subordinate to a number of other criteria such as accuracy, clarity, insightfulness, etc. Economy should be a criterion only when all these other factors are equal; choosing a particular description only because it requires fewer descriptive statements may be not only irrelevant, but actually harmful, if it leads to obscurity rather than clarity.

24 The possibility of significant generalization along the temporal and spatial axes is the most important criterion for choosing between alternative descriptions of a language where the alternatives are equally clear, accurate, and efficient internally.

25 Since derivational morphology plays such an important role in derivational (transformational) syntax, it is not clear whether it should be considered simply one aspect of the syntactic process, or an independent generative system correlated with the syntactic process. Cf. the stimulating discussion of these and other problems by S. K. Šaumjan, "Nasuščne zadači strukturnoj lingvistiki", *Izvestija AN SSSR, Otdel. literatury i jazyka*, XXI (1962), No. 2, p. 104 ff.

26 On the neutralization of grammatical oppositions in Slavic see E. Stankiewicz, "Grammatical neutralization in Slavic expressive forms", *Word*, XVII (1961), pp. 128-145.

27 The actual range of meanings of this "reflexive" morpheme is both complicated and irrelevant to the present discussion.

28 As a matter of fact, the morphemic and word levels are entirely distinct from each other, but the point need not be argued here. The author is now preparing a study of paradigmatic structures on the phonemic, morphemic, logic (=word) and syntagmatic levels.

29 Cf. the discussion of many of these views in the article by V. V. Vinogradov, "Ponjatie sintagmy v sintaksise ruskogo jazyka", *Voprosy sintaksisa sovremennogo ruskogo jazyka (sbornik statej)* (Moskva, 1950), pp. 183-256. More recently, cf. the polemics of E. A. Sedel'nikov and R. F. Mikuš' concerning Mikuš' "syntagmatic theory" in *Voprosy jazykoznanija*, X (1961), No. 1, pp. 73-82, and XI (1962), No. 2, pp. 117-120 and earlier issues. An interesting structural approach to the syntagma can be found in E. V. Padučeva and A. L. Šumilina, "Opisanie sintagm ruskogo jazyka (V svjazi s postroeniem algoritma mašinnogo perevoda)", *Voprosy jazykoznanija*, X (1961), No. 4, pp. 105-115.

30 This and further examples will be given with specific lexical morphemes (*student-*, *čitaj-*, etc.), but it should be understood that the syntactic paradigm is independent of these lexical items. In a more rigorous presentation the tagmas of which these paradigms consist would be described only in terms of the essential categories they manifest, e.g., in the present case, Noun (subject)_{nom, sing, masc}

+ Verbfinite, pres, sing, 3rd pers + Noun (object) acc, sing, fem.

31 S. K. Šaumjan, "Nasuščnye zadači strukturnoj lingvistiki", has insisted on the interrelations of morphological paradigms with syntactic generative procedures. Some discussions of so-called "syntactic synonyms", e.g. V. P. Suxotin, *Sintaksi-českaja sinonimika v sovremennom russkom literaturnom jazyke. Glagol'nye slovosočetačija* (Moskva, 1960), provide a certain amount of material which might be used in later, methodologically more rigid, investigations of syntactic paradigm types.

ON THE REPRESENTATION OF LINEAR RELATIONS IN
GENERATIVE MODELS OF LANGUAGE

Recent years have seen a rapid but uneven development of the linguistic theory known as generative grammar. This development, closely connected with the generally recognized need for further formalization of linguistic descriptions,¹ arose in the theoretical work of N. Chomsky and his followers.² The concept of generative grammar, incidentally, should be kept distinct from that of "transformational analysis" or "transformational method." The frequent confusion of these two concepts is due to the fact that the term "transformation" is used differently by different authors. For Chomsky a transformation is that variety of rewrite rule that is applied after the generation of all so-called kernel sentences by means of immediate constituent rewrite rules.³ For other authors, e.g. Zelig Harris⁴ or the "applicational generative model" of S. K. Šaumjan and P. A. Soboleva,⁵ a transformation is a symbolically expressed morphosyntactic correspondence between similar sentences and phrases in a preexistent corpus. A closely related use of the term "transformation" is found in recent attempts to utilize the possibility or impossibility of changing a phrase of one morphosyntactic structure into that of another in an attempt to ascertain the deeper syntactic relations (Hockett's "deep grammar"⁶) hidden beneath overt surface morphology ("surface grammar").⁷ Finally, the presence vs. absence of particular types of correspondence among various languages (i.e., the possibility or impossibility of certain classes of "transformation," or significant differences in the morphological implementation of existing classes) can serve as the descriptive basis for typological confrontations. There are works which utilize transformations for more than one of these purposes.⁸ As to the concept of generative grammar, it is used not only in syntactic studies themselves (in the work of Chomsky and others), but also in the description of word-formation⁹ and inflexion,¹⁰ as well as in phonology and morphophonemics.¹¹ It is therefore only natural to observe a degree of ambiguity in the use of both these terms.

The present article's purpose is not to define these terms more closely, important as that would be. We shall restrict ourselves to the observation that a generative model of language on the one hand and a transformational description of syntactic phenomena on the other are in principle independent (though not mutually exclusive) concepts: a generative grammar can exist without transformational rules,¹² and there is no reason to restrict the concept of transformational relations to one of the components of a generative mechanism. In this article we shall leave aside the problems involved in the transformational description of language and consider one as yet inadequately studied question of generative models. This question arises in studying the relations between an abstract syntactic model and the latter's realization in a concrete speech act.

It is obvious that human speech does not exist independently of time; in other words, any speech act occurs on a temporal axis (or, in written language, on a graphic analogue of this axis). It is equally obvious, however, that speech is not a simple linear chain of elements (words, sounds), but is a much more complex system of entities and relationships, many of which exist quite independently of the temporal or graphic sequence into which their surface components are arranged. The basic relations between modifying and modified words (the "déterminant" and "déterminé" of the Geneva school) are not changed by linear rearrangement. For example, if one takes such paired sentences as

- | | |
|------------------------------|------------------------------|
| t t' | t' t |
| (1a) On ljubit Mašu | (1b) On Mašu ljubit |
| t' t | t t' |
| (2a) Ivanov — dobryj čelovek | (2b) Ivanov — čelovek dobryj |
| t t' | t' t |
| (3a) Ja pridu v četyre časa | (3b) Ja pridu časa v četyre |

one observes two types of syntactic meaning. The first are basic, invariant in both members of each sentence pair, and are created and expressed in the concatenation of t and t' ; roughly, these are the relations of action and object in (1), of a quality and its bearer in (2), and of a quantity and the item quantified in (3). These invariant relations are unchanged by the linear transpositions of t and t' . The second type of syntactic relation, unlike the first, is not an irremovable component of the very combination of t and t' , but exists only as a potential opposition between a neutral word order, in which only the invariant relation of t and t' is present, and a marked word order, in which some addi-

tional meaning is expressed: a certain intensification in (1), a predicative nuance in (2), approximation in (3). Syntactic meanings of the first, invariant type exist in the given pairs independently of the temporal axis, while those of the second (potential) type are conditioned by the existence of this axis and cannot be expressed without it.

The distinction between temporal and extratemporal linguistic relations cannot simply be reduced to that between parole and langue, since it is easy to point to a whole series of coded relations (i.e., relations of langue, not of parole) which assume the temporal axis as a significant component of the linguistic system. It must be emphasized that the temporal axis helps express not only secondary, potential syntactic relations, but also some which are at the very center of sentence structure itself. Such, for example, are the subject - object relation in English, e.g. *John loves Mary - Mary loves John* (Russian too has classes in which word order ceases to be redundant and assumes a basic distinctive function, e.g. *Doč' ljubit mat' - Mat' ljubit doč'*).¹³ Among the less nuclear, although still extremely important syntactic meanings rendered by the linear order of sentence elements, one can point to the "topic" and "comment" in so-called functional sentence perspective¹⁴ and the relations among juxtaposed entities of various kinds in so-called "suprasyntactic" operations (negation, interrogation, emphasis; cf. *Ivan ne pošel tuda - Ne Ivan pošel tuda*).¹⁵ We could also point to the role of phrase intonation in sentence formation in all languages, to the extraordinarily wide spectrum of syntactic nuances expressed by word order in Russian and related languages, not to mention suprasegmental phenomena of a morphological or phonological nature (French *une femme sage - une sage-femme*, the distinctive role of length in Czech or of rising/falling intonation in Serbocroatian, etc.).

Even from this simple list it is clear that a descriptive model which fails to give a clear and complete account of linear phenomena cannot be adequate to the object described and must remain merely a simplified skeleton scheme of the extraordinarily complex and variegated linguistic organism. It turns out, however, that it is no easy task to reflect both temporal and extratemporal phenomena in a single model. This task, as it appears, has not been solved in a completely satisfactory manner in the generative models proposed so far.

The unclear or inadequate treatment of linear, temporally conditioned language phenomena is evident, so to speak, in two dimensions. The first of these

is that of the separate sentence, in which the rules determining the linear order of elements are mixed indiscriminately together with those which describe non-linear, extratemporal relations. The second is found in the almost total neglect of any phenomena whatsoever which do not fit into the framework of the separate sentence.

The generative model first proposed by Chomsky, which is still the most widespread, inherited its treatment of linear relations from earlier descriptive schemes. While quite correctly pointing out the essential inadequacies of the immediate constituent model,¹⁶ Chomsky nonetheless adopted it as the first portion of his transformational model, and adopted along with it the highly undesirable (in our opinion) confusion of linear and non-linear rules. As is well-known, in the IC portion of a generative grammar (i.e., in that portion, in which sentence structure is defined in IC terms), entities are gradually broken down ("rewritten") into smaller entities, beginning with the full sentence and ending with the ultimate morphological constituents of the kernel sentence, which can then either be subjected to further rules of the transformational component or be converted directly into phonetic units. The rewrite rules are required to follow each other in a given order, and simultaneous application of more than one rule is forbidden. In fact, however, the rules defining linear order are arbitrarily mixed in with non-linear rules from the very beginning. Thus, for example, in the rule $S \rightarrow NP + VP$ (i.e., "sentence" is rewritten as "noun phrase plus verb phrase"),¹ one is actually dealing not with one, but with two rules, and these rules are entirely different in their nature. The first of them talks about the fact that the sentence is a binary construction consisting of a nominal phrase and a verbal phrase, while the second says that the nominal phrase must necessarily precede the verbal phrase on the temporal axis. Similarly, the rule $NP \rightarrow A + N$ defines not only the fact that the noun phrase can consist of an adjective plus a noun, but also the fact that the first precedes the second. All IC rewrite rules of the form $X \rightarrow y + z$ are in fact dual in nature, determining not only the immediate constituents of a given construct, but also the linear arrangement of these constituents. Only there where the IC rewrite rules give rise to discontinuous constituents does the transformational component contain special, purely linear rules, the function of which is to correct the patently inaccurate linear order generated by the IC component's $X \rightarrow y + z$ rules. For example, the English phrase *have taken* can be regarded as a combination of the discontinuous constituent

have...-en and the constituent *take*, but the rule which generates these constituents and has the general form $X \rightarrow y + z$ ($V \rightarrow Aux + V$, i.e., "verb" is rewritten as "auxiliary verb plus verb") is clearly counterfactual, since it prescribes the linear order $y + z$, although in fact z is located in the interior of y . Contradictions arising in this manner are eliminated by the special transformational rules, but this is really nothing more than a mechanical patching-up of the results obtained from a poorly functioning mechanism. One may conclude that it would be better to repair the mechanism itself, all the more so because rules of the format $X \rightarrow y + z$ have additional essential weaknesses.

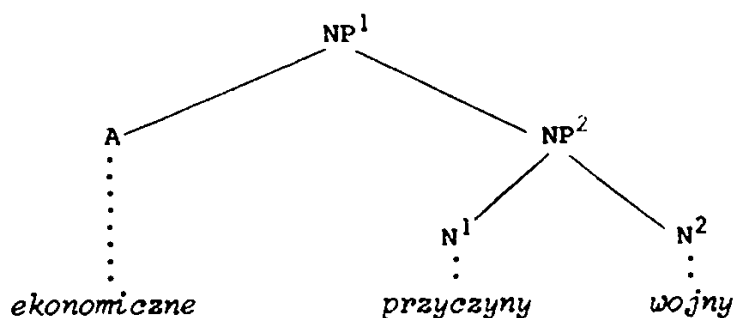
In the first place, the linear order of the elements y and z can depend on factors external to the given sentence. This occurs when the "functional perspective" of the sentence does not coincide with its syntactic division; compare *Krovati stojali v ego komnate* (one has previously spoken of some beds; cf. English *The beds were in his room* with the definite article *the*) and *V ego komnate stojali krovati* (one has previously spoken of the room; cf. English *There were beds in his room* or *His room contained beds*). In belles-lettres, but also in unconstrained conversation, the order *subject - verb - adverbial* alternates with the orders $A - S - V$ or $A - V - S$ etc. These structurally interrelated alternations in linear order are not always easily amenable to precise scientific description, but it is nonetheless obvious that their linear sequence depends primarily on the structure of previous sentences, i.e. on contextual factors which simply cannot be taken into account in rules of the type $X \rightarrow y + z$.

In the second place, the linear order of the elements $y + z$ can depend on factors which are indeed internal to the given sentence, but which are as it were still "unknown" at that stage in the generative process, at which X is rewritten as $y + z$. In Russian, for example, the order of subject and predicate elements depends in part on specific lexeme classes: compare *Ivan prošel mimo doma* 'Ivan walked past the house' but *Prošla nedelja posle znakomstva* '[There] passed a week since [their] meeting' (the first class contains lexemes like *Ivan*, *poezd* 'train', *armija* ..., the second, lexemes like *nedelja*, *den* 'day', *zima* 'winter' ...).

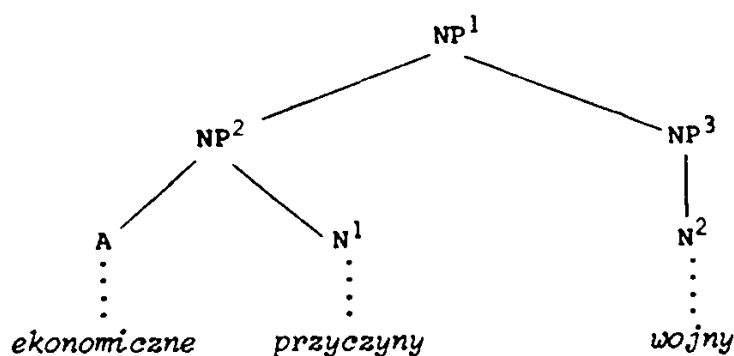
In Polish, French and other languages the linear order of combinations of substantive and modifying adjective can also depend on the specific choice of lexemes; compare Polish *paszport dyplomatyczny* 'diplomatic passport' but *dyplomatyczna odpowiedź* 'a diplomatic reply', French *un homme fatigué* 'a tired man' but *un bel homme* 'a handsome man', *un crayon noir* 'a black pencil' but *une noire*

trahison 'a foul betrayal', (*de ses*) *propres mains* 'by his own hands' but *des main propres* 'by clean hands', etc. These and similar phrases, which have their origins both in the lexeme classes of their constituent elements and in various kinds of metaphoric and stylistic expressiveness, are all generated by the rule $NP \rightarrow A + N$; those lexical factors which dictate the linear order of *A* and *N* appear only in later stages of the generative process, when *A* and *N* are rewritten into specific lexical items. At the $NP \rightarrow A + N$ stage there is no reason whatsoever for assigning *A* and *N* either the order *A N* or the order *N A*.¹⁸

The situation is still more complex in the following case. In Polish a three-member combination consisting of a substantive, an adjective determining this substantive, and a second determining substantive in the genitive, has the order $A N^1 N^2$, for example *ekonomiczne przyczyny wojny* 'economic causes of the war'. Such a phrase has the following IC structure (slightly simplified in the diagram), if it is divided as (*ekonomiczne*) (*przyczyny wojny*), i.e. if we have in mind just the economic, and not, say, the political origins of the war:



However, if the same combination is divided (*ekonomiczne przyczyny*) (*wojny*), i.e. is contrasted for example to the economic causes of the fall of Kievan Rus', then it will have the following IC structure:



It is irrelevant to our present purpose, which of the two structures is assigned to this phrase, since they both require rewrite rules of the form $NP \rightarrow A + NP$,

$NP \rightarrow A + N$, that is, rules which place A before N . But if there is no second substantive, the normal word order of Polish is NA , i.e. *przyczyny ekonomiczne*; cf. *krajowa produkcja samochodów* 'regional (= national, not foreign) production of automobiles', but *produkcja krajowa*.¹⁹ Here the generative apparatus really shows its inadequacy: in the first of the two IC schemes above, when the original NP^1 is rewritten as $A + NP^2$, the adjective is *eo ipso* placed first, as if the generative mechanism already knew that NP^2 would later give rise to the combination $N^1 + N^2$, and not simply to a single N^1 (in which case the order would have to be $N + A$). In the case of the second IC schema above, we have the rule $NP^2 \rightarrow A + N$ (*ekonomiczne przyczyny*), although it is the opposite order NA which is normal for Polish in the absence of a second substantive (*wojny*). It follows that the rules for rewriting NP into N and A are mutually contradictory; one cannot describe the Polish facts without both $NP \rightarrow A + N$ and $NP \rightarrow N + A$, and these rules are mutually exclusive. It is true that they could both be accommodated in a single model, if one were to appeal to more complex contextual conditions, i.e. to rules of the type " $X \rightarrow y + z$ in the context C^1 " and " $X \rightarrow z + y$ in the context C^2 ". Such rules are no rarity in generative grammar, but would be impossible in the given case: we would need a rule such as " $NP \rightarrow N + A$ in all contexts except that in which NP is one of the ICs of a prior NP , the other IC of which is also an NP (i.e., our second schema above), and this rule would give the correct order *ekonomiczne przyczyny wojny*. But if the second NP is also rewritten into a construct of adjective plus substantive, this very rule will generate, for example, the incorrect **ekonomiczne przyczyny światowej wojny* instead of the correct *ekonomiczne przyczyny wojny światowej* 'the economic causes of the world war'. Here again the problem is caused by the fact that the context which determines the linear order of y and z is still nonexistent at that stage, at which these y and z are generated from X .²⁰

In all the above cases — and one could easily multiply them — the usual IC rewrite rules of the format $X \rightarrow y + z$ are simply incapable of representing adequately those factors which determine the linear order of elements. It is for this, and only this reason that it is undesirable to combine linear and non-linear operations into a single rule. There is no logical reason for restricting a rule to a single bit of information; this would lead to an absurd description with a vast number of rules, each of which would contain a minimal amount of information. On the contrary, if one has to choose between a description containing many petty

rules and one with fewer but richer rules, preference will obviously go to the latter, provided that the explanatory power of the two is equal. But in the case of our $X \rightarrow y + z$ rules this proviso is not met, since these rules are incapable of accounting for many essential facts of linguistic structure.

It seems to us that in the given case it is better to increase the number of rules in the generative apparatus. In order to reflect more fully and accurately the role of the temporal axis in the expression of various syntactic relations, we would propose a minor change in the IC component of the generative model, namely the division of the IC component into two cycles.

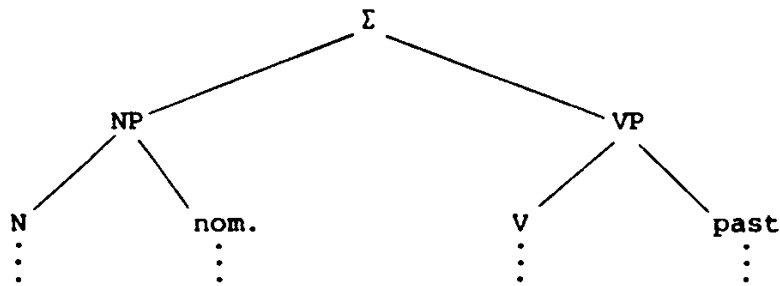
The first cycle will contain only rules of the format $X \rightarrow y z$; these rules will define only the fact that X is a binary construct consisting of y and z , without saying anything about the linear order of y and z . The first cycle is complete when the entire phrase structure tree has come into existence and when the terminal word-class symbols (N , A , etc.) have been replaced by specific lexical classes. Only when all the morphological elements of the given tree are at hand does the second cycle begin. This cycle first applies to the results of the first rule of the preceding, first cycle. For example, if the first rule of the first cycle is $\Sigma \rightarrow NP VP$, then the first rule of the second cycle will operate on the string $NP VP$. The second cycle's function is to impose linear order on the non-linear combinations generated by the first cycle; its rules will have the form "If C^1 , then $y z \rightarrow y + z$ ", "If C^2 , $y z \rightarrow z + y$ ", i.e. in one context the set $y z$ is arranged in the order $y + z$ and in another context, into the order $z + y$; the plus sign indicates the conversion of an extratemporal construct $y z$ into a linear sequence $y + z$ or $z + y$.

Since the second cycle begins only when the entire phrase structure tree has been generated and supplied with lexical classes, those factors which, although determining the order of y and z , themselves appear only later in the generative process than the construct $y z$ itself, can be utilized in assigning linear order to y and z . In other words, a generative apparatus with two cycles in the IC component can take into account all factors in the given sentence (and, for that matter, external to that sentence) which combine to determine the linear order of that sentence's elements (morphemes, words, phrases).

Let us assume that the first cycle generates a very simple binary sentence:

- 1 .1 $\Sigma \rightarrow NP VP$
 .2 $NP \rightarrow N \text{ nom. case}$
 .3 $VP \rightarrow V \text{ past tense}$
 .4 $N \rightarrow \begin{cases} .1 \text{ den}', \text{ moment}, \text{ zima}, \dots \\ .2 \text{ poezd}, \text{ bol}', \text{ armija}, \dots \end{cases}$
 .5 $V \rightarrow \text{proxodit}', \text{nastupat}', \text{nastat}', \dots$ ²¹

The phrase structure tree of this sentence is given below, for rules 1.1-.3 (further development depends on the choice of .4.1 vs. .4.2 and on further morphophonemic rules which are of no interest in the given context²²):

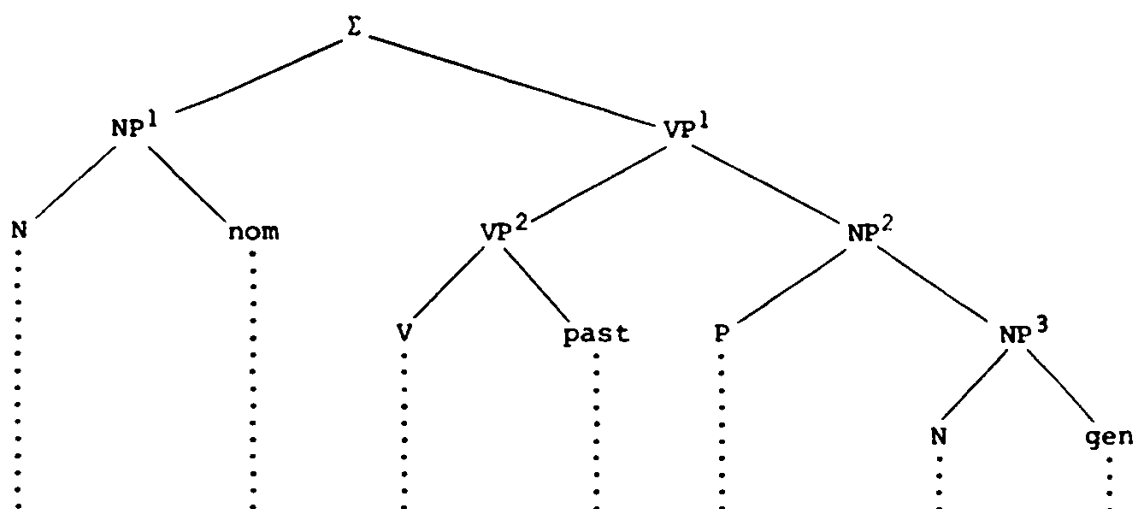


This tree represents only the IC structure of the given sentence but says nothing about the linear order in which these constituents are to be arranged. The second cycle would take a form like the following:

- 2 .1 $\begin{cases} .1 \text{ If 1.4.1, then } NP VP \rightarrow VP + NP \\ .2 \text{ If 1.4.2, then } NP VP \rightarrow NP + VP \end{cases}$ ²³
 [.2 $VP NP \rightarrow VP + \dots NP$]²⁴
 .3 $N \text{ nom} \rightarrow N + \text{nom}$
 .4 $V \text{ past} \rightarrow V + \text{past}$

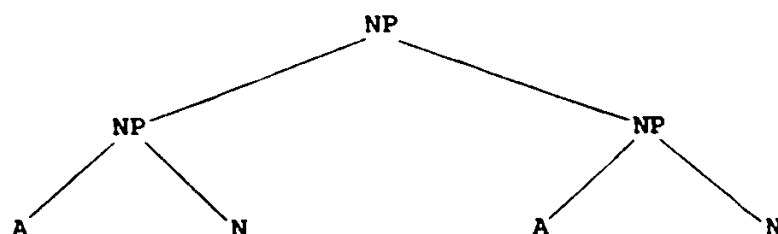
(after which follow the morphophonemic rules). Rules 2.1.1 - 1.2, taking into account the contexts generated by rules 1.1.1 - 1.2, arrange *NP* and *VP* into linear orders such that, after the morphophonemic rules have been applied, one obtains the sentences *Prošel den'* 'a day passed', *Nastupil moment* 'the moment arrived', *Nastala zima* 'winter set in', but *Poezda prošli* 'the trains passed by', *Armija nastupila* 'the army attacked', etc.²⁵

If the first cycle generates a somewhat more complex sentence such as



and includes rule 1.4.1 (i.e. chooses the word-class containing *den'*, *moment*, *nedelja*, ...), then the second cycle, in order to generate the correct word order in the sentences *Ivan prošel mimo doma* 'Ivan passed by the house' and *Prošla nedelja posle znakomstva* 'A week passed since [their] acquaintance', will have to contain rule 2.1.1 ($NP VP \rightarrow VP + NP$), generating the intermediate order **Prošla posle znakomstva nedelja*, and the new rule 2.2 ($VP NP \rightarrow VP + \dots NP$, i.e. "the prepositional construction moves right to the first major juncture"), which rule gives the correct order *Prošla nedelja posle znakomstva*. If in the first cycle rule 1.4.1 (*poezd*, *armija*, ...) had been chosen instead, then rules 2.1.1 and 2.2 of the second cycle would generate, for example, *Poezd prošel mimo polej*.

In the case of the Polish phrase *ekonomiczne przyczyny wojny światowej* linear ordering is accomplished as follows. Starting from the following phrase structure tree (from which grammatical markers have been omitted):



the second cycle will contain i.e. the following rules:

- 2 .1 $NP NP \rightarrow NP + NP$
- .2.1 *If an NP is followed by another NP, A N of the first NP $\rightarrow A + N$*
- .2.2 *If NP is not followed by another NP, A N of this NP $\rightarrow N + A$*

which gives the correct phrase *ekonomiczne przyczyny wojny światowej* with the

order $A + N$ in the first NP but $N + A$ in the second; i.e., such an apparatus takes into account those real factors which condition the linear order of such phrases, and what is more, this is accomplished in an intuitively satisfactory manner. An actual speaker does not "generate" his sentence haphazardly, starting with some such abstraction as Σ and unfolding it into lesser entities such as NP , VP , A , N etc. and only then choosing his specific lexical classes; the speaker knows perfectly well in advance if not all, then at least most of the lexical units which will appear in his sentence, and he chooses just those grammatical frames which are needed for the already-chosen lexical units.²⁶

In order to give a complete and correct account of the linear order of elements in all types of sentences, the second cycle of the phrase structure component will obviously have to contain a large and complex array of contextual rules, covering all the variegated lexico-grammatical factors which condition the arrangement of linguistic units along the temporal axis. The examples adduced here, of course, do not pretend to cover this variety, but have been chosen more or less at random in order to demonstrate the advantage of a model with two cycles of rules in the phrase structure component as compared to a model with a single, undifferentiated set of rules.

The two-cycle generative model, as we have tried to show, can account for linear ordering determined by factors anywhere in the phrase structure tree of the sentence. However, this is not enough: the second major flaw of existing generative models, as was mentioned earlier, is their inability to take into account factors outside of the bounds of the given sentence. In particular, the linear order of NP and VP in a given sentence can depend on what was discussed in the previous sentences. Such contextual factors can easily be formalized by rules of the type "If C^1 , then $y z \rightarrow y + z$ ", that is, by rules of the second phrase structure cycle, provided only that one expands the generative model itself to include not merely the isolated sentence, but some larger entity consisting of a series of consecutive sentences. In other words, the generative model should take as its point of departure not the isolated sentence, but the utterance.

By "utterance" we understand some linguistic entity larger than the sentence, i.e. a string of sentences, a fragment of a text or an entire text, among the constituent sentences of which there obtain structured relations. There are

weighty arguments in favor of an utterance (rather than a sentence) grammar, for example its ability to explicate ellipsis, grammatical agreement between members of neighboring sentences, many particularities of artistically structured language (for example, poetry), and so forth. Space does not permit this view to be argued in the present article, so we shall restrict ourselves to a few general observations.

An utterance generative model would have the form $U \rightarrow \Sigma^1, \Sigma^2, \dots, \Sigma^n$, i.e. the grammar describes an utterance consisting of a string of sentences, any one sentence Σ^x of which is subject to conditioning factors in the previous sentences $\Sigma^1 - \Sigma^{x-1}$ (in rough paraphrase, what can be said in any given sentence depends in part on what has already been said); an utterance-level grammar is thus reminiscent of a Markov chain.²⁷

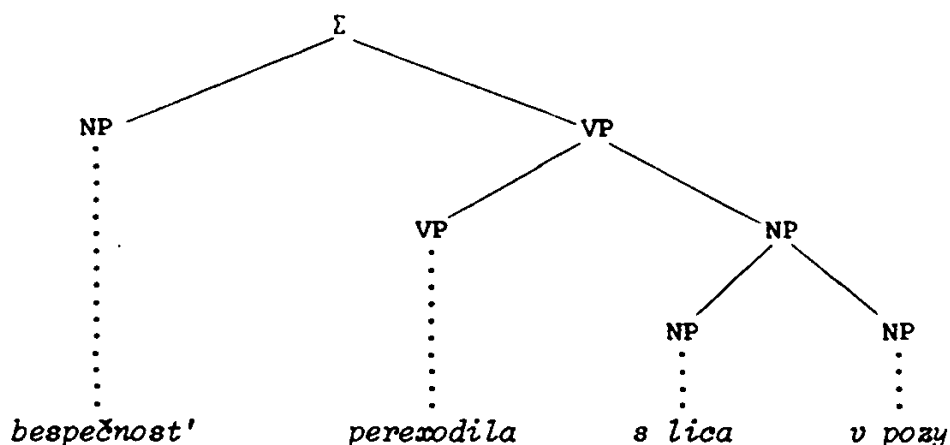
This means that in rules of the type "If C , then $y \rightarrow z + y + z$ ", C of a given sentence Σ^x can assume values specified in the sentences $\Sigma^{x-1}, \Sigma^{x-2}$, etc. To illustrate this, let us examine the third and fourth sentences of Gončarov's novel: *Oblomov* (numeration and italics are ours):

(3) *Mysl' guljala vol'noj pticej po licu, porxala v glazax, sadilas' na polu-otvorennye guby, prjatalas' v skladkax lba, potom sovsem propadala, i togda vo vsem lice teplilsja rovnyj svet bespečnosti* 'A thought moved like a free bird about his face, floated in his eyes, settled onto his half-open lips, hid itself in the folds of his brow, and began to fade out altogether, and then his whole face glowed with the calm light of one with no cares'

(4) *S lica bespečnost' perexodila v pozy vsego tela, daže v skladki šlafroka* 'From his face this carefree look transferred itself into the posture of his entire body, and even into the folds of his dressing-gown'

The fact that (4) contains the word order *S lica bespečnost' perexodila ...* (i.e., adverbial - subject - predicate) instead of the neutral order *Bezpečnost' perexodila s lica ...* (subject - predicate - adverbial) is obviously due to the lexical composition of (3): since (3) uses several units of the semantic field 'face' (*lico* 'face', *glaza* 'eyes', *guby* 'lips', *lob* 'forehead'), the circumstantial adverbial *s lica* 'from the face' is clearly a theme ("topic" in Hockett's terminology) in relation to the other parts of (4), and as such must stand at the head of the sentence. Such facts of functional sentence perspective will be re-

flected in the second phrase structure cycle component of the model proposed here. The first cycle will generate the phrase structure tree (grammatical markers are again omitted):



The second cycle will have to contain a general functional-sentence-perspective rule such as "If $I: (\Sigma^x)y \rightarrow SF(\Sigma^{x-1})$, then $y z \rightarrow \#y... + z$ ", that is, "If in the first IC cycle the phrase structure tree of a sentence Σ^x contains a constituent rewritten as a word belonging to a semantic field represented in sentence Σ^{x-1} , then this constituent is moved to the leftmost major juncture."²⁸ In other words, in order to explain the linear order of elements in some given sentence (or, to put it more accurately, in order to provide some measure of the probability of a certain order) one must have recourse to information from the preceding sentences. It follows that every sentence of the string $U \rightarrow \Sigma^1, \Sigma^2, \dots, \Sigma^n$ must contain not only syntactic and grammatical information, but also a certain amount of purely lexical information, since the semantic content of one sentence influences the grammatical structure (word order, intonation, etc.) of the following sentence(s).

To sum up: the model proposed here has the general form $U \rightarrow \Sigma^1, \Sigma^2, \dots, \Sigma^n$. Each sentence of U is described in a two-cycle phrase structure component, the first cycle of which generates all the constituents of the given sentence (including lexical classes) and the second of which arranges these constituents into the correct linear order, utilizing for this purpose information obtained from the first cycle of the given sentence and from first and second cycles of the preceding sentence(s).²⁹ Such a model, of course, still contains much that is unclear or debatable (for example, the relation between the proposed second phrase-structure cycle and the transformational component³⁰). Nonetheless, one may hope

that the article has provided some material toward further discussion of the optimal form of generative models.*

FOOTNOTES

- ¹ See: O. S. Axmanova and G. B. Mikaëljan, *Sovremennye sintaksičeskie teorii*, M., 1963, pp. 92-121.
- ² On the theoretical bases of generative grammar see: N. Chomsky, *Syntactic Structures*, 's-Gravenhage, 1957 (a Russian translation may be found in the collection *Novoe v lingvistike*, II, M., 1962). See also: R. Liz (R. Lees), "Čto takoe transformacija?" *VJa*, 1961, 3, and the recently published book by E. Bach, *An Introduction to Transformational Grammar*, New York, 1964.
- ³ Generally speaking, the question is somewhat more complex: one distinguishes between elementary and more complex transformations. Furthermore it is still far from settled what kinds of sentence should be considered kernels. On this see the interesting report by P. Schachter delivered at the IX International Congress of Linguists: P. Schachter, "Kernel and Nonkernel Sentences in Transformational Grammar," *Proceedings of the IX-th International Congress of Linguists*, The Hague, 1963.
- ⁴ Z. S. Harris, "Co-occurrence and Transformation in Linguistic Structure," *Language* XXXIII, 3(1), 1957 (Russian translation in the collection *Novoe v lingvistike*, II).
- ⁵ S. K. Šaumjan, P. A. Soboleva, *Applikativnaja poroždajuščaja model' i isčislenie transformacij v ruskom jazyke*, M., 1963. See also S. K. Šaumjan, "Poroždajuščaja lingvističeskaja model' na baze principa dvuxstupenčatosti," *VJa*, 1963, 2; P. A. Soboleva, "Opyt isčislenija transformacij na osnove teorii S. K. Šaumjana o poroždenii klassov slov v processe poroždenija grammatiki," *Problemy strukturnoj lingvistiki*, M., 1963.
- ⁶ C. F. Hockett, *A Course in Modern Linguistics*, New York, 1958, pp. 246-252.
- ⁷ Of these works we shall mention only some which relate to Slavic languages: M. Ivić, "Jedan problem slovenske sintagmatike osvetljen transformacionim metodom (gramatička uloga morfeme *se* u serbsko-xrvatskom jeziku)," *JF*, XXV, 1961-1962; F. Pap, "Transformacionnyj analiz russkix prisubstantivnyx konstrukcij s zavisimoj čast'ju - suščestvitel'nyx," *Slavica*, 1, 1961 (a part of this work also appeared in *Studia Slavica* VII, 1-3, 1961; R. Ružička, "O transformacionnom opisanli tak nazываемyx bezličnyx predloženiј v sovremenom ruskom literaturnom jazyke," *VJa*, 1963, 3; H. Walter, "Die Struktur der reflexiven Verben in der modernen bulgarischen Literatursprache," *ZfS*, VIII, 5, 1963; D. S. Worth, "Transform Analysis of Russian Instrumental Constructions," *Word*, XIV, 2-3, 1958 (Russian translation in the collection *Novoe v lingvistike*, II).
- ⁸ See I. I. Revzin, "O ponjatijax odnorodnogo jazyka i jazyka s polnoj transformaciej (JaPT) i vozmožnosti ix primenenija dlja strukturnoj tipologii," in the collection *Strukturno-tipologičeskie issledovanija*, M., 1962; A. V. Isačenko, "Transformacionnyj analiz kratkix i polnyx prilagatel'nyx," in the collection *Issledovanija po strukturnoj tipologii*, M., 1963; D. S. Worth, "The Role of Transformations in the Definition of Syntagmas in Russian and Other Slavic Languages," *American Contributions to the V International Congress of Slavists*, I, The Hague, 1963.
- ⁹ See: R. B. Lees, *The Grammar of English Nominalizations*, Bloomington, Indiana, 1960; Z. M. Volockaja, "Ustanovlenie otnoženija proizvodnosti meždu slovami (opyt primenenija transformacionnogo metoda)," *VJa*, 1960, 3; P. A. Soboleva, "Opyt

isčislenija transformacij na osnove teorii S. K. Šaumjana o poroždenii klassov slov v processe poroždenija grammatiki."

¹⁰ M. Halle, "O pravilax ruskogo sprjaženija (predvaritel'noe soobščenie)," *American Contributions to the V International Congress of Slavists*, I.

¹¹ M. Halle, *The Sound Pattern of Russian*, 's-Gravenhage, 1959 (See critique of this work: S. A. Ferguson, *Language*, XXXVIII, 3, 1962); ———, "Phonology in Generative Grammar," *Word*, XVIII, 1962; R. P. Stockwell, "The Place of Intonation in a Generative Grammar of English," *Language*, XXXVI, 3(1), 1960.

¹² E.g. S. K. Šaumjan's "applicational" model.

¹³ A. I. Smirnickij has keenly observed (*Sintaksis anglijskogo jazyka*, M., 1957, p. 65) that sentences exist in which semantic factors alone are sufficient to distinguish between subject and direct object even with complete grammatical homonymy and a reversed word order; see: *Ogromnoe bogatstvo prinosit sneg, Mir budet zaščičat' ves' mir*. This is true, however, only in a small number of cases. With the usual absence of semantic factors, the subject and object in sentences with grammatically homonymic forms can be distinguished only with the assistance of linear word order which, under such conditions, ceases to be redundant.

¹⁴ See: V. Mathesius, "O tak zvaném aktuálním členění větném," *Čeština a obecný jazykozpyt*, Praha, 1947. A survey of the voluminous literature on this topic is given by O. A. Lapteva, *VJa*, 1963, 4. See also: P. L. Garvin, "Czechoslovakia," *Current Trends in Linguistics, I, Soviet and East European Linguistics*, The Hague, 1963, p. 502 ff.

¹⁵ See: D. S. Worth, "Suprasyntactics," *Proceedings of the IX International Congress of Linguists*.

¹⁶ N. Chomsky, "Three Models for the Description of Language," *IRE Transactions on Informational Theory*, JT-2, 1956; ———, *Syntactic Structures*, pp. 26-48.

¹⁷ In this article the symbols following are used: Σ - sentence, *NP* - noun phrase, *VP* - verb phrase, *N* - noun, *V* - verb, *A* - adjective, *P* - preposition, *U* - utterance, *SF* - semantic field, *IC* - immediate constituents, *AUX* - auxiliary, *C* - context.

¹⁸ In English, which has been used as the basis for most work on ICs and generative grammar, the order *A + N* just as *NP + VP* is, in almost all cases, the only one possible. This evidently explains the lack of attention given by several American researchers to the problem of mixing temporal and non-temporal factors in rules of the type $X \rightarrow y + z$. But this is a peculiarity of one language and should not determine the structure of the generative mechanism generally.

¹⁹ This and several other Polish examples have been taken from *Učebnik pol'skogo jazyka*, by D. Vasilevskaja and S. Karolak (Warsaw, 1962), pp. 239-244.

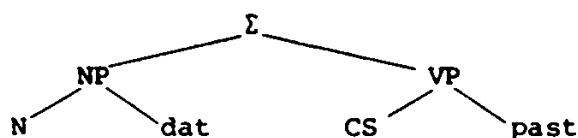
²⁰ The root of the problem in these Polish examples is the compulsory binarity imposed on the material by the IC model. It is this compulsory binarity that prevents the phrase *ekonomiczne przyczyny wojny* from being divided into segments by the most neutral and unmarked method - in the form of two word combinations: *ekonomiczne przyczyny* and *przyczyny wojny*. In other words, the IC model principally excludes the possibility of two endocentric word combinations having one and the same word as the main part. Such "welded" combinations are frequently encountered. About the weaknesses of a strictly dichotomous analysis see: R. E. Longacre, "String Constituent Analysis," *Language*, XXXVI, 1, 1960.

21 Class 4.1 contains substantives which have a temporal meaning; this class is structurally notable for the fact that words entering it can appear in the accusative case with intransitive verbs (*on spal ves' den'*) and with transitive verbs which have a direct object (*on žitaet ètu stat'ju uže celyj mesjac*). Roughly speaking, all the remaining cases enter class .4.2. Verb class .5 contains those verbs which can be combined with substantives of both substantive classes, .4.1 and .4.2. These classes are in need of much refinement and are given only as preliminary examples. In a significant number of cases separate lexical combinations turn out to be impossible or statistically extremely limited.

22 However, these morphological rules should come into effect only after the second cycle, since the final phonetic arrangement of morphemes depends (in certain cases) on the linear arrangement of morphemes: cf: the French, *un bel homme ~ un homme beau, Je l'ai donné à elle ~ Je lui l'ai donné* and so on.

23 Actually the situation is somewhat more complex. Rule 2.1 should also take into account the choice of a definite class of verbs in .5 (see *Den' klonilsja k veđeru* with the usual order *NP + VP*). However, the principle remains unchanged.

24 The rules 2.3-2.4 are not so self-evident as might appear at first glance. If the *VP* develops not into a verb but into one of the words of the so-called category of state (*CS*), we obtain a tree such as:



In this case, the second cycle will have to contain the rule "*CS past tense + past tense + CS*"; subsequently, morphonological rules rewrite *past tense* as *bylo* (just as this obtains in all *VPs* not containing the personal forms of the verb, cf: *Nežego bylo delat'*) in order to obtain, say, *Ivanu bylo skučno, Mne bylo xolodno* and so on. For the format of rule 2.2, see p. 92 below.

25 For the sake of simplicity, we have not taken into account aspect and number because they are irrelevant for our purpose. One should remember, too, that separate lexical combinations can prove to be improbable (cf: *Nastupilo trista let, Nastalo polminuty*). There is the opinion that generative grammar must produce literally all the grammatical sentences of a given language and not one other; the capability of the model to generate clearly improbable sentences of the type *Nastanet sem'sot pjat'desjat tri goda* is considered proof of its defectiveness (see, for example: P. Lackowski, "Words as Grammatical Primes," *Language*, XXXIX, 2, 1963. But such demands, as it seems to us, are not legitimate. There is a large number both of extraordinarily complex lexical and lexico-grammatical interactions and of the most diverse types of interplay of linguistic and non-linguistic situations, etc., which, all together, determine both separately and specifically the occurrence (or markedness) of a given syntactic combination. Because of these, it seems highly improbable that, in general, such a strong generative mechanism will ever exist which could generate all and only these specific combinations. It is much more advisable and more realistic to demand that a structure generate all the correct TYPES of sentence and only these types.

26 None of the extant models correlates well with actual speech behavior, but one can speculate on the possibility of a psycho-sociological model of language and speech, in which all the factors of the speech situation, including the actual

developing utterance, might be (metaphorically) conceived as a television-screen image fed back to the speaker, who can alter or develop his particular performance within the limits imposed by a grammatical black box; in other words, a performance model would consist of a competence model plus a feedback device inputting speech-situation factors into the context-sensitive part of the competence model.

²⁷ It is curious that the linguistic model which looks like a Markov chain and is correctly described by Chomsky as the weakest model of the individual sentence (*Syntactic Structures*, pp. 18-25) proves to be an extraordinarily strong model on the utterance level.

²⁸ This rule will also apply to the word *bespečnost'*, also found in the previous sentence. But so long as the rule about regulating *NP VP* precedes the rule about regulating *NP NP*, the phrase *s lica* will still appear in the correct place at the very beginning of the sentence.

²⁹ From this, it follows that the IC model by itself is not completely "connected to the phenotype level," as S. K. Šaumjan writes ("O logičeskom bazise lingvističeskoj teoriji," in the collection *Problemy strukturnoj lingvistiki*, p. 7).

³⁰ In the article of E. Bach, "The Order of Elements in a Transformational Grammar of German," *Language*, XXXVIII, 3(1), 1962, the linear transposition of words engendered by functional sentence perspective is treated as a component of the transformational component of the grammar.

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THE NOTION OF "STEM" IN RUSSIAN
FLEXION AND DERIVATION

It was Roman Jakobson who, in his seminal article on the Russian conjugation, first introduced the notion of a 'basic stem' into the description of Slavic flexional morphophonemics.¹ This work not only gave rise to a series of derivative articles treating the conjugation systems of other Slavic languages,² but was also directly responsible for much of the subsequent development in generative phonology, in the work of Morris Halle and others.³ While the final evaluation of these new directions in morphophonemics remains a task for the future, there can be no doubt as to the fecundity of Jakobson's original observations; it remains for others to extend these ideas and, as Pavle Ivić has recently put it, "to rectify the details and set the limits".⁴

To date, these new developments in Slavic morphophonemics have been concerned almost exclusively with the flexional system, and specifically with the Slavic verb. Flexion, however, is but one part of the morphological system of a language, and can hardly be viewed in the proper perspective without reference to the derivational system. The view, advanced by Isačenko and others, that the study of derivation belongs in lexicology, not morphology ("Die Bildung neuer Wörter hat mit der Morphologie, welche die Bildung von Formen ein und desselben Wortes untersucht, nichts zu schaffen")⁵ cannot be accepted. Derivation, like flexion, treats the rules for concatenation of morphemes and studies the meaning and formal properties of the entities formed by such concatenation; the obvious fact that the structured relations of morphemes and combinations thereof are far more complicated, far less transparently evident on the derivational level than within the flexional system, can only be regarded as a challenge to the investigator, but not as a reason for relegating the study of word-formation to the lexicon. Stankiewicz is correct in stating that the "derivational and paradigmatic levels are both synchronically and diachronically in a state of interdependence, and [that] neither level can be fully understood without considering the ways in which it circumscribes and modifies the other".⁶ These interrelations

are overtly apparent in the migration of flexional forms into different parts of speech, that is in the 'derivationalization' of paradigmatic oppositions (*domoj, krugóm, sduru, stolovaja*, etc.), a phenomenon which is by no means of purely diachronic interest,⁷ and are also clear in the near-impossibility of classifying all formal changes in words as specifically flexional or specifically derivational (participles from verbs, affectionate diminutives from substantives, aspect derivation, etc.). Stankiewicz has described Sapir's and Trubetzkoy's views of this matter as "continuous" and "polar" respectively,⁸ but it seems that neither the continuous nor the polar view can be supported adequately by the facts — or, to put it another way, the facts require a synthetic combination of these views. If, in fact, one examines all the morphological changes of Russian (i.e., all the changes classified as either flexional or derivational), it is clear that these changes can be described i.a. as a series of additions, subtractions and substitutions of grammatical categories and bundles thereof; the number and type of such categorial distinctions between two given forms provide a measure of what might be called the 'grammatical distance' between these two forms. The shortest grammatical distance or most clearly flexional form change is the substitution of one member of a series of correlative sub-categories for another such member (e.g., substitution of dative for nominative etc. within the category of case, of second for third within the category of person), whereas the greatest grammatical distance or most clearly derivational form change is that involving the maximum number of substitutions of categories (e.g., the formation of verbs from substantives, involving the elimination of case, change of gender from inherent to syntactic and restricted occurrence thereof, addition of the categories of aspect, mood, voice, person, tense). The form changes of Russian, in other words, are neither spread over an indivisibly continuous scale from pure flexion to pure derivation (Sapir's view), nor do they fall, each of them, irrevocably into the flexional or into the derivational system (Trubetzkoy's view); rather, these form changes lie along a finite and objectively describable series of steps from least to greatest grammatical distance, from 'most flexional' to 'most derivational' in terms of the traditional dichotomy, with each specific type of form change characterized by its specific constellation of categorial distinctions, that is localized at a specific point along the scale of grammatical distance and therefore standing in a specified relation both to the 'poles' of flexion and derivation and to the 'continuum' of other similarly localized types of morphological change.⁹

Furthermore, such a view not only helps to overcome the one-sidedness of both polar and continuous views, but also provides a more objective basis for drawing the line between flexion and derivation at a particular point along the scale of grammatical distance — since, after all, it is intuitively obvious (for the Slavic languages, at least) that we do indeed have two (partially overlapping) subsystems, flexional and derivational. Derivation can be defined to include all form changes involving addition or subtraction of inherent grammatical categories; flexion is then defined to include those form changes involving substitution of sub-categories or addition and subtraction of non-inherent, syntactic categories (e.g., the addition of syntactic gender involved in the change from non-past to past tense within the verb). By this criterion (which may, of course, be in need of further refinement) such form changes as aspect derivation (*pročitat'* → *pročitat'*, *nesti* → *nosit'*), formation of participles (*pročitat'* → *pročitannyj*, *ljubit'* → *ljubimyj*), of the comparative degree (*daleko* → *dal'she*, *bogatyj* → *bogatejšij*), etc., will be unequivocally defined as flexional, whereas even such an apparently minimal form change as that of participle to adjective (*ljubimyj* [*<ljubit'*] → *ljubimyj* adj.), involving as it does the loss of the category of aspect and the addition of that of comparison, must be classed as derivational. A special situation occurs in the case of form changes with zero grammatical distance, for example *gradus* 'degree of temperature' → *gradusnik* 'thermometer', *kriknut'* → *uskriknut'*, etc., and particularly in expressive or (in broader terms) 'evaluative' derivation, both quantitative and qualitative (*dom* → *domišče*, *belyj* → *belovatyj*, *belen'kij*, *tolknut'* → *tolkanut'*);¹⁰ in such form changes, which would have to be considered flexional by the criterion of grammatical distance alone (and which are in fact so considered by some scholars), it may be necessary to introduce additional classificatory criteria (types of semantic shift involved in the change, differences in syntactic valence, restrictions on further derivations, etc.). The distinction between flexion and derivation provided by the criterion of grammatical distance coincides with that between simple and complex paradigms ('paradigms' and 'hyperparadigms' respectively) on both morphological and syntactic levels.¹¹

We shall regard derivation, then, as an integral part of the morphological system, whose relation to the flexional system is one not of autonomy but of interdependence. In what follows we shall examine the notion of 'stem' on both the flexional and the derivational levels, discuss some of the methodological problems which arise in the description of derivational morphology, and suggest a formalism

linking the derivational and flexional systems into a coherent whole.

The interdependence of flexion and derivation must be viewed as hierarchal: the derivational system is anterior (in the synchronic sense) to the flexional system, since the stems with which the flexional system operates are to a large extent the end products of processes operating on the derivational level; flexion begins, so to speak, where derivation leaves off. The descriptive priority assigned to derivation does not mean, however, that the morphophonemic entities (stem and affix representations, type and order of rules) on that level can be chosen without regard to those on the flexional level. Rather, these entities and processes must be chosen on both levels with an eye to the descriptive economy of the system as a whole.¹² As a specific instance of derivational choices conditioned by factors on the flexional level, one could cite the redundancy of specifying sharpening of paired consonants before morphophonemic {-e}¹³ occurring in derivation (*belyj* → *belet'*, *mesto* → *mestečko*, etc.), since the same rule will be required to account for the sharpening of such consonants, e.g. before the {-e} of the loc. sing., on the flexional level.

The meaning of the term 'stem' on the flexional level is fairly straightforward. Any inflected word¹⁴ consists of a stem, a paradigm of endings, and a set of rules describing the phonetic consequences of combining the stem with each of the endings. Both the items and the processes of this type of description (i.e., the stems and endings on the one hand, the morphophonemic rules on the other) can be specified with varying degrees of explicitness and detail. The problem of just which facts to introduce at which points in a morphophonemic description, and the concomitant problem of the relative value of accuracy, specificity and economy in the several components of such a description (e.g., the value of simplification in stem notation vs. simplification in the morphophonemic rules) has only recently been accorded serious attention, so that a few words contributed to this discussion may not be out of place.

Traditional grammars of Russian, best exemplified by that of the Soviet Academy,¹⁵ simply list paradigms in their graphic shapes (usually adding stress), without permitting any problems of phonetics vs. phonemics vs. morphophonemics, or of stem notation as related to type and sequencing of rules, to appear at all; the word for 'ox' in the sing. appears as *vol* - *volá* - *volú* - *volá* - *volóm* - *volé*. Such a purely graphic recording of paradigms was looked down upon by phonemicists, who were fond of pointing out the priority of speech over writing and would have

preferred a higher degree of specificity, e.g., a phonemic transcription /vól - valá - valú - valá - valóm - val'é/. The phonemic view was unconcerned with phonetic (allophonic) details of the type [vól - valá - valú - valá - valóm - val'é], and equally and more importantly, unconcerned with the fact that certain phonemic phenomena were every bit as predictable as the subphonemic details (phonemically relevant but morphophonemically predictable reduction of vowels, sharpening before [é], etc.). Only in the presence of a morphophonemic transcription giving stems and endings in a form understood to be conventional - that is, having phonetic significance only when subjected to a specified set of morphophonemic rules - {vol+[#]16 - vol+á - vol+ú - vol+á - vol+óm - vol+é}, does it become evident that the old-fashioned graphic representation of flexion wasn't quite so prescientific after all - and this for the very good reason that the morphophonemic rules of the modern language operate on underlying forms which correspond more closely to the 'archaic' Russian alphabet than to their own phonemic or phonetic surface representations in modern Russian.¹⁷

It is apparent that the further removed from phonetic reality the stem representation is, the greater will be the burden falling upon the morphophonemic rules, and the greater, too, will be the possibility of arranging these rules in a way which at least purports to bring out underlying regularities. Much recent work in generative phonology represents a search for significant generalization in that part of the morphological description which consists of statements of process (i.e., in the morphophonemic rules), accompanied by a somewhat light-hearted lack of concern for the reality of the items (stems and affixes) undergoing the processes.¹⁸

Regardless of whether the stems and affixes are represented as strings of phonemes, morphophonemes, or incompletely specified distinctive feature statements (with the morphophonemic rules, correspondingly, describing phonemic alternation, selection, or further feature specification), the degree of phonetic specificity is higher in the forms resulting from the application of the rules than in the forms to which the rules are applied; in other words, all such descriptions have in common a stem represented by a string of symbols associated with a semantic constant (the 'meaning' of the word) but a phonetic variable, and a set of rules the function of which is to assign a series of highly restricted ranges of variation to this initial variable (e.g., to assign a specifically restricted phonetic value to the stem in the presence of a certain shape of ending, etc.). One can

refer to this assignment of restricted ranges of phonetic variation as the 'fixation' of the initial variable, bearing in mind that the term 'fixation' is a convenient oversimplification, since the code provides for considerable social and individual variation in the final phonetic realization of morphophonemic entities.¹⁹ Fixation of phonetic variables can be observed in the stem {stol-} 'table', in which the final {-l-} represents a variable ranging over the values /l/ and /l'/, while the {-o-} of the same stem ranges over the phonemic /ó/ and /a/ and phonetic [ó], [ʌ] in flexion and [ó], [ʌ] and [ə] in derivation (cf. *stolovát'sja*). Similarly, the {-#-} of the stem {búl#k-} 'bun' represents a variable ranging over the values [ø] and [ə] in flexion (in *búlka* and gen. pl. *búlok* respectively) but fixed as [ə] in derived words (*búločka*, gen. pl. *búloček*). The second {e} of {bereg-} 'bank, shore' assumes the values [ɐ] and [i^e] in flexion (*béreg*, nom. pl. *beregá*) and additionally [é] in derivation (*přiberéž'e*).

The fact that the range of phonetic variation of a given initial morphophoneme is not the same in the flexional and derivational systems gives rise to problems of stem notation, and in particular to the problem of determining the appropriate degree of phonetic specificity on various levels of representation. In the verb *vesti*, for example, a stem vowel {i} (as in {v'id-}) suffices to describe the present tense, infinitive and imperative ([v'i^edú] etc., [v'i^es't'f], [v'i^ed'f] etc.²⁰), but to include the past tense [v'ól] the stem must contain morphophonemic {o}, i.e. {v'od-}. If in addition we wish this stem to serve to generate the participial forms *vedšij* etc. (and whether these are considered part of the flexion or derived forms is irrelevant to the present point), then the stem vowel must be specified only as + vocalic, - consonantal, - diffuse, and - compact,²¹ but remain unspecified as to tonality; in other words, this segment must be identified only as a mid vowel, without specification as front or back. Alternatively, one could specify {e} in the stem, and include a rule to the effect that -low tonality become + low tonality in the environment: ___ {past}, but this would mean that the initial stem no longer represents the actual range of variation occurring in the stem.

A similar example can be taken from aspect formation, which as noted above is closer to derivation than is tense variation. The initial consonantal segment of *vesti* (and its perfective derivatives *provesti*, *uvesti* etc.) is a sharpened {v'-}, but if one wishes a single stem notation to serve to generate the non-determined *vodit'* (and *provodit'*, *uvodit'* etc.), one must either specify that the sharpened

{v'} become -sharp in the process of deriving *vodit'* from *vesti* etc. (thus rendering the original stem less than an adequate generalization), or one must leave the initial segment unspecified as to sharpening, thus obtaining an underlying stem representation which does serve as an adequate generalization, covering the entire range of phonetic variation occurring in the morpheme, but which is then a higher degree of abstraction (since the underlying stem then corresponds to no single sequence of phonemes actually occurring as the final representation of the morpheme) and throwing a larger burden on the morphophonemic rules, which will have to specify that the segment becomes -sharp in the case of *vodit'* and +sharp in that of *vesti*. Generalization over the entire system is obtained at the cost of lesser specificity in at least some important parts of that system.²²

Let us look now at the notion of stem as it might apply to the derivational system. Most recent grammars simply present a derivational stem ('*proizvodjaščaja osnova*') in its Cyrillic shape (with a concession to phonemic accuracy in the form of a Latin *j* for /j/), the addition of an affix to which produces a similarly transcribed derived stem ('*proizvodnaja osnova*') adequate to predict the flexional forms of the derived word.²³ The affixes themselves are usually presented in the form of catalogues, as Stankiewicz has noted;²⁴ the principal weakness of this approach, however, is not that it is 'stem-oriented', i.e., concerned with the immediate constituent structure of stems (although a somewhat superficial IC view of derived stem structure does crop up now and then in the literature²⁵), but rather that it makes no attempt to describe stems precisely, nor to distinguish between the 'stem' of a word in flexion (i.e., that unit necessary in order to predict the paradigmatic forms of the word) and the 'stem' of a word in derivation (i.e., that unit necessary to predict the shape of secondary, derived stems). Yet it is obvious that a coincidence of flexional and derivational stems, while by no means infrequent, is but a special (not the general) case. Thus, the same {ruk-} which serves to describe the flexional forms [ruká - ruk'í] etc. will also serve to describe the derived {rúč#k-} and indirectly the latter's flexional forms [rúčkə, rúčk'i, ..., rúč'bk], etc., but the flexional stem of *igrá*, {igr-} (cf. gen. pl. [igr]), cannot serve to generate the derived stem {igór#k-} of the diminutive *igórka*, gen. pl. *igórok*; cf. also *igórnyj* and similar sets such as *iglá*, gen. pl. *igl*, derived *igólka*, gen. pl. *igólok*. The flexional stem of *bereg* is {b'er'ig-}, from which one can predict the paradigmatic forms [b'é'r'bk, b'é'r'bgə], nom. pl. [b'br'ieqá], etc. and some but not all of the derivatives of this word (*berežók*

and *náberežnaja*, but not *poberéž'e* or *bezbréžnyj*). The morphophonemic {-o-} of {v'os'#n-} will suffice to generate the flexion [v'i^esná], gen. pl. [v'ós'ɲn], etc., and would serve to produce the derived adjective *vesénnij*, but cannot possibly serve as a base for the adjective *vešnij* = {v'ěšn'-} (this last example poses the same morphophonemic problem as *vesti* - *věi* - *védšij*, discussed above).

As was the case with the examples taken from the flexional system above (*vesti* etc., *vodit'*), one can obtain generalization in the stem at the cost of lessened specificity in some parts of the system and/or greater complexity in the morphophonemic rules. To return to the family of *bereg* for an example: if one takes as a base not the 'narrow' morphophonemic representation {b'er'ig-} (by 'narrow' we mean a morphophonemic representation which approaches a phonemic transcription as closely as the paradigm allows; e.g., the second vowel is rendered as {i}, which suffices to generate the phonetic [ɨ] and [i^e] of *béreg* and *beregá*), but a 'broad' morphophonemic transcription such as {bereg-} (without specification of vowel reduction or consonant sharpening), will enable one to generate the derived words *poberéž'e*, *berežók*, *náberežnaja* (= {poberéž#j-},²⁶ {berež#k-}, {náberežn-}), although still not the non-pleophonic *bezbréžnyj*. Leaving aside the problem of *bezbréžnyj* for the moment, what is gained by using the broader initial stem representation is a form of the morpheme which adequately represents the breadth of phonetic variety in which the morpheme appears; what is lost is the close correspondence between the morphophonemic representation of the stem and the actual phonetic shape of the word which is the base of the derivational nest or word-family. In a narrow stem representation, the stem {b'ér'ig} is closer to, say, nom. sing. /b'ér'ik/ = [b'ér'ɨk] than it is to the corresponding segment of the derived word *poberéž'e*, namely /-b'ir'éž-/ = [-b'ir'éž-]. Since *poberéž'e* is derived from *bereg*, there is a strong intuitive reason for wishing the stem to resemble the latter rather than the former, and for the change of the second stem vowel ({i} → {é}) to be considered part of the derivational process. A broad stem representation, on the other hand, e.g. {bereg-}, eliminates the explicit statement of the hierarchal relation between *bereg* and *poberéž'e*, since {bereg-} is no closer to the one than to the other.²⁷ Furthermore, the broad stem representation obscures the distinction between the rules operating on the flexional level (i.e., those which derive [b'ér'ɨk], [b'ér'ɨgə] etc. from {bereg-}) and those which operate on the derivational level (deriving, e.g., {poberéž#j-} from {bereg-}); for example, if stress is simply assigned to one syllable in deriving /b'ér'ik/ etc.,

and to another in deriving /pab'ir'ěžja/ (via {poberěž#j-}, if one will), the function of stress shifts in derivation vs. those in flexion is, to say the least, difficult to determine (cf. the fact that stress shifts from stem to affix are frequent in both flexion and derivation, whereas shifts from one syllable of a stem to another syllable within the stem are frequent in derivation but exceedingly rare in flexion – and then are usually redundant, accompanying other types of stem change; cf. the stress shifts in the jotated plurals of masculine nouns, type *kólos*, gen. *kólosa*; plur. *kolós'ja*, gen. *kolós'ev*).

It was noted above that an extremely broad stem representation, making use of distinctive feature notation, could provide a stem from which could be generated a larger number of derivatives than is possible with the traditional alphabetical morphophonemic representations. Even a maximally broad representation, however, cannot cover all cases; there remain several types of derivational process in which it is quite impossible to generate derived words out of the stems of the words from which they are derived.

Many of the cases in which derived words show morphophonemic changes which cannot be predicted from any of the stem representations discussed so far have to do with vowel/zero alternations. The subject of vowel/zero alternations in derivation requires a special study; all we can do here is to sketch in some of the ways this alternation differs in derivation from its conduct in flexion.

First, one has cases of the type *igrá*, gen. pl. *igr*, derived adjective *igórnyj*, touched on above; cf. also *baraxló* (no plur.), dimin. *baraxólka*; *ikrá*, gen. pl. *ikr*, derived *ikórka*, *ikórnyj*; *týkva*, gen. pl. *tykv*, derived *týkovka*, *týkovnyj* (and *týkvennyj*); *slúžba*, gen. pl. *služb*, derived *služěbnyj*, and many similar instances. Clearly, one has to do in such cases with stems containing, as it were, a 'derivational {#}' but not 'flexional {#}'. Just as the 'flexional {#}' must be marked as such, to distinguish it from [o] < {o} and from the absence of any morphophoneme (e.g., to distinguish the type *platók*, gen. *platká* from the type *porók*, gen. *poróka* on the one hand, and to distinguish the type *sosná*, gen. pl. *sósen* from the type *volná*, gen. pl. *voln* on the other hand), so must the 'derivational {#}' be marked in some explicit way, to distinguish the type *slúžba*, gen. pl. *služb*, derived *služěbnyj* (cf. *bězdna*, gen. pl. *bezdn*, derived *bezdbnyj*, in which the appearance not only of [ó] but also of the [d] is motivated only by the morphophonemics of derivation) from the type *vérba*, gen. pl. *verb*, derived *věrbnyj*. An adequate representation of the stem must obviously distinguish among (1)

forms with no morphophonemic zero at all (type *volná*), (2) forms with a morphophonemic {#} apparent in both flexion and derivation (type *pěsnja*, gen. pl. *pěsen*, derived *pěsennyj*), (3) forms which manifest no {#} in their flexion, but which show such a vowel/zero morphophoneme in derivation (type *igrá*, *igr* but *igórnnyj*, *služba*, *služb* but *služěbnnyj* etc.), and (surprisingly enough) even (4) forms which show a {#} in flexion, but not in derivation (type *másló*, gen. pl. *másel*, adj. *máslennyj* or *čisló*, gen. pl. *čisel*, adj. *čislennyj*, as opposed to those forms which also show {#} in flexion, but which retain it in the form of {e} in derivation, e.g. *kréslo*, gen. pl. *krésel*, adj. *krésel'nyj*, *vesló*, gen. pl. *věsel*, adj. *vesél'nyj*).²⁸ Towards the end of this article, we shall suggest a possible way to represent these facts explicitly.

Secondly, Russian contains a good many word-families in which the root morpheme alternates between pleophonic and non-pleophonic forms (*běreg* but *bezbrěžnyj*, *molodój* but *mládšij*, *molokó* but *mlěčnyj*, etc.). The reasons for this are well-known, and need not concern us here. Such alternations cannot be specified on purely phonetic criteria (reflecting the East and South Slavic developments of **tort* etc.), because of the existence of an equally large group of words with identical phonetic sequences (i.e., with the same phonetic structure as the reflexes of old **tort* etc. groups, but of different origin; the same rules which permit *bezbrěžnyj* to be derived from *běreg* will also permit **bescremónnyj* from *ceremónija*, those which generate *mlěčnyj* from *molokó* will generate **zlětnyj* (!) from *zóloto*, etc.). It is clear that the initial stem representation must distinguish between those words which (when specific affixes are attached) permit only pleophonic derivatives of pleophonic stems (type *besporóčnyj*), those which permit only non-pleophonic derivatives from pleophonic stems (type *bezbrěžnyj*), and those which permit both types of derivation (*besprerýunnyj*, *bespererýunnyj*) – plus, of course, the corresponding types of derivation from non-pleophonic stems. This question too would require special study before the proper combination of stem representation and morphophonemic rules could be devised; for the present, suffice it to say that it is clear that the stem representations will have to distinguish among these derivationally different types.

The derivational alternations arising from the reflexes of liquid diphthongs are complicated by those originating in old grades of ablaut and those due to different reflexes of the reduced vowels. In such cases, vocalic alternations are often accompanied by alternations in the sharpening of consonants, e.g., {b'#j-}

[b'jú, b'éj] vs. {bój-}, *sobrát'* / *sobirát'* / *sobór*, *šit'* / *š'ju* / *šej* / *šov*, etc.²⁹ An accurate classification of these multifarious alternation types must await a more exhaustive collocation of word-families than is available at present;³⁰ in any case, it is clear that the stem representations must distinguish between apophonic and non-apophonic derivation (types *brestí* / *brod* and *cvestí* / *cvet*).

Finally, let us note in passing that there are word-families in which no one stem can be taken as the base for derivation without imposing upon the family a hierarchy unwarranted by the words themselves, for example the group *makedónec* = {makedón#c-}, *makedónka* = {makedón#k-}, *Makedónija* = {makedón'ij-}, *makedónskij* = {makedónsk-}; no one of these morphophonemic stems can be taken as the base to derive the other three without establishing a hierarchal order unjustified by the linguistic material.³¹ In such cases, the derivational system must contain a stem such as {makedón-} from which all the given flexional stems can be generated (more on this below).

The derivational types discussed in the preceding paragraphs should be adequate to demonstrate the thesis that it is by no means invariably possible to generate the stems of derived words out of the stems best suited to represent the derivational bases (*proizvodjaščie osnovy*) upon which they are formed. How, then, can one formalize the relation between derivational bases and the words derived therefrom?

A provocative solution to this problem was proposed by Stankiewicz in 1962.³² In accord with his view (with which we can only agree) that flexion and derivation are two separate but interrelated systems, Stankiewicz proposes to set up two distinct stems for each word-family, one for the base word and the other for the derivatives, all derivatives being treated as containing the same underlying stem. For example, to return to a word-family which has already figured in the discussion, Stankiewicz establishes a 'paradigmatic base form' for the word *bereg*, namely {b'ér'ig-} (*n.b.* the narrow morphophonemic transcription), and a separate 'derivational base form', apparently also inherent to the word *bereg*, namely {b'i-r'ég-}, from which one can derive, e.g., *poberéž'e*. Similarly, the word *borodá* 'beard' has a paradigmatic base form {bórad-}, and a derivational base {baród-} (*cf.* *podboródok*); the corresponding paradigmatic and derivational bases for *vesná* 'spring', *désjat'* 'ten', *igrá* 'game' and *iglá* 'needle' are given as {v'os'#n-} (*cf.* pl. *věsny*) and {v'is'#n-} (*cf.* *vesémnij*), {d'és'it'-} and {d'is'át-} (*cf.* *desját'j*), {igr-} and {ig#r-}, {igl-} and {ig#l-} respectively. Cases such as

otobráť' / otbirát' versus *otbór* are handled in similar fashion: {b#r-/b'ir-} versus {bor-}. In passing, one may note the gain in specificity obtained in such a representation of stems: in effect, aspect derivation utilizes a different set of alternations than does substantive derivation from verbs (here, {#/i} versus {#/ó}). It must not be forgotten, however, that such specificity can be located in the morphophonemic rules just as well as in the stem representation.

There is no doubt that Stankiewicz's two-stem proposal is a very interesting and fruitful one. However, when one attempts to use this type of description with a larger number of words, certain difficulties become apparent, and one is brought to the conclusion that the two-stem concept (one stem for the flexional system, another for the derivational system) is in need of certain refinements. Let us examine the two-stem system more closely.

First, there remain the difficulties occasioned by derivations of the type *béreg* + *bezbréžnyj*, *slúžba* + *služébnýj*, the {makedón-} group, etc., all discussed above. One cannot establish a derivational base form {bréž-}, since this would account only for *bezbréžnyj* and *pribréžnyj*, but not for *beregovǫj*, *náberežnaja*, *priberéžnyj*; to establish a set of more than one derivational base form would be a contradiction in terms.

Secondly — leaving the non-plephonic forms aside for the moment — one notes that a derivational base form such as Stankiewicz's {b'ir'éǵ-} is indeed better suited than the paradigmatic base form {b'éř'ig-} to generate *poberéž'e*, in which the stress falls on the second stem vowel, but it is in no way closer to the phonetic shapes of several other derivatives than is the paradigmatic base form: derivatives like *náberežnaja* = [náb'br'ěžn-], *záberegi* = [záb'br'ěg'i], *beregovǫj* = [b'br'ěgʌv-] and *berežók* = [b'br'iežók-] can be formed from the paradigmatic base {b'éř'ig-} just as easily as from the derivational base {b'ir'éǵ-}. Similarly, either the paradigmatic {bórad-} or the derivational {baród-} will serve equally well to derive *borodátyj*, *borodáč*, *borodástyj*, etc. Neither {v'os'#n-} nor {v'i-s'ńn-} will generate *věšnij*, *vešnják*, but either will do equally well for *vesnjánka*. In some cases, the results obtained by the two-stem system in a narrow transcription are paradoxical indeed. Thus, while it is true that only the derivational base form {d'is'át-} and not the paradigmatic {d'éř'it-} will serve to generate *desjátyj*, either base will do equally well for *desjaterík*, *desjatína* etc., and it even turns out that only the PARADIGMATIC base will serve to DERIVE *désjatero*, *désjat'ju*!

A less obvious inadequacy of the narrowly transcribed two-stem system is found in the fact that the degree of specificity in stem descriptions varies from stem to stem in an arbitrary manner. The paradigmatic bases are chosen to approximate the phonemic composition of the base word as closely as the morphophonemics permit; this results in a quasi-phonemic transcription containing phonemes and morphophonemes, including such narrowly specified items as sharpened consonants before {e} and such morphophonemic abstractions as {#}. The derivational base forms, on the other hand, contain the same mixture of phonemic and morphophonemic symbols, but approximate the phonemic shapes of the derivatives as whose base they serve sometimes as closely as with the paradigmatic bases, sometimes much less closely. For example, to return to the family of *béreg*, the derivational base form {b'ir'ég-} reflects the vocalism of /b'ir'igavój/ less closely than that of /pab'ir'éžja/, and the derivational base {ig#l-} contains a {#} necessary to generate *igólka* and *igól'nik* but quite irrelevant to *iglístyj*, *iglovátyj*, etc. The taxonomic advantages, such as they are, which accrue from the description of stems in a narrow quasi-phonemic manner (showing sharpening before {e}, rendering etymological and derivationally morphophonemic {e} by {i} if it doesn't happen to be stressed in the given word, etc.) tend to evaporate in the two-stem system with one single derivational base representing a whole group of derived words, to some of which it is closely connected phonemically, to others of which it is no more closely related than is the paradigmatic base form.

A good many, but not all of the difficulties noted above would disappear if both the paradigmatic and the derivational base forms were given in a broader transcription. So, however, would the utility of the two-stem system (in most cases): the broadly transcribed stem of the word *bereg* is {bereg-}, which is identical to the broadly transcribed stem {bereg-} needed to generate *poberéž'e*, *záberegi*, *beregovóžj*, etc. Similarly, a single stem {v'os'#n-} will serve equally well as the paradigmatic base of *vesná*, gen. pl. *věsen* and as the derivational base of *vesěnnýj*. The advantages of throwing a greater descriptive burden onto the morphophonemic rules (i.e., by leaving the specification of consonant sharpening and vowel reduction to the morphophonemics of flexion, after the derivation is complete — proceeding, in other words, from {bereg} to {poberéž#j-} and only then to [pəb'i^er'éžjə], etc.) would seem to be clear, since the taxonomic advantages of narrow stem notation, although great in principle, proved largely illusory in practice, as was noted above.

All of this does not mean, however, that the two-stem system proposed by Stankiewicz must be abandoned. On the contrary, it is only a two-stem system which can account for facts of the type *bereg/bezbrežnyj*, *igra/igornyj*, the *make-don-* cluster, *bresti/brod*, etc. That is, Stankiewicz is quite correct in assuming that an adequate description of the morphological system as a whole cannot avoid a notation specifying the processes which operate on the derivational level, and keeping these distinct from those operating on the flexional level. We shall accept, then, the system of flexional and derivational stems, and attempt to see how these two different values attached to the notion of 'stem' (one within the paradigmatic system, one within the derivational or hyperparadigmatic system) can be formally related.

Even if all the disadvantages of the two-stem system which arise from the overly narrow transcription discussed in the preceding pages were to be eliminated, one is still left with two separate base forms, one paradigmatic and one derivational; these two stems are simply given, with no formally specified relation between them. That is, we find *mutatis mutandis* the same situation which existed in verb flexion before Jakobson's 1948 article,³³ when the venerable tradition of two stems — the so-called 'infinitive stem' and 'present stem' — each of which served to predict a certain number of form groups, had not yet been abandoned. Prior to the appearance of Jakobson's article, both of these stems had simply to be accepted as given, neither being derivable from the other by any generally applicable rules — in other words, the two halves ('present' and 'infinitive') of the verb flexion were artificially separated until 1948, when Jakobson's introduction of a 'basic stem' and morphophonemic rules of the type now termed generative made it possible to uncover the underlying structural unity of this flexional system. A similarly artificial division now separates the two halves of the morphological system as a whole: even the two-stem system proposed by Stankiewicz leaves the flexional and derivational systems unconnected and, as it were, 'separate but equal'. In the remainder of this article we shall propose — as a basis for further discussion — a descriptive framework which makes it possible to formalize the relations between the derivational and flexional systems. The framework proposed here, as will become evident, attempts to modify Stankiewicz's two-stem proposal in the light of Jakobson's concept of a basic stem, such a basic stem standing in a predictive relation (directly or indirectly) to all the actually occurring forms of the given system, without necessarily being

identical to any one of these actual forms.

It is clear that each individual word has its own flexional stem (Stankiewicz's 'paradigmatic base form'; henceforth, F-stem), from which the morphophonemic rules of the flexional system will generate all and only the actually occurring phonetic shapes of the given word's paradigm. The specific nature of these flexional morphophonemic rules (henceforth, F-rules) is not relevant to the present proposal, although one may suppose that they will take the form of an ordered set, perhaps with one or more cyclical components. The F-stems themselves can be rendered in a broad or in a narrow transcription (with concomitant complexity or simplicity in the F-rules); this issue too is not directly relevant to the framework being proposed here, but let us assume a relatively broad morphophonemic transcription of F-stems which leaves vowel reduction, predictable sharpening, and the resolution of vowel/zero morphophonemes to the F-rules. A given word-family will thus consist of a number of such F-stems, e.g.

<i>bereg</i>	=	{béreg-}
<i>beregovoj</i>	=	{beregov-}
<i>poberež'e</i>	=	{poberež#j-}
<i>zaberegi</i>	=	{zábereg-}
<i>bezbrežnyj</i>	=	{bezbrež#n-}
<i>bezbrežnost'</i>	=	{bezbrežnost'-}
<i>berežok</i>	=	{berež#k-}
etc.		

Similarly, the "Macedonian" family already discussed will contain the F-stems:

<i>Makedonija</i>	=	{makedón'ij-}
<i>makedonec</i>	=	{makedón#c-}
<i>makedonka</i>	=	{makedón#k-}
<i>makedonskij</i>	=	{makedónsk-}

The task of derivational morphophonemics then becomes quite clear: it must specify the formal relations existing among the several F-stems of a given word-family. How can this best be accomplished?

In the case of word-families like the second above (*Makedonija*, etc.), the utility of a basic stem becomes apparent at once, since as we have seen there is no non-artificial way to derive three of the four F-stems from a fourth. We shall posit, therefore, the existence of a DERIVATIONAL BASIC STEM, defined as that

entity from which all of the given F-stems can most economically be predicted. In the case of the given family, the derivational basic stem (henceforth, D-basic stem) will have the form {MAKEDÓN-} (the capital letters signifying that the given segment is a derivational, not a flexional stem), to which the addition of the suffixes {ij}, {#c}, {#k} and {sk}, plus the concomitant morphophonemic rules (e.g., {N} → {n'} in the environment: ____ {ij}) will generate the four F-stems of the given family. Rules operating on D-stems will be called derivational rules (D-rules), to distinguish them from the F-rules operating on flexional stems. D-rules generate F-stems out of D-stems, whereas F-rules generate phonetic shapes out of F-stems. The similarities and differences between the derivational and flexional systems will be specified by similarities and differences between the D- and the F-rules (as well as by those between the D- and the F-stems).

In cases where a word-family consists of a headword and a number of derivatives thereof (the type *bereg* above), the descriptive framework must make this fact clear. Whereas the several F-stems {makedón'ij-}, {makedón#c-}, etc. were all derived "simultaneously" from an underlying D-basic stem {MAKEDÓN-}, the F-stems {beregov-}, {poberéž#j-}, {zábereg-} etc. must be shown to be derived from the WORD *bereg*, and not simply derived along with the F-stem of *bereg*, {béreg-}, from an underlying form. The descriptive framework, in other words, must not only avoid imposing a hierarchy of derivation where none exists, but must equally carefully avoid obscuring those real hierarchies which do exist. This can be attained only if the stem from which (for example) {berež#k-}, {bezbréž#n-} etc. are generated is clearly identified as a D-stem of the word *bereg*, since *berežok*, *bezbrežnyj* etc. are clearly if intuitively recognized as derivatives of *bereg*, that is, as subordinated to the latter within the derivational system. How this is accomplished in the framework suggested here becomes clear when we consider for a moment what the process of deriving one word from another actually consists of.

Derivation, although usually treated as consisting of affixation and stem modifications ensuing therefrom, actually contains a further process: the addition of a paradigm of endings. If *služba* is derived from *služit'*, it is not merely the affix {-b-} which is added to the verb stem (we are not concerned here with representations), but this {-b-} plus the entire grammatical paradigm {a - i - e - u, etc.}. The creation of one word out of another, then, consists of three processes: (1) affixation (including zero affixation, as in *gost' = {gost'-} + gostja = {gost'-}*), and negative affixation or truncation, as in *glubokij = {glubók-} +*

glub' = {*glub'-*}); (2) addition or substitution of paradigms, "paradigmation", the particular paradigm being in many cases a concomitant of the particular affix added; (3) stem- (and/or affix-) change or alternation, occasioned by affixation. Bearing in mind, then, that word-formation consists of affixation (possibly zero affixation) and paradigmation (also possibly zero), one can describe the generation of the word *bereg* as follows:

(1) A D-basic stem, which must by definition exist for every word-family of the language, must contain all the information which will permit the derivation not only of the headword *bereg* but also of all the latter's derivatives. Such a D-basic stem is {B<E>REG-}. The morphemic status of such D-basic stems, particularly in large and complicated word-families, must be the subject of further investigation; in any case, this is still but a stem, unassociated with any particular word.

(2) The WORD *bereg* is generated by the addition of affix (here, zero) and paradigm (here, {∅ - a - u etc.}), i.e.

$$\{B<E>REG-\} \rightarrow \{B<E>REG-\} + \{P^{\circ}\} + \{\emptyset\}^{34}$$

It is at this point that the word *bereg* comes into existence. The string {B<E>REG-} + {P^o} + {∅} is the highest-level, i.e. most abstract representation of the word *bereg*. This most abstract, 'highest', 'deepest' etc. level of representation of the headword will then serve for two further types of generative process, namely the generation of the F-stem of *bereg*, {béreg-} (and by implication the concomitant paradigm) on the one hand, and the generation of all derived words on the other. We shall call this most abstract representation of the word *bereg*, from which not only its F-stem but also all derived stems are to be generated, the derivational stem (D-stem) of the word *bereg*. The D-stem of a headword within a word-family is, then, equal to the D-basic stem of the family plus segments representing affixation and paradigmation.

(3) The F-stem of *bereg* is generated from the D-stem by rules which must specify whether the brackets < > are to be removed (leaving {BEREG-}, as in the case of this particular word) or whether the item in brackets is to be removed (which would leave {B< >REG-}, from which an automatic rule would eliminate {< >}). Subsequent rules will eliminate boundary markers and introduce those other morphophonemic changes which are part of the derivational process, resulting in the given case in {béreg-} and its paradigm.

It is clear that the D-rules consist of two components: a first component,

specifying affixation and paradigmation (and thus creating the word out of the D-basic stem); a second component, describing the stem alternations (including the choice of {<E>} → {E} or {<>}) etc. which occur in the creation of the word. These two components of the D-rules can be termed the D-D rules (generating D-stems from D-basic or — cf. below — D-stems) and D-F rules (generating F-stems out of D-stems).

(4) The F-rules, operating on the F-stem resulting from the D-F rules, will generate the ultimate phonetic representation of each form of the given word's paradigm.

The generation of derivatives is accomplished in much the same way as the generation of the F-stem of the headword. The rules of derivation (say, of *beregovoj* and *bezbrežnyj* from *bereg*) must of course operate not on the F-stem of *bereg* ({béreg-}), which is insufficiently general to permit both pleophonic and non-pleophonic derivation, but on this word's deeper morphological structure, namely on its D-stem. In other words, D-rules operate on D-stems. The rules generating *beregovoj* from *bereg* will have the form:

D-stem		{B < E > REG}
D-D rules	→	{B < E > REG} + {ov} + {oj} ³⁵
D-F rules	→	{beregov+}
F-rules	→	[b'br'bgʌv-]

The resolution of morphophonemic alternations involving entities such as {<E>} into the vocalic or the zero alternant will obviously be made as a consequence of the specific affixation undergone by the D-basic stem. In the case of the non-pleophonic *bezbrežnyj*, the derivation will appear as:

D-stem		{B < E > REG}
D-D rules	→	{B < E > REG} + {bez ... #n-} ³⁶ + {oj}
D-F rules	→	{bezbréž#n-}

in which one of the D-D rules will specify that {<E>} → zero, another the transposition of elements, etc.

In the case of doublets, e.g., *pribrežnyj* / *priberežnyj*, the D-F rules dependent upon {pri ... #n-} will contain an optional rule for {<E>} → zero, thus generating both pleophonic and non-pleophonic forms.

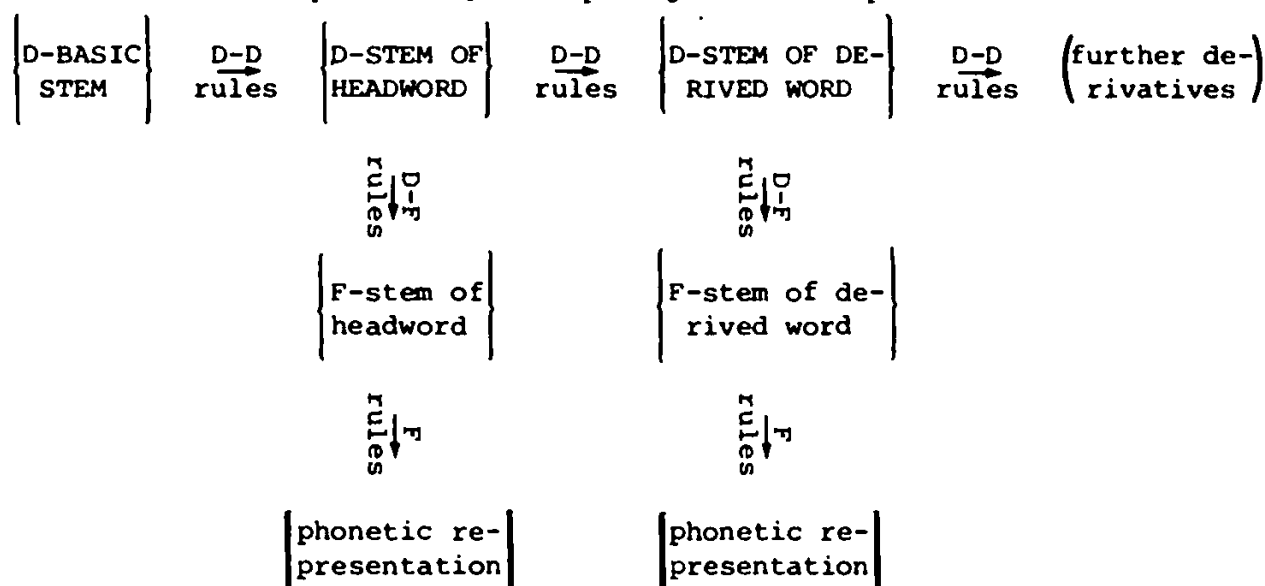
Further ('second-level') derivation will be accomplished by rules operating on the D-stem of the given word. The point cannot be argued here for lack of

space, but it appears that in spite of the fact further derivatives usually repeat the F-stem shape of their bases, there are enough cases of truncation and other alternations in the derivational stems (cf. *zažigatel'naja bomba* + *zažigalka*) to warrant the assertion that this is a coincidence of surface structure resulting from the application of similar rules to the same deep structure. However, it must be granted that the mechanics of second- (third-, etc.) level derivation require further study.

The fact that derivation operates not on the 'surface' F-stem of the derivational base (*bereg*), but on its 'deep' or underlying D-stem, is only to be expected, in the light of recent work in syntax and semantics.

The task that was set for the rules of derivational morphology, namely that of specifying the relationships existing among the several F-stems of a word-family, has now been accomplished. The F-stem {bezbréž#n-} is related to the F-stem {beregov-} via the D-stems of these two words, the D-stems themselves being related by the sets of rules which generate them from the D-stem of their derivational base *bereg*. The F-stem of the headword *bereg* is related to all derivatives by the same routes (i.e., by the same sets of rules) as just outlined, plus D-F rules generating {bereg-} from its D-stem {B<E>REG} + {P⁰} ... The descriptive framework which formalizes these relations can be seen schematically as:

TABLE I

Components of a Morphological Description

Needless to say, there are a great many problems connected with the description of Russian morphology in the framework proposed here, and it would doubtless be vain

to hope that the suggestions offered here can be accepted without revision. One may hope, however, that the basic thought which underlies the present article — that is, the necessity of describing derivation and flexion in their hierarchal interrelations, by means of explicitly connected items and explicitly ordered processes — can be accepted. The innovations suggested in the foregoing pages present a possible synthesis of Stankiewicz's two-stem proposal (in considerably revised form) with Jakobson's pathbreaking concept of the basic stem. One would like to think that the methodological framework offered here — in, perhaps, some revised and more sophisticated form — will prove to have the capacity to show clearly, explicitly and unambiguously the unity and variety which characterize the interrelations of derivation and flexion.

FOOTNOTES

- ¹ R. Jakobson, "Russian conjugation", *Word*, IV (1948), 155-167.
- ² M. Halle on Old Church Slavic and Old Russian, *Word*, VII (1951), 155-167 (adopted by H. G. Lunt, *Old Church Slavonic Grammar*, The Hague, 1955 and later editions); H. Rubenstein on Czech, *Word*, VII (1951), 144-154 (cf. the substantial revisions and additional material in H. Kučera, *Word*, VIII, 1952, 378-386); H. Lunt on Macedonian, *Makedonski jazik*, II (1951), 123-131 and *A grammar of the Macedonian language* (Skopje, 1952); A. Schenker on Polish, *Word*, X (1954), 469-481; C. H. van Schooneveld on Serbocroatian, *International Journal of Slavic Linguistics and Poetics* (henceforth *IJSLP*), I/II (1959), 55-69.
- ³ A new point of departure was provided by M. Halle's paper at the Vth Congress of Slavists, "O pravilax ruskogo sprjaženija (predvaritel'noe soobščenie)", *American Contributions to the Fifth International Congress of Slavists, Sofia, September 1963*, Vol. I: *Linguistic Contributions* (The Hague, 1963), 113-132. Cf. also A. V. Isačenko, "The morphology of the Slovak verb", *Travaux linguistiques de Prague*, I (1964), 183-201, and T. M. Lightner, "On the phonology of the Old Church Slavonic conjugation", *IJSLP*, X (1966), 1 ff., with extensive bibliography.
- ⁴ P. Ivić, "Roman Jakobson and the growth of phonology" (a review of Jakobson's *Selected writings, I: Phonological studies*, The Hague, 1962), in *Linguistics*, XVIII (1965), 36. Halle's work cannot, of course, be characterized as mere rectification; his introduction of cyclically-ordered rules operative on stems with specified immediate constituent structure, while open to criticism on some counts, is an original and provocative contribution.
- ⁵ A. V. Isačenko, *Die russische Sprache der Gegenwart, Teil I: Formenlehre* (Halle/Saale, 1962), 9. Cf. Isačenko's earlier expression of this view, "O vzájomných vzt'ahoch medzi morfológiou a deriváciou", *Jazykovedný časopis* (Bratislava), VII (1953), 200-213, and K. A. Levkovskaja, "O slovoobrazovanii i ego otnošenii k grammatike", *Voprosy teorii i istorii jazyka v svete trudov I. V. Stalina po jazykoznaniju* (Moscow, 1952), 153-181.
- ⁶ E. Stankiewicz, "The interdependence of paradigmatic and derivational patterns", *Word*, XVIII (1962), 3. Cf. V. V. Vinogradov, "Slovoobrazovanie v ego otnošenii k grammatike i leksikologii", *Voprosy teorii i istorii jazyka v svete trudov I. V. Stalina po jazykoznaniju* (Moscow, 1952), 99-152.
- ⁷ Cf. the difficulties in assigning forms like *noč'ju*, *večerom* to the class of substantives or to that of adverbs. Soviet grammarians, e.g., in AN SSSR, *Grammatika russkogo jazyka* (Moscow, 1960²), I, 618 and II (1), 135, consider such items to be adverbs when they stand alone, but instrumental substantives when they occur modified by an agreeing adjective such as *rannij*, *pozdnij*, etc. The fact that these words can be modified by adjectives at all clearly takes them partly out of the adverb category; on the other hand, the fact that the class of co-occurring adjectives is highly restricted shows that these instrumental case forms have already been partially adverbialized.
- ⁸ Stankiewicz, *op. cit.*, 4.
- ⁹ In the case of substitutions of sub-categories within a grammatical category, one might assume that grammatical distance would be a function of the number of correlated sub-categories: the larger the number of such sub-categories, the smaller will be the grammatical distance involved in a change from one such sub-category to another (that is, the more 'flexional' and less 'derivational' such a

change will be). For example, since the ratio of category to sub-categories is 1:6 for the category of case (i.e., there are six cases in the category) – leaving aside the question of the second genitive and second locative – change from one case form to another will be felt as more paradigmatic (= more highly grammaticalized, more flexional = less derivational or lexicalized) than will a change from one number to another, where the ratio of category to sub-categories is 1:2. It is interesting to note (although this requires further verification with textual control) that the lexicalization of plurality in Russian (the 'derivationalization' of the marked member of the plural / non-plural opposition) became most active after the loss of the dual, i.e., with the reduction of the category : sub-category ratio from 1:3 to 1:2; in this connection, one would welcome data concerning the degree to which the number opposition has been lexicalized in Slovene, where the dual persists... Within the verb system, form changes within the paradigms of tense (*čitaet / čital / budet čitat'*, ratio 1:3) and person (*čitaju / čitaeš' / čitaet*, ratio 1:3) are further removed from derivation than is the aspect correlation (*pročitat' / pročityvat'*, ratio 1:2). Obviously it is not only the number, but also the type of categorial opposition that determines the grammatical distance between forms (for example, correlative oppositions such as case, number, person, tense are more highly grammaticalized than disjunctive oppositions such as that of mood; a mechanical adding-up of categories can of course throw light on but one aspect of the distinction between flexion and derivation).

¹⁰ Evaluative derivation is discussed in D. S. Worth, "The suffix *-aga* in Russian", *Scando-Slavica*, X (1964), 192 ff. On expressive derivation, cf. E. Stanekiewicz, "Expressive derivation of substantives in contemporary Russian and Polish", *Word*, X (1954), 457 ff., and "Grammatical neutralization in Slavic expressive forms", *Word*, XVII (1962), 128-145.

¹¹ Cf. D. S. Worth, "The role of transformations in the definition of syntagmas in Russian and other Slavic languages", *American Contributions to the Fifth International Congress of Slavists*, I: *Linguistic Contributions* (The Hague, 1963), 378 ff.

¹² It is perhaps worthwhile repeating that the economy criterion must be subordinated to criteria of accuracy and insightfulness (cf. *American Contributions ...*, I, 373, fn. 23); for an extended discussion of evaluation procedures in grammar, see N. Chomsky, *Aspects of the theory of syntax* (Cambridge, Mass., 1965), 37 ff.

¹³ Mor(pho)phonemic transcriptions are given in curved brackets, phonemic transcriptions in slants, and phonetic transcriptions in square brackets. Transliterated Cyrillic forms are given in italics. The broad phonetic transcription uses symbols from R. I. Avanesov, *Fonetika sovremennogo russkogo literaturnogo jazyka* (Moscow, 1956), except for the reduced mid central vowel, which is here rendered by [ə]. {#} represents an alternating vowel/zero morphophoneme, and [∅] its phonetically zero alternant.

¹⁴ This article will deal only with inflected words. On problems of uninflected words in Russian cf.: B. O. Unbegaun, "Les substantifs indéclinables en russe", *Revue des études slaves*, XXIII (1947), 130-145; I. P. Mučnik, "Neizmenjaemye suščestvitel'nye, ix mesto v sisteme sklonenija i tendencii razvitija v sovremennom russkom literaturnom jazyke", *Razvitie grammatiki i leksiki sovremennogo russkogo jazyka* (Moscow, 1964), 148-180; D. S. Worth, "On the stem/ending boundary in Slavic indeclinables", *Zbornik za filologiju i lingvistiku* (Novi Sad), IX (1967), 11-16.

¹⁵ Akademija Nauk SSSR, *Grammatika russkogo jazyka*, I, 134.

16 In view of the meaning assigned to the symbol {#} in fn. 13 above, an explanation of the 'zero ending' may be in order. The morphophoneme {#} representing the nom. sing. masc. is necessary in order to explain the vowel/zero alternations in preceding stems, e.g. *skorbnyj / skorben* < {skorb#n + #j# / skorb#n + #} (the rules which generate these alternations will resemble — for obvious reasons — those for the vocalization of the jers in an earlier stage of Russian; for a discussion of this and related problems in morphophonemics, cf. D. S. Worth, "On the morphophonemics of derivation", preprint for the Phonologie-Tagung of the Association internationale de phonologie, Vienna, Aug.-Sept., 1966); {#} will normally → [∅] in substantives as well as short adjectives, but is vocalized in long adjectives as [ó] when stressed (*molodoj*) and [ə] or [y] when unstressed (*dobryj*); dialectally, this {#} is vocalized before the enclitic article, e.g. [dómot] < {dom# + t#} by the same rules as apply to long adjectives.

17 The almost universal resistance encountered by attempts to up-date (usually, to phonemicize) the alphabets of literary languages (cf. most recently the discussion of 1964-65 in the USSR) may be due not simply to the uncooperative recalcitrance of the linguistically unschooled population, but also to the fact that this population has internalized a grammar utilizing items deeper than phonemic strings, these items being (albeit inadequately) represented graphically in the 'archaic' and non-phonemic spelling system.

18 In some cases the stem representations turn out to resemble earlier stages of the language, although they are not selected with this purpose in mind (cf. Lightner, "On the phonology of the Old Church Slavonic conjugation", 23 ff.). This coincidence, which apparently occasions pleasure in some circles, is of course no coincidence at all, since today's morphophonemics are yesterday's phonetic change (somewhat rearranged and regularized by analogical change); there is nothing surprising in the fact that an adequate description of phenomena in today's language is in some way related to the causes of these phenomena. One can predict that if generative phonology broadens its scope to include Slavic derivational morphology, it will soon be dealing in items and rules oddly reminiscent of Indo-European laryngeals and ablaut. — In other cases, the underlying stem representations of generative phonology bear little similitude to anything at all. Thus we find that the form underlying *pišú* is ((p, is + 'a + o) + u) (Halle, "O pravilax ...", 120), and that the imperfective verb *obižát* is derived from its perfective partner *obl-det* by way of the underlying affixed imperfective stem o + = + b, id + e + O + 'aj (*ibid.*, 129). If the 'o' of ((p, is + 'a + o) + u) can still be understood as a generalization of the thematic vowel, the 'O' of o + = + b, id + e + O + 'aj (O = a rounded vocalic archiphoneme, which does not need to be specified any further, since the ensuing rules invariably eliminate it from the representation) corresponds to no known reality of any Slavic language, now or ever; this 'O' appears in the stem representation for a very simple reason: the rules for substitutive softening in verb flexion (s + š etc. before a sequence of unrounded vowel + rounded vowel) can't be made to work in aspect derivation without it. In other words, this "O" is an exception to a rule (or a statement of the lack of significant generality of a rule), masquerading as part of a stem. One may question the utility of generalizations obtained at the price of such artifice. On this point, cf. also the comments of E. Stankiewicz, "Slavic morphophonemics in its typological and diachronic aspects", *Current trends in linguistics*, III: *Theoretical foundations* (The Hague, 1966), 500 f.

19 For example, postconsonantal posttonic {j} → [j] or [i] (Avanesov, *Fonetika* ..., 188), {délaj + om} → [d'éləiɐm] or [d'éləim] (*ibid.*, 191), *bez dela* = [b'ieɐ-

d'élə] or [b'iez'-d'élə], etc. (*ibid.*, 179).

20 This example is of course valid for that variety of Russian which does not distinguish between pretonic {e} and {i}. An initial {e} would serve equally well for the present tense, and would generate the participial [é] as well, but the equivalent problem would then arise with the past tense [ó].

21 The distinctive feature characteristics of Russian sounds are given according to the matrix suggested by M. Halle, *The Sound Pattern of Russian* (The Hague, 1959), 45. This type of notation, which for more specific entities might appear to be but a clumsy recoding of traditional symbols, is singularly appropriate for noting more abstract morphophonemic entities such as /é/ - /ó/ after sharpened consonant.

22 The + sharp / - sharp opposition is grammaticalized in several pairs of verb of motion: *vezti / vozit'*, *nesti / nosit'*, *bresti / brodit'*; cf. also *vertet'* but *vorotit'* and stem-final palatalizations and depalatalizations such as *provodit'* *provod*, *glubokij / glub'*.

23 The best, although far from satisfactory general treatment of Russian derivational morphology is N. M. Šanskij, *Očerki po russkomu slovoobrazovaniju i leksikologii* (Moscow, 1959). A few articles approaching derivational processes from original viewpoints have appeared recently, e.g., N. A. Janko-Trinickaja, "Procesy vključenija v leksiku i slovoobrazovanii", *Razvitie grammatiki i leksiki sovremenogo russkogo jazyka* (Moscow, 1964), 18-35; E. A. Zemskaja, "Interfiksacija v sovremenom russkom slovoobrazovanii", *ibid.*, 36-62.

24 E. Stankiewicz, "The interdependence of paradigmatic and derivational patterns", p. 6.

25 N. M. Šanskij, *Očerki po russkomu slovoobrazovaniju* ..., 6.

26 The {#} in this stem is required in order to generate the first of the two possible plurals of this word, *poberežij* and *poberež'ev*; cf. AN SSSR, *Grammatika russkogo jazyka*, I, 159.

27 To avoid misunderstandings, it should perhaps be specified that the 'closeness' of one (morphophonemic) stem to another (phonemic or phonetic) must be measured in terms of the number and complexity of the rules necessary to generate the latter from the former.

28 Vowel/zero alternations in derivation are compared to those in flexion in I. Worth, "Vowel-zero alternations in Russian derivation", *IJSLP*, XI (1968), 11-16.

29 The inadequacies of a phonemic or quasi-phonemic stem representation are particularly evident in cases where apophony, liquid-diphthong developments, and other historical processes combine to form root shapes with extremely wide phonetic variation. Anyone doubting this is invited to consider the two-dozen-odd phonemic forms of the root √VERT 'turn' in modern Russian: /v'ir/ (*vernut'*), /v'ór/ (*vvermutyj*), /v'órt/ (*trubkovert*, *vertkij*), /v'irt/ (*vertljavyj*), /v'irt'/ (*vertet'*), /v'ért'/ (*vertel'*), /v'érc'/ (*vvérčivat'*), /v'irč'/ (*vyverčennyj*), /varáč/ (*vvoračivat'*), /vórat/ (*vorot*), /varót/ (*vodovorot*), /varat/ (*vorotnik*), /varat'/ (*vorotit'*), /varóč/ (*zavaročat'*), /vrat/ (*vozurat*), /vrat'/ (*vozvratit'*), /vrašč/ (*vraščat'*), /órt/ (*obertyvat'sja*), /aráč/ (*oboračivat'*), /arót/ (*oborot*), /arót'/ (*oborotit'*), /aróč/ (*oboročennyj*), /rat/ (*obratnyj*), /rat'/ (*obratit'*), /rašč/ (*obraščat'*) - and a careful search might uncover yet others. Naturally, many of these forms result automatically from application of general morphophonemic rules to an underlying form {t} → [∅] before {-nu}, {v} → [∅] after {-b} c

prefix boundary, etc.).

30 The author, together with A. S. Kozak, is preparing such a word-family glossary based on app. 110,000 Russian words, which have been put on magnetic tape, segmented into morphs, and reordered on a largely etymological basis. The first of a projected series of publications from this project (which is supported by the U.S.A.F. Project RAND) will be a dictionary of word families entitled *Russian derivational dictionary* (New York, 1970).

31 Here we disagree with Stankiewicz, who feels that feminine is always to be derived from the masculine in such pairs as *makedónec / makedónka* ("The interdependence ... ", 9). Pairs like *student / studentka*, *poët / poëtessa* do not attest that the order of derivation is always from unmarked masc. to marked fem.; there is no more reason to take the form with a zero morph as derivational base than there would be to take a gen. pl. in zero (e.g., [rukØ]) as the base form of the plur., and to derive the nom. [rúk'i] therefrom.

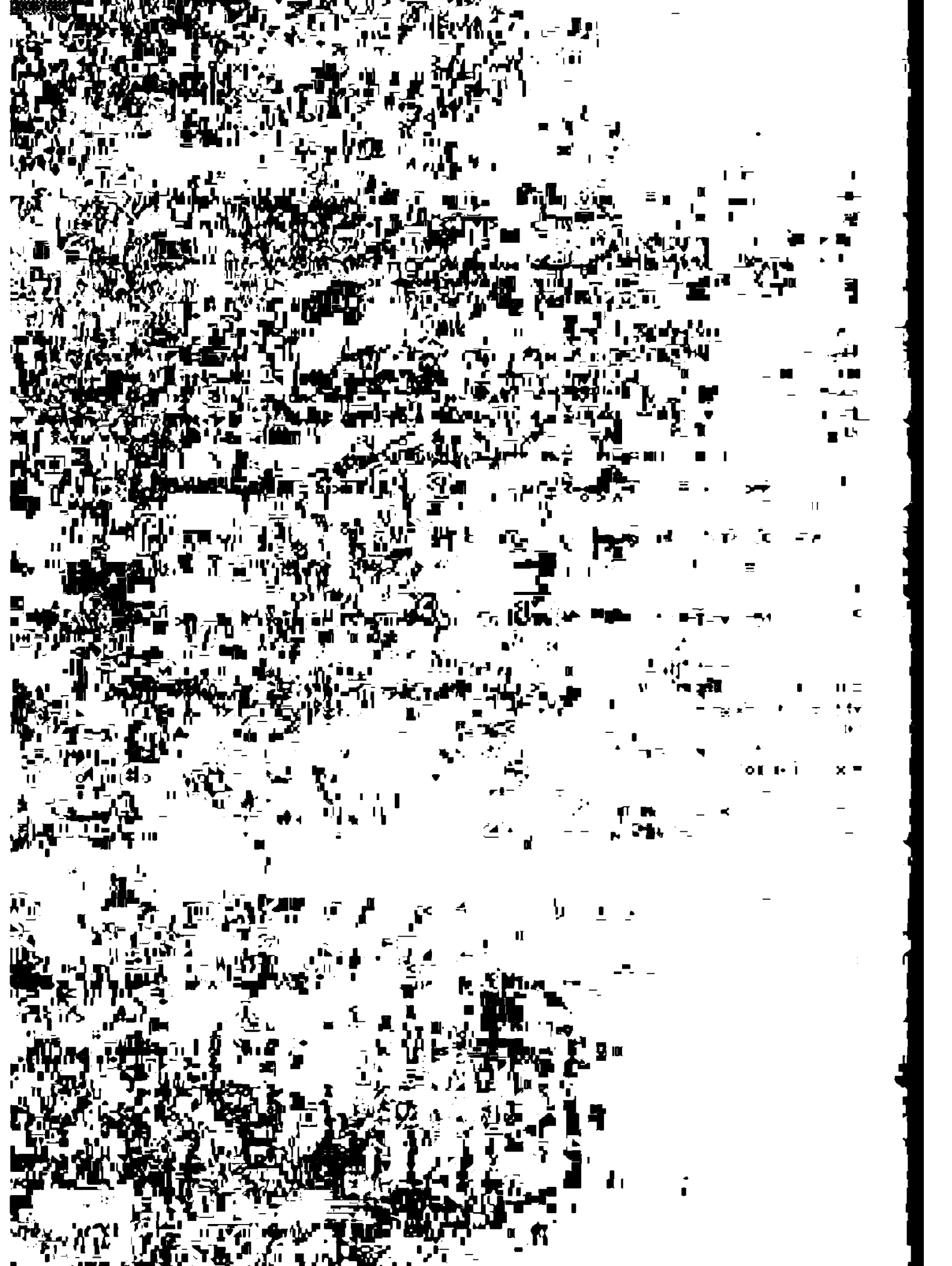
32 E. Stankiewicz, "The interdependence of paradigmatic and derivational patterns", 11 ff.

33 Cf. footnote 1 above.

34 The symbol {P⁰} stands for zero affixation, and {Ø} for the so-called 'masculine' paradigm.

35 {oj} represents the entire paradigm of endings, not simply the nom. sing. masc. ending.

36 So-called prefixal-suffixal derivation is most conveniently treated as a concatenation of items, one of which is a discontinuous affix. We assume that stress is assigned as part of the D-F rules (since stress of derivatives is dependent on both the stress of the derivational base and the particular affixation process), but the problem of the optimal method of assigning stress must be considered unsolved. A further problem, outside the scope of this article, but by no means unimportant, lies in the specification (is it possible? if so, how?) of the relation between *bezbrežnyj* and *bez berega* – a problem, that is, arising as it were at the intersection of morphology and syntax.



GRAMMATICAL FUNCTION AND RUSSIAN STRESS

Slavic linguistics in the United States has been marked by the continuation and elaboration of the Prague School's functional approach to language phenomena. This influence has been due in large measure to the teaching of Roman Jakobson, and is evident in the writings of many of his students; for example, Stankiewicz has recently insisted that predictive morphophonemic rules must specify not only the phonological alternations of a language, but also the interrelations and grammatical functions of these alternations within the given linguistic system.¹ Such insistence on the correlation of form and function, and particularly on the hierarchical organization of linguistic categories and their formal expressions, can at times shed new light on phonological alternations which might otherwise appear unmotivated and capricious. This is true inter alia of accentual alternations in the Slavic languages.² As an example, we shall look at a generally neglected type of stress shift in the substantive declension of contemporary standard Russian. This is the stress type *sestrá, kol'có*.³

The most frequent and productive type of stress shift in the Russian substantive is that distinguishing the plural stem from the singular stem, e.g. *nós nósa nósu* etc. 'nose' vs. pl. *nosý nosóv nosám, dolgótá dolgótý* etc. 'length' vs. *dolgóty dolgót dolgótam, póle pólja* 'field' vs. *poljá poléj poljám*, and so forth. That is, the singular stem as a whole is opposed to the plural stem as a whole, the one being stressed and the other unstressed: sg. {nós-} {dolgót-} {pól'-} vs. pl. {nos-} {dolgót-} {pol'-} etc. If we assume that the grammatically unmarked singular stem forms are filed in the dictionary, with those stems which undergo stress shift from singular to plural marked as such, then the correct plural stem forms can be generated by the following alpha-switching rule:

[α stressed] → [-α stressed] / _ {plur}

So {nós-} → {nos-}, {dolgót-} → {dolgót-} etc.⁴

Within either the singular or the plural stem, and occasionally within each of them (but then independently of each other), a further accentual opposition is possible: one and only one case form can be singled out by a stress shift and

opposed thereby to all other case forms within the given stem.⁵ Three such case-marking stress alternations are generally well known:

(1) The accusative singular of 2d declension feminines can be opposed to all other cases of the singular, e.g. *ruká rukí* etc. 'hand' vs. acc. *rúku*, *storoná storoný* etc. 'side' vs. *stóronu*.

(2) The nominative plural of masculines and of 2d and 3d declension feminines can be opposed to the oblique cases of the plural (acc. = nom. for inanimate substantives), e.g. gen. pl. *volkóv*, dat. *volkám* etc. 'wolves' vs. nom. *vólki*, *svečéj svečám* etc. 'candles' vs. *svěci*, *pečěj pečám* etc. 'stoves' vs. *pěči*.⁶

(3) The so-called 'second locative' can be marked by a stress shift to the ending in stem-stressed masculines (redundantly) and 3d declension feminines (significantly), e.g. *nós nůsa* 'nose' vs. loc. *na nosú*, *stěp' stěpi* 'steppe' vs. *v. stepí*.

Another and much less well-known type of case-marking stress shift is that which forms the subject of this discussion: (4) THE GENITIVE PLURAL IS MARKED BY A STRESS SHIFT FROM STEM-INITIAL TO (PHONEMICALLY) STEM-FINAL POSITION in some fifteen substantives, e.g. nom. pl. *sěstry*, dat. *sěstram* etc. 'sisters' vs. gen. *sestěr*, *kól'ca kól'cam* 'rings' vs. gen. *koléc*. In almost all substantives of this stress type, the genitive shift within the plural is superimposed, in the sense explained in fn. 4, on an already-shifted stressed stem; i.e. the dictionary entries for 'sister' and 'ring' are {s'ost'#r-} and {kol'#c-}, which become {s'óst'#r-} and {kól'#c-} by the abovementioned alpha-switching rule for pluralization.⁷ Before trying to determine the morphophonemic location of the stress in forms such as *sestěr* and *koléc*, however, let us adduce the factual evidence and see how this class of words has been treated in the literature.

The genitive shift appears regularly in four 2d declension feminines and three 1st declension neuters:

sěstry, *sěstram* vs. gen. *sestěr* 'sisters'

sém'i, *sém'jam* vs. gen. *seméj* 'families'

zěmli, *zěmljam* vs. gen. *zemél'* 'lands'

óvcy, *óvcam* vs. gen. *ovéc* 'sheep'

kól'ca, *kól'cam* vs. *koléc* 'rings'

kryl'ca, *kryl'cam* vs. *kryléc* 'porches'

jájca, *jájcam* vs. *jaíc* 'eggs'⁸

Several other words belong to this pattern, but show variant stress alternations; i.e., they have dual class membership. The 2d declension non-neuter *sud'já sud'í* 'judge' regularly has the plural *súd'i suděj súd'jam* (like *sém'i seměj sém'jam*), but also admits the pattern with fixed stem-initial stress throughout the plural: *súd'i súdej súd'jam*. *Svin'já* 'pig' usually patterns like *sem'já* and *sestrá* (*svín'i sviněj svín'jam*), but admits an aberrant dative *svín'jam* as well. The three neuters *gumnó* 'barn', *oknó* 'window', and *ruž'ě* 'rifle' are usually stem-initially stressed throughout the plural (*gúmna gúmen gúmmam* etc.), but are also attested with the less frequent genitives *guměn, okón, ružěj*; that is, they follow the pattern of *kol'có* only marginally. One of the pluralia tantum, *xlópoty* 'worry, cares', appears to be settling into the *sestrá* pattern, although the sources are not unanimous: the Ušakov dictionary (1940) and the first three editions of Ožegov's dictionary (1940, 1952, 1953) assign the pattern *xlópoty*, gen. *xlopót*, dat. etc. *xlopótám* — i.e. end-stress throughout the plural except for the nominative (like *póxorony poxorón poxoronám* 'funeral').⁹ But the Academy Grammar (1953), the orthographic dictionary of Ožegov and Šapiro (1959), the four-volume Academy dictionary replacing Ušakov (AN SSSR 1961), and the authoritative 17-volume Academy dictionary (1964) — plus, most interestingly, the fourth edition of the Ožegov dictionary (1960) — all give *xlópoty xlopót xlópotam*, exactly like *sěstry sestěr sěstram*, from which *xlópoty* then differs only in having a 'full' rather than an inserted vowel under phonemic stress in the genitive plural.¹⁰ As this development of *xlópoty* shows, the pattern of *sestrá, kol'có* is not entirely unproductive. Finally, the suppletive plurals *ljúdi* 'people' (to *čelovék* 'person') and *děti* 'children' (to *reběnok* 'child') show the same stress pattern as *sestrá, kol'có* (*ljúdi ljuděj ljudjam* etc., *děti detěj dětjam* etc.) except for the abnormal end-stressed instrumentals *ljud'mí, det'mí*; but since end-stress in the latter is a redundant feature of the truncated instrumental ending {-m'í} (for usual {-am'i}), these two words can also most efficiently be assigned to the class of *sestrá* and *kol'có*.

Those grammars and special studies of Russian stress with which I am acquainted either ignore the stress type *sestrá, kol'có* altogether, or list some words of this group as exceptions to other, more frequently occurring, types. Thus, for example, the Academy Grammar gives the stem-final stress of *koléc, kryléc, jaíc* and of *zemél', ovéc, sviněj, seměj, sestěr, suděj* as exceptions; but it also, inconsistently, lists *sud'já* and *sem'já* among those feminines which shift

the stress 'from ending to stem in the nom.-acc. plur.' (p. 169), i.e. (incorrectly) as having the same end-stress throughout the plural (except for the nominative-accusative) as, say, *svěči svečěj svečám*. Isačenko simplifies the situation somewhat, doubtless for pedagogical purposes, in listing *kryl'có* and *čajcó* together with *plečó* 'shoulder' (pl. *plěči*, gen. *plěč* or *plečěj*, dat. etc. *plečám*) as having 'mehrfacher Akzentwechsel im Plur.', and in placing *ovcá*, *svin'já*, *sem'já*, and *sestrá* together with *travá* 'grass' in the group of substantives with fixed stem stress throughout the plural; similarly *zemljá* is given together with *ruká* and *vodá* 'water' as taking stem-stress to mark the accusative singular, but its plural is not mentioned.¹¹ Unbegaun notes the irregular /í/ of *jaíc* but does not mention the stress peculiarities of the type *kol'có* at all.¹² Ďurovič gives *ovéc*, *sestěr*, *sviněj*, *seměj*, *suděj* as exceptions to the type *travá*, and *zemél'* – somewhat awkwardly – as an exception to the type *zemljá*.¹³ In a practically-oriented study by Zaliznjak (1963) one finds *zemél'*, *ovéc*, *sviněj*, *seměj*, *sestěr*, *guměn*, *koléc*, *jaíc*, and *xlopót* grouped together as exceptions to the author's stress distribution rules (Zaliznjak is thus the only author to recognize the common accentual features of at least two-thirds of the words in this class); but in the same author's theoretical study (1964) of Russian substantive stress, these words are not even mentioned, although as we shall see they are not entirely devoid of theoretical interest.¹⁴ Garde's examination of Russian stress in terms of competing accentual 'forces' of morphemes is, like Zaliznjak's study, a stimulating theoretical essay, but unfortunately fails to deal with the class of words with which we are concerned here.¹⁵ Finally, Red'kin, in the chapter on accentology of the prospectus for a new academic grammar in the Soviet Union, discusses adjective and verb accentuation at some length, but for some reason hardly mentions the stress patterns of Russian substantives.¹⁶ The same is true of most of Red'kin's other studies; only in his latest paper (1967) does this author attempt to connect stress patterns with grammatical meanings, but without dealing with problems relevant to our discussion.¹⁷

Even those few authors who, like Zaliznjak, recognize the unusual stress pattern of the type *sestrá*, *kol'có* do not attempt to describe the 'exceptional' stress shift of this group in relation to other accentual alternations in the Russian substantive, nor do they take up the problem of the MORPHOPHONEMIC, as opposed to the phonemic, location of the stress in these forms. And yet it is only when one distinguishes morphophonemic accentual alternations from phonemic ones,

looking for grammatical significance (i.e. a correlation of phonological and semantic entities) on the morphophonemic level alone, that some measure of meaningful patterning can be discovered in phonological alternations such as those of the Russian substantive declension. The phonemic surface can take one no further than, e.g., Zaliznjak's statement that the stress in *sěstry* → *sestěr* moves 'one syllable to the right', or Āurovič's that it moves 'to the inserted vowel' (but then what about *xlopót*, which has no inserted vowel?), or that of the Academy Grammar that it moves to the final syllable of the stem (but then what of the END-stressed *detěj*, *ljuděj*?). In the remainder of this paper, I shall try to show that if these stress shifts are described by rules operating on the morphophonemic level (i.e., if the rules describing such shifts are applied relatively early in the grammar), an appreciable measure of generality can be obtained and the accentual alternations can be seen — Trubetzkoy notwithstanding — as not at all 'ganz sinnlos'.¹⁸

The type of systematic morphophonemic treatment of accentuation which has been practised by Kuryłowicz for more than three decades¹⁹ has, one regrets to note, remained without effect on the bulk of studies dealing with Russian stress (cf. the survey above). The one such attempt known to me, other than Kuryłowicz's own studies, was made only in passing by Lunt and is unfortunately unsuccessful. In a footnote to a survey of recent works on Balto-Slavic accentological problems,²⁰ Lunt follows Kuryłowicz in correctly distinguishing initial/desinential stress shifts (e.g. nom. *vodá*, acc. *vódu*; nom. sg. *skovorodá* 'frying pan', nom. pl. *skóvorody*) from the desinential/predesinential shifts that mark the singular-plural opposition (e.g. *vojná* *vojný* etc. 'war', pl. *vójny* *vójn* *vójnám*; similarly *sírotá* 'orphan', pl. *síroty* [not **síroty*], and *kolesó* 'wheel', pl. *kolěsa* [not **kólesa*]). This is an important insight of Kuryłowicz's, but Lunt extends this principle overhastily to the class *sestrá*, *kol'có*: 'we ... even take care of the "irregular" stress on the inserted vowels of gen. plur. *koléc* (~ *kol'có* "ring") and *zemlěj* [sic] (~ *zemljá* "land").²¹ Now, one could of course 'take care' of the stress of *koléc*, *sestěr* etc. in this way, but at what price? We would have to classify as irregular all the now regular feminines and neuters in which the plural stress (shifted from the ending by the alpha-switching rule introduced above) is fixed on the same syllable throughout the plural, NOT moving to the right in the genitive (e.g., *sošná* 'pine', pl. *sóсны*, gen. *sóсен*; *vesná* 'springtime', *věсны*, *věсен*; *metlá* 'broom', *mětly*, *mětel*; *číslo* 'number', *čísла*, *čísел*; *pis'mó*

'letter', *pís'ma*, *písem*; *polotnó* 'linen', *polótna*, *polóten*; *remesló* 'trade', *reměsla*, *reměsel*, etc.); a special rule would be required to account for the shift from **sosěn* to *sósen*, etc. In other words, Lunt's proposal, though motivated by the best of intentions, is ineffective and must be rejected.²² The type *sestrá*, *kol'có* must be recognized as a small but independent stress group, which cannot be identified completely with the type *sosná*, *čisló* (although it shares the alpha-switching pluralization rule with the latter).

How, then, are we to characterize morphophonemically the forms like *sestěr*, *koléc*? Specifically, where is the stress shifted to in the genitive plural, in relation to the stem/desinence boundary? If we bear in mind that a grammar consists of ordered rules, and examine briefly the form-function correlations in other, less difficult, accent shifts, we shall arrive at an unambiguous answer to this question.

As was pointed out above, Russian stress positions do not consist of individual case-number forms opposed to each other, but of number stems opposed to each other as wholes, and then of case oppositions within individual number stems. The phonological point of departure, i.e. the stem form listed in the dictionary, is the grammatically unmarked (*merkmallos*) singular stem, and the rules of the type 'Stem + stem+plural' with their attendant morphophonemics (such as the alpha-switching rule discussed here) must precede those of the type 'Stem + stem+ nominative', 'Stem (plural) + stem (plural) + nominative', etc., with the latter's attendant morphophonemics (such as the rule [- stressed] → [+ stressed]/_ {nom}). Case-marking stress shifts, in other words, are the lowest-level morphophonemic rules of Russian declension, and must be preceded by the deeper-level number-formation rules.

The types of stress shift which can be utilized to convey grammatical information are subject to restraints which differ in the flexional and derivational systems, and it is in these differing restraints that we shall find the clue needed to solve our problem. The Russian derivational system utilizes accent shifts within stems and within roots (in the synchronic sense of the latter term), e.g. *běreg* 'shore' → *poberež'e* 'coastline' ({*běreg-*} → {*poberež#j-*}), *xólod* 'cold' → *xolódnyj* 'cold (adj.)' ({*xólod-*} → {*xolód#n-*}), *navýknut'* 'become accustomed' → *návyk* 'habit' ({*navíknu-*} → {*návik-*}), and also makes use of stress across the stem-desinence boundary, e.g. *brevnó* 'log' → *brevénčatyj* 'made of logs' ({*brev#n-*} → {*brevénčat-*}), *běreg* → dim. *berežók* 'little shore' or adj.

beregovóĵ ({béreg-} → {berež#k-}, {beregov+óĵ}). The Russian flexional system, on the other hand, seldom uses stress shifts within the stem (inf. *peredát'* 'to hand over', past masc. *péredal*) and never within the root. THE SUBSTANTIVE DE-CLENSION UTILIZES ONLY STRESS SHIFTS ACROSS THE STEM-DESINENCE BOUNDARY. This is true both of the singular/plural opposition ({nós-/nos-}, {sirot-/sirót-}, etc.) and of all the case oppositions (*golová* etc. 'head', acc. *gólouu*; *volkám* etc., nom. *vólki*; *stépi* etc., loc.₂ *v stepí*). All apparent exceptions to these rules disappear when one examines the underlying morphophonemic forms: *stól stolá* etc. 'table' turns out to have underlying morphophonemic fixed ending stress (i.e., {stol+ǫ stol+á} etc.), as does the plural of *město* 'place', *mestá měst mestám* etc. (= {mest+á mest+ǫ mest+ám} etc.) Such forms have morphophonemically stressed zero endings, and the phonemically stressed stems /stól/, /m'ést/ result from lower-level phonetic rules that have nothing to do with grammatical meaning.²³ Similarly, the apparent intra-stem shift of *kólos* 'ear of corn', pl. *kolós'ja* etc., is a redundant concomitant of the partially suppletive plural morpheme {-#j}, and, as is well known to Slavists, plural formation is in many respects closer to derivation than to flexion. In any case, suppletion is never utilized for case formation.

We can therefore state unequivocally that case oppositions in Russian can be marked by only one type of accentual alternation: desinential/stem-initial. Within the singular, the accusative of 2d declension feminines is marked by a left shift (i.e., unstressed stems become stressed to mark accusative, e.g. {borod-} → {bórod-}), and within the plural the same shift marks the nominative of masculine and feminine substantives (e.g. {volk-} → {vólk-}, {sveč-} → {svéč-}, {peč-} → {péč-}). The right shift (stressed stems becoming unstressed) is utilized within the singular to mark the second locative (e.g. {nós-} → {nos-}, {stép'-} → {step'-}), and — to come to the group of words with which this paper is concerned — within the plural, it is this same stress shift from stem-initial to desinential position which marks the genitive case in words of the type *sestrá, kol'cób*. The grammatically relevant stress shift in the type *sestrá, kol'cób* is described by exactly the same rule [α stressed] → [-α stressed]/_ . . . , as was needed to describe the number-marking shift and the three more generally known case-marking shifts. On the morphophonemic level, therefore, the stress is shifted from the stem in *sěstry sěstram* etc. to the zero ending of *sestěr*; i.e., the effect of the alpha-switching rule is: {s'óst'#r-} → {s'ost'#r+ǫ}, {kól'#c-} → {kol'#c+ǫ},

{xlópot-} → {xlopót+∅}, etc. This, and only this, is a grammatically relevant stress shift. Later on in the grammar, lower-level phonetic rules automatically move the stress from any stressed {∅} to the next left syllable (e.g. nom. {stól+∅} 'table' → /stól/, cf. gen. {stól+á} → /stalá/; past masc. {v'od+l+∅} 'led' → /v'ól/, cf. fem. {v'od+l+á} → /v'ilá/ etc.; this is a general rule of Russian grammar, and need not be spelled out in detail here). Note, incidentally, that when we describe the shift of *sěstry* → *sestěr* as one from stem to ending, we automatically cover the cases of *děti* → *detěj* and *ljúdi* → *ljuděj*, in which the genitive has a 'real' rather than a zero ending (i.e. {dét'-} etc. → {det'+éj}), like {xlópot-} → {xlopót+∅}); these two words would otherwise require special treatment. We conclude, therefore, that the morphophonemic place of the stress in the genitives *sestěr*, *koléc*, *suděj*, *xlopót*, etc. is on the zero ending, and we note that the rule describing this stress shift is identical (but for differing morphological environments, of course) to that which describes all other stress shifts (number-marking and case-marking) in the Russian substantive. By ordering the rules of the grammar (specifically, by applying the rules for number-stem formation before those for case formation), and by seeking grammatical significance only on the morphophonemic level, we effect a considerable simplification and generalization of the phonological rules. That this approach results not only in a more efficient, but also in a more insightful grammar, can be shown by rephrasing the description in terms of marked and unmarked grammatical categories and in terms of Jakobson's theory of the general meanings of cases²⁴; but this must be the subject of a later paper.

FOOTNOTES

- ¹ E. Stankiewicz, "Slavic morphophonemics in its typological and diachronic aspects", *Current trends in linguistics*, 3: *Theoretical foundations*, The Hague, 1966, p. 505; cf. the discussion by D. Worth in *Current Anthropology*, 9, 1968, pp. 155-60.
- ² G. Y. Shevelov, "Speaking of Russian stress", *Word*, 19, 1963, p. 67-81.
- ³ Italicized forms are transliterated from Cyrillic. Phonemic transcriptions are enclosed in diagonals, morphophonemic transcriptions in curved brackets. The hatchmark # represents a morphophoneme ranging over the values 'vowel' and 'zero', the latter of which is represented by \emptyset . Only enough forms are cited from the paradigms to allow unambiguous identification of stress types.
- ⁴ The specific syllable to which the stress shifts is entirely predictable: number is marked only by shifts from stem (any syllable) to ending, or from ending to pre-desinential stem syllable. Note that the number-marking rules must be applied before resolution of {#} as a vowel or \emptyset ; more on this below.
- ⁵ This statement of course assumes that the accusative is derived from the nominative or genitive, with which it is identical for inanimates and animates respectively; i.e., the accusative is not counted as a phonologically independent form.
- ⁶ Note that this nominative-marking shift can occur with stems which have already marked the plural stem as a whole by a stress shift from stem to ending. The dictionary form of the word for 'wolf' is {vólk-}, which becomes {volk-} by the alpha-switching rule given above; within the plural, then, the nominative is marked by moving the stress back again from ending to stem, i.e. by a rule [- stressed] → [+ stressed]/_ (nom), which, as will become clear, is only a special case of the alpha-switching rule. In other words, the stress of nom. pl. *vólki* is only superficially identical to that of nom. sg. *vólk*, gen. sg. *vólka* etc.; morphophonemically, the stress of *vólki* results from a double stress shift, first from stem to ending to mark the plural, and then, within the latter, from ending to stem to mark the nominative.
- ⁷ To avoid misunderstandings, it should be emphasized that morphophonemic transcriptions such as {s'ost'#r-} are only a convenient shorthand for distinctive-feature matrices.
- ⁸ The underlying form is {jaj#c-}; when preceded by {j} in a few exceptional cases, {#} becomes /i/ when vocalized.
- ⁹ D. N. Ušakov et al., *Tolkovyj slovar' russkogo jazyka*, 4 vv., Moscow, 1935-40; S. I. Ožegov, *Slovar' russkogo jazyka*, Moscow, 1949, 1952², 1953³.
- ¹⁰ AN SSSR, *Grammatika russkogo jazyka*, I, *Fonetika, morfoložija*, Moscow, 1953, § 276; S. I. Ožegov and A. B. Šapiro, *Orfografičeskij slovar' russkogo jazyka*, Moscow, 1959⁴; AN SSSR, *Slovar' russkogo jazyka*, 4 vv., Moscow, 1961; AN SSSR, *Slovar' sovremennogo russkogo literaturnogo jazyka*, 17 vv., Moscow, 1965; S. I. Ožegov, *op. cit.*, 1960⁴.
- ¹¹ A. V. Isačenko, *Die russische Sprache der Gegenwart. Teil I: Formenlehre*, Halle (Saale), 1962, p. 111.
- ¹² B. O. Unbegaun, *Russian grammar*, Oxford, 1957, p. 61.

- ¹³ L'. Ďurovič, *Paradigmatika spisovnej ruštiny*, Bratislava, 1964, p. 126f.
- ¹⁴ A. A. Zaliznjak, "Udarenie v sovremennom ruskom slovoizmenenii", *Russkij jazyk v nacional'noj škole*, 1963, No. 2, p. 7-23; —, "'Uslovnnoe udarenie' v ruskom slovoizmenenii", *Voprosy jazykoznanija*, 1964, No. 1, p. 14-29.
- ¹⁵ P. Garde, "Pour une théorie de l'accentuation russe", *Slavia*, 34, 1965, p. 529-59.
- ¹⁶ V. A. Red'kin, "Akcentologija", *Osnovy postroenija grammatiki sovremennogo russkogo literaturnogo jazyka*, Moscow, 1966, p. 19-49.
- ¹⁷ V. A. Red'kin, "Sistema udarenija suffiksial'nyx polnyx prilagatel'nyx v sovremennom ruskom jazyke", *Učenyje zapiski Instituta slavjanovedenija AN SSSR*, 23, 1962, p. 204-11; —, "K udareniju imen prilagatel'nyx s suffiksom -n-", *Slavjanskaja filologija*, 5, 1963, p. 69-84; —, "K akcentologičeskemu zakonu Xartmana", *Kratkie soobščeniya Instituta slavjanovedenija*, 41, 1964, p. 55-69; —, "O ponjatii produktivnosti v akcentologii", *Russkij jazyk v nacional'noj škole*, 1965, No. 2, p. 6-12; —, "O variantnosti akcentnyx edinic v formax sklonenija russkogo jazyka", *Československá rusistika*, 12, 1967, p. 94-9.
- ¹⁸ N. S. Trubetzkoy, *Das morphologische System der russischen Sprache* (= TCLP 5, 2), Prague, 1934, p. 34.
- ¹⁹ Cf. for example J. Kuryłowicz, "Struktura morfemu", *Biuletyn Polskiego Towarzystwa Językoznawczego*, 7, 1938, p. 10-28; —, "Sistema russkogo udarenija", *Naukovi zapysky L'vivs'koho deržavnoho universitetu*, 3 (Serija filolohična, 2), 1946, p. 75-84.
- ²⁰ Horace G. Lunt, "On the study of Slavonic accentuation", *Word*, 19, 1963, p. 82-99.
- ²¹ Lunt, 96-7. *Zemlěj* is an unfortunate oversight: the genitive plural of *zemljā* can only be *zemél'*; and even if it were **zemlej*, the *e* would of course not be 'inserted' but part of the ending {-ej}. The morphophonemic shape of *zemél'* is {zem'#1'+ \emptyset }, and that of Lunt's **zemlěj* would be {zeml'+ $\acute{e}j$ }.
- ²² Lunt's second example of initial/desinential vs. predesinential/desinential stress shifts (p. 97) is hard to follow: 'the past forms *dāl* ~ *dalā* "gave (m. ~ f.)" represent INITIAL-SYLLABLE STRESS ~ DESINENTIAL, cf. *pěredal* ~ *peredalā* "handed over". But the non-prefixed verb and such prefixed forms as *pōdal*, *prīdal* ~ *podalā*, *prīdalā* "gave, added" can also be looked on as containing PREDESI-NENTIAL ~ DESINENTIAL STRESS, and this interpretation gives rise to the substandard form *perēdal*. How *pōdal*, *prīdal* can be said to have predesinential stress escapes me, and it is equally mysterious why predesinential stress should give rise to the NON-predesinential *perēdal*. Perhaps 'predesinential' is an oversight for pre-predesinential: this would account for *pěredal* → *perēdal* under the influence of *pōdal*, *prīdal*, but it is still hard to see what kind of morphophonemic gymnastics could attribute pre-predesinential stress to *dāl*.
- ²³ Note that the morphophonemic end-stress of /m'ést/ = {mest+ \emptyset } is confirmed by the substandard /m'istóf/ = {mest+ $\acute{o}v$ }, evidencing the same parallelism as in {det'+ $\acute{e}j$ }, {xlopot+ \emptyset }, discussed at the end of this paper.
- ²⁴ R. O. Jakobson, "Beitrag zur allgemeinen Kasuslehre: Gesamtbedeutungen der russischen Kasus", *TCLP*, 6, 1936, p. 240-88; —, "Morfologičeskie nabljudenija nad slavjanskim sklonenijem (sostav russkix padežnyx form)", *American contributions to the Fourth International Congress of Slavists*, 's-Gravenhage, 1958, p. 127-56.

VOWEL ~ ZERO ALTERNATIONS IN RUSSIAN DERIVATION

Languages which join an elaborate flexional apparatus to a complicated system of word-formation — as is the case in the majority of Slavic languages — can be described only with the aid of a complex set of morphophonemic entities. These entities are of two basic types: items (stems, affixes, boundaries) and processes (rules for concatenating items and for describing the phonetic consequences of such concatenation). The exact border between these two types of entity is by no means clear: certain kinds of information can be included in either the item or the process part of the morphological description (e.g., the palatalization of paired consonants before {e} can be included in the description of Russian stems, or can be left to the morphophonemic rules of the flexional system). This is not the place to discuss the appropriate balance between the specificity of the information contained in the item description versus that of the process rules (complexity in one part of the morphological description standing in inverse proportion to that in the other part). Rather, we shall examine in some detail one specific morphophonemic entity of contemporary standard Russian (CSR), namely the alternating vowel ~ zero morphophoneme, and attempt to point out some of the differences in the behavior of this entity in the flexional and the derivational systems respectively. The present paper is intended to be suggestive rather than exhaustive.

1. *Formal Conventions.* Throughout this paper, morphophonemic transcriptions are given in curved brackets {}, phonemic transcriptions in slants //, and phonetic transcriptions in square brackets []. Phonemic transcription is used without regard to the question of whether a separate phonemic level exists, as a convenient device for indicating more phonetic detail than can be shown in the morphophonemic transcription, but where full phonetic specification would be irrelevant to the point under discussion. The phonetic transcription used here is that of R. I. Avanesov,² with the exception of the reduced mid central vowel, rendered here by [ə]. The morphophonemic transcription is moderately but not optimally "broad"; on the other hand, it is broad in not marking the predictab-

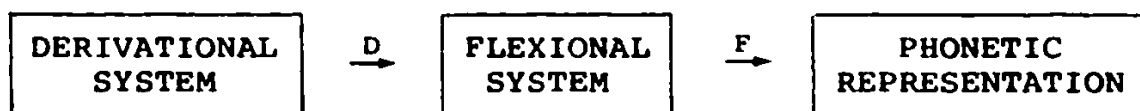
palatalization of paired consonants before {e} or the stress-conditioned reductions of non-diffuse vowels, but on the other hand it uses only the relatively "narrow" alphabetic system, which cannot represent such generalized morphophonemes as the alternating {e ~ o} in identical environments (cf. вёл, вёдший) as a single entity — such representation being possible only with a distinctive feature notation (+ vocalic, - consonantal, - diffuse, - compact). In other words, the morphophonemic transcription used in this paper is a compromise between accuracy and readability; however, the simplifications involved are not relevant to the problems with which the paper is concerned.

The following symbols are used in this paper: {#} is an alternating vowel ~ zero morphophoneme as in ДЕНЬ, gen. ДНЯ, stem {d'#n'} or ОКНО́, gen. pl. О́КОН, stem {ok#n}. [ø] is the phonetically (and /ø/ the phonemically) zero alternant of morphophonemic {#}, there where it is necessary for clarity's sake to mark this zero alternant explicitly; otherwise, phonemic and phonetic zero are shown by the absence of a symbol (the gen. sing. of ДЕНЬ thus appearing as /d'øn'á/, [d'øn'á] or simply [d'n'á]). {%} and {ø} are morphophonemic symbols not in general use; they are introduced in this paper to render the alternating vowel ~ zero morphophoneme of the derivational system ({%}), as distinguished from the flexional {#}, with {ø} representing the zero flexional-level alternant of derivational {%}, as in derivational {IG%R} from which are generated the flexional stems {igør} of игра́, gen. pl. игр 'game' and {igóR+%k} of the diminutive игóрка, gen. pl. игóрок; like [ø], {ø} is used only where clarity requires explicitness (elsewhere, this symbol is simply omitted, e.g. {igr}). Stems in the derivational system are given capital letters, those of the flexional system in lower-case letters. The boundary between stem and affix is marked by a plus +, that between stem (simple or complex) and ending by the hyphen -. The tilde ~ means 'alternating with'. The arrow → indicates that the entity to the right thereof is generated from that to the left; arrows with superscripts ^D and ^F indicate that the rules of generation belong to the derivational and flexional systems respectively — e.g., {B%REG} ^D {béreg} ^F [b'ér'bk] in the nom. sing. of бе́рег 'bank'. Stress will be marked on non-monosyllables as a matter of convenience, but the stress markings have no systematic import. Further conventions will be introduced and explained as required below.

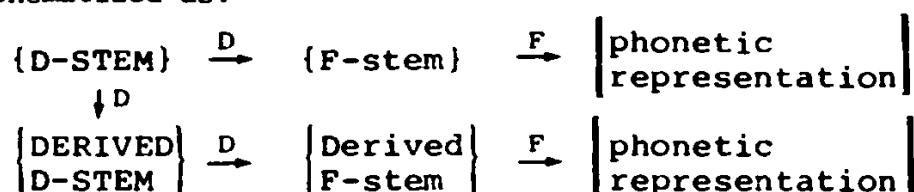
2. *Theoretical Framework.* There is no need here to recapitulate the views of many scholars who have discussed the interrelations of the derivational and

flexional systems.³ Instead, we shall summarize the theoretical framework, discussed in more detail elsewhere,⁴ which serves as background for the remarks made in this paper. This theoretical framework itself has been advanced only tentatively, as a basis for discussion, and may well stand in need of revision; however, such revision is unlikely to affect the description of the vowel ~ zero morphophonemes with which this paper is concerned.

The morphological system of Russian consists of two hierarchically ordered subsystems, derivational and flexional. Derivation is anterior (in the synchronic sense) to flexion, since the stems of the flexional system are to a large extent the result of items and processes on the derivational level. The output of the derivational system serves as the input to the flexional system:



Since the entities of the flexional system are generated by concatenating items of the derivational system (stems, affixes) with concomitant morphophonemic change (truncation, substitutive softening, interfixation, etc.), it is clear that the "stems" of the two systems differ considerably, e.g. the flexional stem {bereg}, which serves to generate all the paradigmatic forms of the word бѐрег, [b'ér'ɛk], [b'ér'ɛgə], ..., [b'ɛr'i'ɛgá] etc., cannot serve to generate the derived words безбрѐжный, прибрѐжный etc. We assume as a postulate, therefore, that every word has a derivational (D-) stem, adequate to generate both the word's flexional stem and the derivational and flexional stem of all words derived from the given word. The morphophonemic rules of the flexional system (i.e., morphophonemics in the usual sense) serve to generate phonetic representations out of flexional (F-) stems. The morphophonemic rules of the derivational system, which are almost totally uninvestigated, serve two functions: they generate flexional stems out of derivational stems, and they generate derived (secondary) derivational stems out of their primary bases (Russian произво́дящая основа). In somewhat simplified form, this theoretical framework can be schematized as:



The D-stem of a word, as is clear from this schema, stands in a predictive relation both to its own F-stem (and ultimately to the latter's phonetic representation), and to the D-stems, F-stems and phonetic representations of all secondary, tertiary etc. derivatives of the given word as well.

Against this background, it is clear that the flexional rules will have to generate either a full vowel (symbolized here by [v], without for the moment considering exactly which full vowels occur in which environments) or no vowel ([∅]) out of the flexional morphophoneme {#}, i.e.

$$\{#\} \xrightarrow{F} \begin{cases} [v] \\ [\emptyset] \end{cases}$$

(without specifying the environments in which the one and the other choice must be made; cf. below). It is equally clear, moreover, that the flexional morphophoneme {#} itself must be generated by a rule of the derivational system out of some entity of the derivational stem, namely out of the derivational vowel ~ zero morphophoneme {%}. Flexional {#}, however, is but one of the three possible flexional morphophonemes resulting from derivational {%}, the other two being a full vowel (symbolized here by {V}, again without considering exactly which full vowel obtains in which environments), e.g. {IG%R} → {IGOR+} → {igór+#k}, and the absence of any vowel morphophoneme, namely {∅}, e.g. {B%REG} → {+B∅REG+} → {bez+bréz+#n-}.⁵ This subset of the D-rules will thus have the form (again without specifying environments):

$$\{\%\} \xrightarrow{D} \begin{cases} \{V\} \\ \{\emptyset\} \\ \{#\} \end{cases}$$

With these general considerations in mind, we can examine flexional {#} and derivational {%} in more detail, in sections 3. and 4. respectively.

3. *The Vowel ~ Zero Morphophoneme in Flexion: {#}*. Although the facts concerning the distribution and various phonetic realizations of the vowel ~ zero morphophoneme in the flexional system of CSR are generally well known, a brief recapitulation may not be out of place here.⁶ Stems differ from endings, both in the specific vowels which alternate with [∅] and in the environments which condition the choice of [∅] or [v]. Nominal stems generally show /ó/, /é/ or their unstressed reductions (СОН, gen. СНА 'sleep'; ДЕНЬ, gen. ДНЯ 'day'), verb stems these same two vowels (ЖЕЧЬ, past tense masc.

жѣг, 1st pers. sing. pres. жгу 'burn') plus /i/ in aspect formation (поджигать imperfective 'set fire to'); endings have principally /i/ in verbs (infinitives, нести́ 'carry', cf. проче́сть 'read through'; imperatives, неси́! 'carry!', cf. сядь! 'sit down!') but /o/, /u/, /a/ (all rare) in substantive endings (fem. instr. sing. водо́й ~ водо́ю 'water', но́чью 'night'; instr. plur. водами but лоша́дми 'horses'). The choice of full vowel or zero is determined partially phonetically, partially by paradigm class or stylistically in endings, but is conditioned almost exclusively by the phonetic environment in the case of stems: segments containing {#} reduce it to [∅] before segments the first or second item of which is a full vowel, but vocalize this {#} to a full vowel in all other positions, i.e. before two consonants (подобра́ть, pres. подберу́ etc. 'pick up'), consonant plus {#} (infinitive жечь 'burn' = {ž#g-t'#} → žog-t' → [žéč]); past tense {ž#g-l#} → žog-l → [žók]), {#} plus consonant (plural донья́ etc. of дно 'bottom' = {d#n+#j-} → dón+j-; instr. sing. ложью́ 'lie' = {l#ž-#ju} → lóž-ju → [lóžju]), or {#} alone ({d'#n'-#} → [d'én'])

It must be emphasized that the occurrence of vowel ~ zero alternations is not automatic, that is, not predictable from the environment in which a stem occurs (the realization of the vowel ~ zero morphophoneme as [v] or [∅], on the other hand, is predictable), although the occurrence of {#} is more nearly predictable in some form classes than in others. In masculine substantives the occurrence of {#} is largely unpredictable: стрелóк, стрелкá 'gunner' ((strel#k-)) vs. игрóк, игрокá 'gambler' ((igrok-)), both animate; платóк, платкá 'kerchief' ((plat#k-)) vs. челнóк, челнокá 'canoe' ((čolnok-)), both inanimate; кашель, кашля́ 'cough' ((káš#l'-)) vs. скóбель, скóбеля́ 'spoke-shave' ((skóbel'-)); ремéнь, ремня́ 'strap' ((rem'#n'-)) vs. ячмéнь, ячменя́ 'barley' ((jačmen'-)); соловéй, соловья́ 'nightingale' ((solov'#j-)) vs. дуралéй, дуралéя 'nincompoop' ((duraléj-)); наём, найма́ 'hiring' ((naj#m-)) vs. поём, поёма́ 'meadow flooded in Spring' ((pojóm-)). The appearance of the "mobile vowel" — i.e., the existence of morphophonemic {#} — is more nearly predictable in the gen. pl. of feminines and neuters, but not entirely so: бóйна, gen. pl. бóен 'slaughterhouse' ((bój#n'-)) vs. оббóйма, оббóям 'cartridge clip' ((obój#m-)); тюрьма́, тюрем 'prison' ((t'ur'#m-)) vs. пáльма, пáльм 'palmtree' ((pál'm-)); кúкла, кúкол 'doll' ((kúk#l-)) vs. иглá, игл 'needle' ((igl-)); судьбá, судéб 'fate' ((sud'#b-)) vs. прóсьба, прóсьб 'request' ((próz'b-)); ядрó, ядер 'kernel' ((jad'#r-)) vs. (plural only) нéдра, нéдр

'womb, bosom' ($\{nédr-\}$). In the short form masc. of adjectives, the appearance of a mobile vowel is largely but still not entirely predictable: **БЫСТРЫЙ**, **БЫСТР** ($\{bístr-\}$) vs. **ОСТРЫЙ**, **ОСТЁР** (and **ОСТР**) 'sharp' ($\{óst'\#r-\}$); **ПОДЛЫЙ** **ПОДЛ** 'vile' ($\{pódl-\}$) vs. **СВЁТЛЫЙ**, **СВЁТЕЛ** 'light, clear' ($\{svét'\#l-\}$). Since the existence of morphophonemic $\{\#\}$ can in many cases not be predicted from its environment (e.g., the /ó/ of **СТРЕЛО́К** cannot be explained by the impossibility of a terminal cluster /lk/, cf. **ПОЛК**, **ШЁЛК**, etc.), internal consistency requires that it be stated explicitly as part of the morphophonemic transcription of every stem and ending in which it occurs.

4. *The Vowel ~ Zero Morphophoneme in Derivation.* Whereas the vowel ~ zero alternations in Russian flexion are fairly straightforward and systematic, at least in stems, those of Russian derivation are somewhat more complicated. An examination of word-families in terms of the vowel ~ zero alternations occurring therein brings to light two principal classes of alternation:

(1) there are words in which the vowel ~ zero alternation of the flexional stem of the base is eliminated in the derivational process, $\{\#\}$ being replaced either by a full vowel (type **БУ́ЛКА**, gen. pl. **БУ́ЛОК** 'bun', diminutive **БУ́ЛОЧКА**) or by zero (type **ЛЁ́Н**, **ЛЬНА** 'flax', derived adjective **ЛЬНО́ВЫЙ** 'flaxen'), i.e. in which we have the derivational alternations $\{\#\} \sim \{V\}$ and $\{\#\} \sim \{\emptyset\}$ respectively;

(2) in other word-families, there are no vowel ~ zero alternations on the flexional level, but such alternations appear when one flexional stem is compared to another, a full vowel of the base corresponding to a zero in the derived form (type **МЕ́БЕЛЬ**, **МЕ́БЕЛИ** 'furniture', **МЕБЛИ́РОВАТЬ** 'to furnish') or vice versa (type **ИГРÁ**, gen. pl. **ИГР** 'game', diminutive **ИГРО́РКА**), i.e. in which one has the derivational alternation $\{V\} \sim \{\emptyset\}$ ($\{\emptyset\} \sim \{V\}$).

We shall examine these two classes of alternation in 4.1 and 4.2 below.

4.1. $\{\#\} \sim \{V\}$ and $\{\#\} \sim \{\emptyset\}$ Alternations in Derivation. The rules for vocalization ($\{\#\} \xrightarrow{D} \{V\}$) and elimination ($\{\#\} \xrightarrow{D} \{\emptyset\}$) of $\{\#\}$ in derivational bases are generally similar to those governing the behavior of $\{\#\}$ in flexion, but there are certain striking differences.

4.1.1. *Alternations before consonants.* Stems containing $\{\#\}$ vocalize it to a full vowel before suffixes beginning with a consonant (i.e., a [-vocalic, +consonantal] segment): **БАГО́Р**, gen. **БАГРÁ** ($\{bag\#r-\}$) 'hook, gaff' \xrightarrow{D} **БАГО́РЩИК**

((bagórščik-)) 'fisherman etc. using a gaff', лóдка, gen. pl. лóдок {{lód#k-}} 'boat' ^D → лóдочник {{lódošn'ik-}} 'boatsman', ковёр, коврá {{kov'#r-}} 'carpet' → ковёрчик {{kov'órčik-}} 'little carpet', etc. There do not appear to be any exceptions to this rule.

4.1.2. *Alternations before full vowels.* Less stable is the behavior of {#} before derivational suffixes beginning with a full vowel (i.e., a [+vocalic, -consonantal] segment). Ordinarily, derivational stems containing {#} eliminate it before vocalic suffixes, but there are a number of exceptions to this general rule. A look at several typical suffixes makes this clear.

The suffix {+ást(ij)}. One finds the expected elimination of {#} in у́гол, gen. углá {{ug#l-}} 'corner, angle' → углáстый {{uglást-}} 'angular', вихóр, вихрá {{v'ix#r-}} 'cowlick' → вихрáстый {{v'ixrást-}} 'with a cowlick', etc., but a seemingly unmotivated vocalization of {#} in лоб, лба {{l#b-}} 'forehead' ^D → лобáстый {{lobást-}} 'with a prominent forehead' and кóрень, кóрня {{kór'#n'-}} 'root' → коренáстый {{kor'enást-}} 'thicket, stump' (on the reasons for such anomalies, cf. below).

The suffix {+ik}. Derivational stems which contain a full vowel in the first syllable and a {#} in the second, eliminate the {#} as would be expected in derivation before the (dimin.) vocalic suffix {-ik-}: козёл, gen. козлá {{koz'#l-}} 'goat' ^D → кóзлик {{kózl'ik-}} 'small goat', and similarly орёл, орлá 'eagle' ^D → óрлик, осёл, ослá 'donkey' ^D → óслик, хохбл, хохлá 'cowlick' ^D → хóхлик, чехóл, чехлá 'case' ^D → чéхлик, ковёр, коврá 'carpet' ^D → кóврик, ломóть, ломтjá 'round (of bread)' ^D → лóмтик 'slice'. However, derivational stems which contain no full vowel, but only {#} ("non-syllabic stems" in Jakobson's terminology),⁷ vocalize this {#} even before the vocalic suffix {-ik-}: лоб, лба 'forehead' ^D → лóбик; ров, рва 'ditch' ^D → рóвик; пёс, пса 'dog' ^D → пёсик; рот, рта 'mouth' ^D → рóтик.

The suffix {+ist(ij)}. The adjective-forming suffix {-ist-} is more regular in its effect on the {#} of derivational bases than the diminutive {-ik-}.

The great bulk of derivational bases containing {#} eliminate it before {-ist-}: стéбель, стéбля 'stem' ^D → стéблистый 'many-stemmed'; кóрень, кóрня 'root' ^D → корнйстый; кóготь, кóгтя 'claw' ^D → когтйстый; нóготь, нóгтя 'nail' ^D → ногтйстый; ручёя, ручья́ {{ruč#j-}} 'stream' ^D → ручья́стый {{ručjst-}}. Derivational bases containing only {#} do not vocalize it before

{-ist-}: лёд, льда 'ice' \xrightarrow{D} льди́стый; пень, пня 'stump' \xrightarrow{D} пни́стый; мох, мха (and мѡха) 'moss' \xrightarrow{D} мши́стый. Only ка́мень, ка́мня 'stone' and сту́день, сту́деня 'galantine' vocalize the {#} of their stems before this suffix, giving каменíстый and студенíстый.

The suffixes {+iř#k-}, {+yř#k-}. Standard grammars, such as that of the Soviet Academy, list two suffixes in /iřk/, a diminutive -yřko and a scornful, ironic -iřka (from feminines and animate masculines) ~ -iřko (from neuters and inanimate masculines). These suffixes would require a separate study, since the existing descriptions do not give an adequate picture of either their formal or their semantic features (e.g., stem-final consonants of the derivational bases are sometimes softened, sometimes not: рот, рта ({r#t-}) 'mouth' gives the diminutive ротíшко, but дон, дна ({d#n-}) 'bottom' has the diminutive дѡнышко). Most of the -a declension derivatives show {#} \xrightarrow{D} {∅}, e.g. земля, gen. pl. земéль ({zem'#l'-}) 'earth' \xrightarrow{D} земли́шка (pejorative), па́рень, па́рня ({par'#n'-}) 'lad' \xrightarrow{D} парни́шка, статья, gen. pl. статéяй ({stat'#j-}) 'article' \xrightarrow{D} статы́шка ({stat'#j'iř#k-}); судьба́, gen. pl. сýдеб ({sud'#b-}) 'fate' \xrightarrow{D} суды́шка; only the "non-syllabic" лёд, льда ({l'#d-}) 'ice' vocalizes {#} in леды́шка 'piece of ice'. The -o declension derivatives are less consistent: {#} is eliminated in the cases of письмѡ, gen. pl. пи́сем ({p'is'#m-}) 'letter' \xrightarrow{D} письмы́шко, седлѡ, се́дел ({s'od'#l-}) 'saddle' \xrightarrow{D} се́длышко, and the non-syllabic лоб, лба ({l#b-}) 'forehead' \xrightarrow{D} лбы́шко, but vocalized in рот, рта ({r#t-}) 'mouth' \xrightarrow{D} ротíшко, дон, дна ({d#n-}) 'bottom' \xrightarrow{D} дѡнышко, and сýдно, gen. pl. судѡв 'boat' (with suppletive loss of {-#n-}, but cf. сýдно, gen. pl. сýден 'bedpan', obliging one to posit {sud'#n}) \xrightarrow{D} судёнышко, pejorative and diminutive 'boat'; finally, стеклѡ, gen. pl. стѣкол ({st'ok#l-}) 'glass' has both стѣклышко and стѣкѡлышко, the former having the meaning both of a diminutive of 'glass' and of 'piece of glass', the latter being rather dialectal and an affectionate diminutive.

The suffix {+ov(δj)}, {+δv(ij)}. The adjective-forming suffix {-ov-} causes the {#} of derivational bases to be eliminated everywhere where the base contains a full vowel in addition to {#}, e.g. огѡнь, огня́ 'fire' \xrightarrow{D} огнево́я, ко́рень, ко́рня 'root' \xrightarrow{D} корнево́я, у́гол, угла́ 'corner' \xrightarrow{D} угловѡя, котѣл, котла́ 'cauldron' \xrightarrow{D} котло́вый, ковѣр, ковра́ 'carpet' \xrightarrow{D} ковро́вый. Morphophonemic {#} of the base is also eliminated in a few non-syllabic bases (лѣн, льна 'flax'

^D → льно́вый, пёс, пса 'dog' → псо́вый), but is more frequently vocalized, as in лоб, лба 'forehead' → лобово́й 'frontal', лёд, льда 'ice' → ледово́й (and ледо́вый), рот, рта 'mouth' → ротово́й, мох, мха (and мо́ха) 'moss' → мохово́й.

The erratic behavior of {#} is apparent from the sampling of suffixes just adduced. In some cases, of course, the historical causes of the appearance of {V} where we would expect {∅} from {#} are clear: an original full vowel of the stem has been supplanted by the alternating vowel ~ zero morphophoneme {#}: ка́мень, ка́мня is an innovation from an older *-n*-stem (cf. OCS *katy*, gen. *katene*), and one can assume that камені́стый was formed before {e} > {#}; similarly, ко́ренáстый was presumably formed before the full vowel (cf. OCS *koreny*, gen. *korene*) had become {#} in ко́рень, ко́рня. It is tempting to assume that ледо́вый (ледово́й), ледяно́й, and лёдышка were formed before Old Russian лёдъ, леду had become лёд, льда but льди́на (льди́нка) and льди́стый after this change; however, without a detailed historical study of derivation, such speculation about relative chronology can have no more scientific value than that about "morphological analogy" or "leveling", the results of which appear equally capricious (Russian Шве́ц, Швеца́, Ukrainian Шве́ц, Шевця́, Polish *szewc*, *szewca*, etc.). In any case, such explanations cannot account for forms like мохово́й from мох, мха (мо́ха) < мъхъ and ротово́й from рот, рта < рѣтъ, and even if — as is unlikely — such a neat historical explanation turned out to cover all the above cases, there is no apparent way to convert this historical knowledge into a morphophonemic description of the modern language. We are left, then, with such anomalous pairs as роти́шко and лби́шко, лоба́стый and угла́стый, студені́стый and стебли́стый, ледо́вый and льно́вый, etc.

The only generalization (concerning the vocalization vs. elimination of {#} in derivation) permitted by the facts so far is that there is a tendency to vocalize non-syllabic bases (i.e., to avoid the non-syllabic form of stems containing {#}) in derivation. This tendency becomes a law only before the suffix {-ik}, which requires that the stress fall on the pre-suffixal syllable, whence лобі́к, пёсі́к, ро́вик, ро́тик; otherwise, variation is the rule, cf. лоба́стый but лби́шко, ко́ренáстый but корні́стый, ледо́вый and лёдышка but льди́на and льди́стый, etc. Whereas we saw in 4.1.1. that {#} invariably becomes {V} before a consonantal suffix, 4.1.2. has now shown us that {#} does *not* always become {∅} before a vocalic suffix. In 4.1.3., we shall see what happens to {#}

before suffixes beginning with a segment which is neither consonantal nor vocalic, namely {#}.

4.1.3. *Alternations before {#}*. Stems containing {#} as penultimate segment invariably vocalize this {#} to a full vowel before suffix-initial {#}. Such sequences of two vowel ~ zero morphophonemes occur occasionally in the formation of adjectives in {#n} and frequently in the formation of diminutives in {#k} (masculines in -ок and feminines in -ка). Examples of adjectives: закуска ({zakús#k-}) 'appetizer' → заку́сочный ({zakúsoč#n-}),⁸ убо́рка ({ubór#k-}) 'harvesting' → убо́рочный ({ubóroč#n-}), литьё ({l'it#j-}) 'casting' → литéя-ный ({l'itéj#n-}), семья́ ({sem#j-}) 'family' → семе́йный ({seméj#n-}), etc. Incidentally, in the last two examples it is clear that contrary to the Academy grammar (I, p. 344), there is nothing unusual about the formation of adjectives in -н- from jot-stem substantives; preterminal {#} is vocalized as in the case of all other sequences of {#} in successive syllables. Examples of diminutive substantives: кусо́к ({kus#k-}) 'piece' → кусо́чек ({kusóč#k-}), у́гол ({úg#l-}) 'corner' → уголо́к ({ugol#k-}), руче́й ({ruč#j-}) 'stream' → ручеёк ({ručej#k-}), бу́лка ({búl#k-}) 'bun' → бу́лочка ({búloč#k-}), льди́нка ({l'd'ín#k-}) 'piece of ice' → льди́ночка ({l'd'ínoč#k-}), земля́ ({zem#l'-}) 'earth' → земе́лька ({zemél'#k-}), etc.⁹

4.2. {V} ~ {∅} and {∅} ~ {V} alternations in derivation. In all the vowel ~ zero alternations discussed above, the base form upon which the flexional or derivational rules operated contained the morphophoneme {#}; the behavior of this entity in derivation was quite similar to that in flexion (although not identical; cf. лóбик, рóтик for the expected *лбик, *ртик). The flexional system has no parallel for the type of alternation which we shall now examine, however.

Russian contains a good many word families manifesting a type of vowel ~ zero alternation which as far as I know has not been mentioned in the literature. These are sets of derivationally related words in which one member of the set contains a full vowel in its flexional stem (e.g. ме́бель, ме́бели 'furniture') but the other member no vowel — i.e., the stem vowel of the derivational base is "lost", as it were, in the process of derivation (cf. мебе́лирова́ть 'to furnish'). In other cases, the opposite situation obtains: a flexional stem without a vowel acquires one in the course of entering a derived stem, e.g. игра́, gen. pl. игр

'game' → diminutive *игóрка*, adj. *игóрный*, etc. Alternations of the first type ($\{V\} \rightarrow \{\emptyset\}$) appear to be completely idiosyncratic, but those of the second type ($\{\emptyset\} \rightarrow \{V\}$) are largely predictable in terms of the morphophonemic structure of the suffix with which they are combined. A sampling of each type will be presented below.

4.2.1. $\{V\} \rightarrow \{\emptyset\}$ alternations. Alternations of this type are due to the various time depths and source languages of borrowings, which of course does not simplify their description in CSR. Examples of such alternations: *та́бель*, gen. *та́беля* 'table (of ranks, etc.)' ($\{tábel'\}$) → *таблѝца* 'table, plate' ($\{tabl'íc'\}$); *ка́бель*, *ка́беля* 'cable' ($\{kábel'\}$) → *каблогра́мма* 'cablegram' ($\{kablográmm'\}$); *ра́кель*, *ра́келя* 'knife to scrape ink from typeface' ($\{rákel'\}$) → *раклѝст* 'printing shop foreman' ($\{rakl'íst'\}$); *скóбель*, *скóбеля* 'spokeshave' ($\{skóbel'\}$) → *скоблѝть* 'scrape, plane' ($\{skobl'í'\}$); *ме́бель*, *ме́бели* 'furniture' ($\{mébel'\}$) → *меблировáть* 'to furnish' ($\{mebl'irová'\}$); *ша́бер*, *ша́бера* 'plane' ($\{šáber'\}$) → *ша́брить* 'to plane' ($\{šábr'i'\}$). In other, phonetically similar or even identical cases, the vowel of the original stem is preserved in the derived forms (this is especially true of derived verbs), e.g. *моде́ль*, *моде́ли* 'model' ($\{modél'\}$) → *моделѝровать* 'to model' ($\{model'írova'\}$) and similarly *шта́бель*, *шта́беля* 'stack, pile' → *штабелѝровать*, *ни́кель*, *ни́келя* 'nickel' → *никелѝровать*, *карте́ль*, *карте́ли* 'cartel' → *картелѝровать*, etc. Words in the one and the other group (i.e., alternating and non-alternating) do not appear to be marked in any way phonetically, for example by non-sharpening of consonants before {e}. One must conclude therefore that pairs like *моде́ль* → *моделѝровать* and *ме́бель* → *меблировáть* are already distinctively marked on the level of the derivational stem, i.e. as

$$\begin{array}{l} \{MODEL'\} \rightarrow \{modél'\} \\ \downarrow \\ \{MODEL'\} \rightarrow \{model'írova'\} \end{array}$$

on the one hand and

$$\begin{array}{l} \{MÉBEL'\} \rightarrow \{mébel'\} \\ \downarrow \\ \{MEB\emptyset L'\} \rightarrow \{mebl'irová'\} \end{array}$$

on the other. Similarly, the flexional stems of *ни́кель*, *шта́бель*, *карте́ль* are derived from underlying stems which also contain a full vowel ($\{E\}$), whereas *та́бель*, *скóбель*, *ша́бер*, although their flexional stems contain the full vowel

{e} just as do those of the first three words, must derive this {e} not from a full vowel, but from the derivational-level vowel \sim zero morphophoneme {#}.

4.2.2. $\{\emptyset\} \rightarrow \{V\}$ alternations. Alternations of the second type, i.e. in which the base word contains no vowel in a terminal cluster, but where such a vowel appears in derived forms, are more nearly predictable on phonetic grounds. Such alternations are particularly frequent (relatively speaking; there are in general not very many such words) in words containing velar + liquid clusters, e.g.: with {gr}, *игра́*, gen. pl. *игр* 'game' ({igr-}) \rightarrow diminutive *игóрка* ({igór#k-}); *вѐнгр*, -а 'Hungarian' ({véngr-}) \rightarrow feminine *венгѐрка* ({vengér#k-}) and adj. *венгѐрский*; with {gl}, *игла́*, gen. pl. *игл* ({igl-}) \rightarrow dimin. *игóлка* ({igól-#k-}), adjective *игóльный*; *кѐгля*, more often plur. *кѐгли*, gen. *кѐблей* 'skittles' ({kégl'-}) \rightarrow adj. *кѐгельный* ({kégel'#n-}); with {kr}, *йскра*, gen. pl. *искр* 'spark' ({ískr-}) \rightarrow dimin. *йскорка* ({ískor#k-}), *шáнкр*, -а 'chancere' ({šáňkr-}) \rightarrow adj. *шáнкерный* ({šáňker#n-}); with {kl}, *пúкля*, gen. pl. *пúклей* 'curls' (= *бúкли*) for which Dal' gives the derived adjective *пúкольный* was the only example which could be found. Examples with the clusters {xr} and {xl} are of dubious validity in CSR: *барахлó* 'trash' forms a derived substantive *барахóлка* 'flea market', but since the base has no plural, one cannot assume that its stem is {baraxl-} rather than {barax#l-} (i.e., one cannot determine whether one has to do with the alternation of {V} with $\{\emptyset\}$ or with {#}); finally, *махóрка* 'cheap tobacco' ({maxor#k-}) is undoubtedly derived from *махрá*, but since the latter is without a plural, one is left in the same uncertainty as with *барахлó*.

The cluster {kv} shows the same alternation as those above, e.g. *ты́ква*, gen. pl. *тыкв* 'pumpkin' ({tíkv-}) \rightarrow dimin. *ты́ковка* ({tíkov#k-}), *бúква*, *букв* 'letter' ({búkv-}) \rightarrow *бúковка* ({búkov#k-}); *смóква* 'fig' and *кльóква* 'cranberries' have no plurals, but can by phonetic analogy with *ты́ква* and *бúква* be assumed to have the stems {smókv-} and {kl'úkv-} respectively, and form *смо-кóвница* 'figtree' ({smókóvn'ic-}) and the dimin. *кльóковка* ({kl'úkov#k-}). The same alternation appears in some derived adjectives, e.g. *ты́ковный* beside *ты́квенный*, *кльóковный* (Dal') beside *кльóквенный*, but only *бúквенный*.

The $\{\emptyset\} \rightarrow \{V\}$ alternation is somewhat less frequent in words not containing velars in the final cluster. The group stop + liquid takes an "inserted" vowel in derivation in several borrowed words, e.g. with {str}, *магíстр* 'master' ({magístr-}) \rightarrow *магíстѐрство* and *магíстѐрский*, *минíстр* 'minister' \rightarrow

министёрство 'ministry'; with {bl}, корáбль 'ship' ({korabl'-}) + корабéльный 'naval' and корабéльщик 'sailor', дирижа́бль 'dirigible' + adj. дирижа́бельный.

Other clusters occur only in isolated examples, e.g. бéздна, gen. pl. бéздни 'abyss' ({bézn-}) + бездóнный ({bezdbn#n-});¹⁰ пóйма, gen. pl. пóйм 'area flooded in Spring' ({pójm-}) + поёмный and поёмистый, both 'flooded in Spring' ({pojóm#n-}, {pojóm'ist-}).¹¹

Most of the above clusters have consisted of an obstruent stop followed by a non-obstruent or {v}. The alternation {∅} → {V} appears in a cluster of continuant + obstruent stop only in the two words слúжба, gen. pl. слúжб 'service' ({slúžb-}) + служéбный 'official' ({služéb#n-}) and тязба (no plur., but presumed *тяжб) 'lawsuit' ({t'ážb-}) → тязебный 'legal' ({t'ážeb#n-}); the word усáдьба 'estate' has two plurals, усáдьб and усáдеб, and forms the derived adjective усáдебный, which therefore shows both the {∅} → {V} alternation like слúжба, слúжб, служéбный and the {#} → {V} alternation, like e.g. свáдьба, gen. pl. свáдеб 'wedding' → adj. свáдебный.

Examination of the above alternations in terms of distinctive features sheds a certain amount of light on the regularities underlying the alternations. Thus, of the two +consonantal segments interrupted by the inserted {v} in derivation, the first is usually +compact, and the second either -compact (/kv/, /žb/) or not marked for compactness (/kr/, /kl/, /gr/, /gl/). Furthermore, the first consonant of such clusters is usually marked by more +features than the second, and there where the number of +features is equal, those of the first consonant occur earlier ("higher") in the feature matrix.¹² The only generalization permitted by these observations is that the inserted {v} tends to occur in clusters of decreasing feature complexity.

FOOTNOTES

- ¹ An earlier version of this paper formed part of a report "On the morphophonemics of derivation" presented at the first meeting of the Association Internationale de Phonologie in Vienna, August-September 1966. The research upon which the paper is based was supported by the United States Air Force under Project RAND.
- ² R. I. Avanesov, *Fonetika sovremennogo russkogo literaturnogo jazyka* (Moscow, 1956); Avanesov's symbols are transliterated in the usual way.
- ³ See, for example, V. V. Vinogradov, "Slovoobrazovanie v ego otnoženii k grammatike i leksikologii", *Voprosy teorii i istorii jazyka v svete trudov I. V. Stalina po jazykoznaniju* (Moscow, 1952), pp. 99-152; A. V. Isačenko, "O vzájomných vzt'ahoch medzi morfológiou a deriváciou", *Jazykovedný časopis* (Bratislava), 7 (1953), pp. 200-213; E. Stankiewicz, "The interrelation of paradigmatic and derivational patterns", *Word*, 18 (1962), pp. 1-22.
- ⁴ "The notion of 'stem' in Russian flexion and derivation", *To Honor Roman Jakobson*, Volume III (The Hague, 1967), pp. 2269-2288.
- ⁵ All such derivations and rules describing them are rendered only very informally in this paper, as the precise types and order of the rules which will most neatly generate flexional stems from derivational stems remain to be worked out. The derived stem {bezbréž#n-} is formed by concatenating {brég} (from {B%REG}) with the discontinuous affix {bez+...+#n-}.
- ⁶ The most complete description of these alternations is to be found in H. L. Klagstad's unpublished doctoral dissertation "Vowel-Zero Alternations in Contemporary Standard Russian" (Harvard University, 1954).
- ⁷ R. Jakobson, "Russian conjugation", *Word*, 4 (1948), pp. 155-167.
- ⁸ A narrow morphophonemic transcription of the flexional stem of those adjectives which have no short forms could do without {#}; however, rather than posit two derivational suffixes, {#n} and {n}, it seems reasonable to posit a single suffix {#n}; since in the case of the full-form-only adjectives this sequence will never occur in the environment {___-#}, the {#} of the suffix will never be vocalized.
- ⁹ For discussion of the optimal framework within which to describe these vocalizations, see D. S. Worth, "On cyclical rules in derivational morphophonemics", *Phonologie der Gegenwart* (Vienna, 1967), pp. 173-186.
- ¹⁰ Incidentally, the {d} of this form provides an additional argument in favor of the theoretical framework adopted in this paper: there is no reason to posit the existence of a {d} in the flexional stem of БЕЗДНА taken alone, since no phonetic {d} appears in the word's paradigm; on the other hand, there is no non ad hoc way to derive БЕЗДОННЫЙ from a stem without this {d}. In other words, it is clear that the processes of derivation operate at a level deeper than that of the flexional stem.
- ¹¹ Both the derived adjectives were actually formed from the dialectal substantive ПОЁМ, gen. ПОЁМА ({pojóm-}), which does not of course affect the fact that they are synchronically derived from ПОЙМА.
- ¹² These remarks utilize the distinctive feature matrix suggested by M. Halle,

The sound pattern of Russian ('s-Gravenhage, 1959), p. 46. The nasality, continuant, voicing and sharpening features, which clearly play no role in the alternations being discussed, are omitted.



"SURFACE STRUCTURE" AND "DEEP STRUCTURE"
IN SLAVIC MORPHOLOGY

0. In linguistic descriptions the term "surface structure" refers to sets of facts which are more or less amenable to direct observation, whereas "deep structure" refers to sets of hypothetical constructs assumed to underlie the surface; a statement about deep structure is in effect an hypothesis designed to explain in an intuitively satisfactory and economical manner the directly observable surface facts. Statements about surface structure can be proved true or false by observational tests, but statements about deep structure cannot be tested directly; their validity can only be estimated (in a largely subjective and hence unsatisfactory manner) in terms of the amount of insight, clarity, and efficiency with which the given hypothesis accounts for the surface data. For example, it is a matter of verifiable surface structure that the gen. sing. of Czech *stůl*, *vítr* are *stolu*, *větru* and that the gen. plur. of *dělo*, *moucha* are *děl*, *much*, but such simple observation cannot explain the apparent contradiction in the morphophonemic vowel alternations in these words: the "long" vowels (length being coupled with qualitative alternations in some cases) /ú/, /í/ (as opposed to /o/, /je/) appear before the zero ending in the nom. sing. *stůl*, *vítr*, but it is the short vowels /u/, /e/ (as opposed to /ou/, /í/) which appear before the zero ending of the gen. plur. *much*, *děl*. The explanation of such phenomena must be sought in the deep structure underlying them, i.e. in some hypothesis about the morphophonemic entities and rules which give rise to the observed data. For example, one might assume that the stems of these words have the forms {*stol*}, {*větr*},¹ {*moux*}, {*d'íl*} and that Czech morphophonemics contains an "alpha-switching rule"² α -long \rightarrow - α -long/___ \emptyset , i.e. a rule to the effect that whatever the length of the stem vowel in this class of stems, it is reversed before the zero ending (long vowels becoming short and short vowels becoming long). Applied to the four stems in question, this rule will yield the correct phonemic shapes /*stúl*/, /*vítr*/, /*mux*/, /*d'el*/ before the zero endings while leaving the stem forms /*stol-*/, /*vjetr-*/, /*moux-*/, /*d'íl-*/ before syllabic endings.³ However, the

existence of such a rule cannot be proved or disproved, but merely accepted (or rejected) as being more (or less) reasonable and economical in comparison with competing solutions.⁴

0.1. The terms "deep" and "surface" should be understood not as polar absolutes, but relatively; what is deep from one point of view is superficial from another. In Russian phonology, for example, stem vowels /ó/ and /a/ of nom. sing. *słóvo* and nom. plur *słová* (= /slóva/, /slavá/) are superficial in relation to the morphophonemic {o} which underlies them in the stem {slov}, but the phoneme /ó/ is itself an element of relatively deep structure compared to its phonetic representations [ó] and [ó·] in nom. sing. *słóvo* and prep. sing. *słóve* (= [slóvə], [sló·v'ɛ]). The Czech adj. *sborový* is deeper than its derivative *sborovost*, but less deep than its base *sbor*. The syntactic string "Verb plus noun phrase" is superficial in comparison to the "Verb phrase" from which it is derived, but deeper than all further derived strings. The deeper an entity or a rule lies in the hierarchy of the linguistic system, the farther is it removed from verifiable physical fact and the greater is the area of physical fact for which it is, so to speak, responsible; "deep" thus means abstract and general, while "surface" means concrete and specific. Significance and verifiability thus stand in a kind of complementary distribution: statements about surface structure are verifiable but relatively insignificant, while those about deep structure are (at least potentially) significant but relatively unverifiable.

0.2. The concept of deep and surface structure can be useful in the description not only of such specific linguistic entities as phonemes or syntactic strings, but also of the components of the linguistic system (i.e. the apparatus of items and processes by which one wishes to describe a language) itself. The subsystems of which a linguistic system consists are hierarchally organized; in a generative description (the term is not used in a precise mathematical sense) a deeper component has as its output entities which serve as input to a less deep component. In syntax, for example, the base component outputs strings which serve as the material upon which the transformational component operates. As we shall try to show in this paper, an analogous situation obtains in morphology, where the deeper derivational component outputs entities (flexional stems) which serve as input to the less deep flexional component. Deep and superficial components are interdependent, as Stankiewicz has pointed out;⁵ the entities and operations of

the derivational subsystem are meaningful only when taken together with those of the flexional system, since the latter stands as a structural link between the former and phonetic reality. Neither system can be evaluated in isolation from the other.

0.3. In a particular linguistic description, the number and types of "layers" of deep structure, and the formal characteristics of the items and processes on and between these layers, constitute an hypothesis about the structure of that part of the linguistic system dealt with by the description. A generative description formalizes such an hypothesis by means of an ordered set of statements that proceeds from deeper to less deep layers of structure (from abstract to concrete, from generalities to specifics), resulting in a set of statements that can be matched against physical data (sounds, writing). The deepest elements in such a description are the initial entities upon which the first set of rules operates; the result of applying the first set of rules to these deepest entities is a secondary set of less deep entities, etc., etc. The elements of such a description are thus of two orders: entities, and operations performed upon entities (Hockett's items and processes). As we have argued elsewhere⁶ and shall show again in this paper, there exist certain types of information which can be formalized equally well as entities or as operations, and it is no simple matter to weigh the advantages of incorporating this type of information into the one or the other component of the description.⁷ This is especially true of Slavic morphology, where the complicated interrelations of derivation and flexion have hardly been explored. Furthermore, it is an unfortunate fact that most existing descriptions of derivation are content to list the dictionary forms of bases and derived words, with little or no attention to the precise formulation of stems of these words or to the morphophonemic operations which change the base stem to the derived stem.⁸ And yet it is only when one begins to describe derivational processes with precision that one realizes what great areas of ignorance are leaped over by such phrases as "is derived from." If *výbeg* is derived from both *vybegát'* and *výbežat'*,⁹ by virtue of what rules, operating on what stems, does it choose its stress from the perf. but its consonantism from the imperf. verb? How does the subst. *výbojka* acquire unsharped /b/ and low /a/ (= {o}), neither of which occurs in either of its bases, *výbit'*—*vybivát'*? Why is *zaválina* derived from the imperf. *zaválivat'* but *podpálina* from the perf. *podpálit'*?¹⁰ If *ogárok* is derived from *obgorét'*, what happened to the /b/?¹¹ How is it that *Avstrija* +

ák results in *avstriják*, but *Prússija* + *ák* in *prussák*, not **prussiják*? If adding *ěj* to *bogátyj* produces *bogatěj*, why does it result in *gramotěj* and not **gramotněj* when added to *grámotnyj*? Why is a young *útka* an *utěnok*, not an **učónok*, whereas a young *vólk* appears as a *volčónok*, not a *volěnok*? Etc., etc. The fact that we have perfectly good historical explanations for these and similar facts does not absolve us of the obligation to explain them, in some way or another, in the modern language. The fact of the matter is that as far as derivation is concerned, the linguist's intuitive understanding has far outrun the formal apparatus at his disposal. When *čtec* is defined as "tot, kto čitaet" this statement reflects a linguistic reality that is not approached by such unexplicated confrontations as "*čtec* (čest', pro-čest', pro-čtu)".¹² Structural linguistics must insist on an explicit statement of the procedures by which *čitat'* + *ec* results in *čtec*, by which /n/ is dropped in forming *gramotěj*, etc. Until such time as we insist on complete, precise, and consistent descriptions of derivational morphology, we shall not even be aware of the problems to be solved in this area.

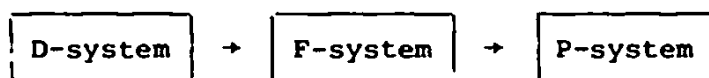
0.4. The present report offers a few suggestions for the more precise formulation of the morphophonemic processes which occur in derivation, and compares the morphophonemics of derivation to those of flexion. The first part of the report (1.) outlines a format in which the grammar of Slavic languages (derivation and flexion) might be written; this section is an expansion of a suggestion offered elsewhere,¹³ and is concerned with the formalization of grammatical descriptions as well as with the integration of derivation and flexion into a single, coherent system. We shall be particularly concerned with what might be called *intra-systemic typology*, that is with comparing the kinds of entities and operations functioning within the derivational and flexional systems. We hope to avoid two extremes: first, that of more traditional grammars, which usually divorce derivation from flexion entirely, often reserving the term "morphology" for the latter alone,¹⁴ second, that of the M.I.T. school of generative phonology, which achieves rigorous formalism only at the price of collapsing derivation and flexion into a single undifferentiated set of rules with unrealistically abstract underlying entities and extraordinarily complicated (and often counter-intuitive) rules, the effect of which is to neglect the specific features of each subsystem and to ignore the word as the central unit of Slavic morphological structure.¹⁵ This first section covers a broad area and can only be schematic; the formalism therein is more potential than real. Section 2. of the report examines three

basic morphological entities (the word-form, the word, and the word-family) in terms of the concept of deep and surface structures and within the descriptive framework outlined in 1. It is shown that derivational rules must operate on stems on a deeper level than that of flexional stems; this point is illustrated by the role of the derivational {+} boundary in such morphophonemic processes as truncation and depalatalization. This section serves both to illustrate the kind of problem encountered in a more formal description of derivational morphology and to provide some linguistic flesh for the rather bare theoretical bones of section 1. Both 1. and 2. are intended to be exploratory; more definitive solutions to the kinds of descriptive problems discussed here will be possible only after detailed formal descriptions of several Slavic flexional and derivational systems are available.¹⁶

1. Slavic morphology can be described as an interconnected set of three systems: derivational (D-), flexional (F-) and phonetic (P-). The first two are morphological in the full sense, that is, they deal with phonological, grammatical and semantic features of morphemes; the P-system is marginal to morphology, serving only to connect the morphological processes of the D- and F-systems to the observable phonetic surface, and will therefore be treated only marginally in this report.

1.1. The D-system has descriptive priority over the F-system, and the latter over the P-system. By this we mean that the processes of the D-system must be completed before those of the F-system begin. In other terms, one might consider the D-system as an automaton whose output is a set of entities which serve as input to a second automaton, the F-system; similarly, the latter's output serves as input to the P-system. The function of the D-system is to specify the relations among those entities which comprise word-families; that is, the D-system defines a paradigm of whole words. The function of the F-system is to specify the relations among those entities which comprise words; that is, the F-system defines a paradigm of word-forms. As we have pointed out in an earlier report,¹⁷ the word is a paradigm of word-forms, and the word-family is a paradigm of words or hyper-paradigm. The Russ. word *sljudinit* (as a word, not as a dictionary entry which happens to coincide with the nom. sing.) is a paradigm of word-forms *sljudinit*, *sljudinita*, *sljudinitu*, ... Similarly, the word-family of *sljuda* is a paradigm of words *sljuda*, *sljudinit*, *sljudinitovyj*, *sljudistyj*, *sljudovyj*, *sljudjanistyj*,

sljudjanistost', *sljudjanoj* (we shall concern ourselves later with more precise specification of what is meant by "word"). In other terms, an individual word is both a cover symbol for a paradigm of word-forms, and one of the individual entries in a paradigm making up a word-family. A generative view of morphology thus considers the derivational system as relatively deep, compared to the flexional and phonetic systems; the F-system is superficial in relation to the D-system (since the former operates on entities delivered to it by the latter), but is deeper than the phonetic system (since it itself delivers those entities upon which the latter operates). This view of these three components of Slavic morphology might be illustrated as:



1.2. The D- and F-systems can be described in almost purely binary terms. In each of these two systems, there are two kinds of entity (stems and affixes) and two kinds of morphophonemic operation (concatenation and accommodation). The P-system, which as has been mentioned is marginal to Slavic morphology, contains only one kind of entity (already coalesced stem+ending clusters) and one type of rule (accommodation). Concatenation rules describe the morphotactics of stems and affixes, and accommodation rules the morphophonemics of these entities, but the border between these fields is not always clear. If, for example, the morphological component of the grammar has to begin with a string generated by the syntactic component, say SUB + INSTR,¹⁸ the choice of {om} vs. {#ju} can be considered a matter of morphotactics or of morphophonemics, depending on whether these entities are regarded as two morphemes or one; the choice of {oj} vs. {ju} for {#ju}, on the other hand, is purely morphophonemic. The rules by which these choices are made might look as follows:

- (1) SUB \rightarrow $\begin{cases} \text{SUB}(+f) \\ \text{SUB}(-f) \end{cases}$
- (2) INSTR \rightarrow $\begin{cases} \{\text{om}\}/\text{SUB}(-f) \text{---} \\ \{\#\text{ju}\}/\text{SUB}(+f) \text{---} \end{cases}$
- (3) SUB(+f) \rightarrow $\begin{cases} \text{SUB}(+f)^2 \\ \text{SUB}(+f)^3 \end{cases}$
- (4) {#ju} \rightarrow $\begin{cases} \{\text{oj}\}/\text{SUB}(+f)^2 \text{---} \\ \{\text{ju}\}/\text{SUB}(+f)^3 \text{---} \end{cases}$
- (5) SUB(+f)² \rightarrow {žon}, {sten}, {n'án'}, ...
- (6) SUB(+f)³ \rightarrow {kóst'}, {nóč}, {míš}, ... etc.

The result of rules like these is a set of strings {žon+oj}, {sten+oj}, {n'án'+oj}, ..., {kóst'+ju}, {nóč+ju}, {míš+ju}, ... which, once stress has been assigned ({žon+oj} → {žon+ój}, etc.) and the boundary {+} erased, can be delivered to the phonetic system.

Similar rules in the derivational system will assign the diminutive affixes {ik}, {#k}, {čik}, {#c} etc. to derivational stems marked (-f, +m); unlike the flexional system, where a given stem can ordinarily combine with only one set of endings, the derivational system has many stems which appear in more than one stem + affix combination even within such categories as DIM(inutive), e.g. {dóm+ik}, {dom+#k}; {dóč+#k}, {dóč+úr#k}, {dóč+uš#k}, ... In some cases, the choice of affix can be made only after a class of words has been rewritten as individual words, since affix choice depends partly on the phonology of the stem; for example, with few exceptions the diminutive affixes {ik} and {čik} are in complementary distribution, the latter appearing after stems in {n, m, l, r, v} and the former elsewhere.¹⁹ Rules such as (3) above, which simply paraphrase the statement that Russian has two types of feminine paradigm, cannot take such phonological factors into account. Both derivation and flexion (but especially the former) show a complicated cross-classification of phonological, grammatical and semantic features. In substantive flexion, for example, the nom. plur. in {á} is with insignificant exceptions restricted to stems with initial stress (a phonological fact) except for words with the meaning of "person in a particular occupation" (a semantic fact), e.g. *učitel'* + *učiteljǎ*, *inspěktor* + *inspěktorá* (or *inspěktory*). In adjective derivation, the suffix {in(ij)} can be added only to (+animate) substantive stems, e.g. *gubinyj*, *solov'inyj* (a grammatical fact), whereas in substantive derivation abstracts in {t'ij}, e.g. *vzrytie*, *razvitie* can be formed only from verbs with monosyllabic roots (not stems) (a phonological fact, and a very "deep" one). To classify stems simply by assigning symbols indicating the classes of paradigms with which they combine (e.g. in flexion to classify *kólokol* and *profěssor* as taking nom. plur. {á} by adding a special grammatical marker to these stems) would be partially redundant, since this information is already partially contained in the phonological, grammatical and semantic marking of the stems. On the other hand, not all stems with given combinations of phonological, grammatical and semantic features will combine with the same paradigmatic endings, so that some type of essentially ad-hoc stem classification (i.e. some type of stem marker showing that, e.g. *vórož* + *voroxá*,

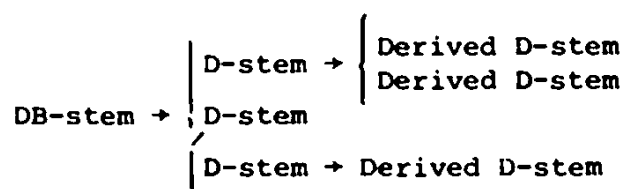
vóron → *vórony*, and *vórot* → both *vorotá* and *vóroty*) must be included in the grammar. It is too early to tell just how these facts can best be reflected in a generative morphology, but it is already clear that all morphological entities must contain not only phonological, but also grammatical and semantic markers.

1.3. Every morpheme (and every combination of morphemes) must be rendered as a tripartite set of distinctive feature matrices: phonological, grammatical, and semantic. The stem of the word meaning 'father', for example, will consist of a phonological matrix of Jakobson-Halle distinctive features, beginning with the segment [-consonant, +vocalic, -diffuse, -compact, +low tonality], i.e., {o}, and continuing for the remaining morphophonemes {t}, {#}, {c}; the usual alphabetic notation of morphophonemes serves as a convenient shorthand for this distinctive feature matrix, e.g. {ot#c}. Since as we have seen the semantic content of morphemes plays a not unimportant role in their combinatory possibilities, this semantic content must be marked with a precision no less than that of the phonological shape. We assume, therefore, that the meaning of morphemes and morpheme combinations can be rendered by a matrix of semantic distinctive features. This assumption is clearly more a profession of faith than a statement of fact, but the latest research in this field is apparently moving in this direction.²⁰ In any case, such semantic distinctive features can serve as a working hypothesis. The usual English or other translation can serve as a convenient shorthand for the assumed feature matrix, much as an alphabetic notation serves as a shorthand for the phonological matrix.

The need for a grammatical feature matrix has already been demonstrated in syntactic studies, and such features are equally necessary in morphology. For example, feminine and animate masculine substantive stems take the emotive (generally, pejorative) affix {iš#k(a)}, i.e. the affix {iš#k} and the second decl. paradigm, while inanimate masculine and neuter stems take {is#k(o)}, i.e. the same affix but with the neuter first decl. paradigm;²¹ it follows that the derivational stems must be marked as +/- feminine and if -fem., as +/- animate. In ensuing discussions we shall indicate only those grammatical features relevant to the point at hand (e.g. "SUB(+fem.)" above), and shall not be concerned with the fact that features in the three matrices are to some extent cross-classified and redundant, as is the case with gender (grammatical) and sexus (semantic) or with suffix phonology and the grammatical features implied by a given suffix.

In most of this report, the phonological shorthand alone will be used to represent morphemes and their combinations, but it must not be forgotten that concatenation and accommodation rules operate on the grammatical and semantic matrices as well.

1.4. In both the D- and the F-system a single basic stem is sufficient to characterize the entire paradigm of items generated from this stem. The notion of a predictive basic stem was introduced in Jakobson's study of the Russian verb,²² and can be extended in two ways: first, from the verb to all flexional forms (i.e. one can assume that substantives and adjectives have basic stems as well); secondly, from the flexional system to the derivational system (i.e. one can assume that just as an F-stem is adequate to predict all the forms of its paradigm, so does there exist a derivational basic stem adequate to predict all the forms of *its* paradigm, that is, all the flexional stems of the words comprising the paradigm of the given D-stem). The phonological matrix of the derivational basic (DB-)stem specifies those features which, when combined with and accommodated to those of the affixes specified by the DB-stem's grammatical matrix, result in derived D-stems; the latter's grammatical matrices specify further affix combinations resulting in secondary derivatives, etc. (see the discussion of word-families, pp. 180-181 for more detail). The grammatical matrices of DB- and D-stems must include information not only about derivation (i.e. about the morphotactics of these stems), but also such information as will subsequently be needed in the F-stem (paradigm types, etc.). The semantic matrix of a DB-stem specifies those features which remain constant throughout the derivational family, and probably some features which may be erased by certain affixes (i.e. the semantic changes occurring in derivation can include not only addition, but subtraction of semantic features). One can illustrate such a system by the following schema:



With the exception of blocked stems (see pp. 162-163 below), all stems of the D-system are outputted to the F-system via a rule which erases internal boundaries; e.g. the DB-stem {č̣t}, concatenated with the verb-forming affix {áj}, results in the D-stem {č̣t + áj}, which not only serves as the derivational base

for further word-formation (*čtec, pročitat'*, etc.) but also (via {čit+áj}) is outputted as {čitáj}, the latter being the F-stem of the word *čitát'* (the morphophonemics of these processes will be discussed in detail below). The rules of the flexional system operate on such F-stems delivered to it by the D-system.

1.5. Just as the D-stems of the D-system form intermediate levels between the DB-stem and the terminal derived D-stems, so are there intermediate levels within the F-system. In the substantive declension, the singular and plural stems form intermediate levels between the basic F-stem of the substantive and the several case-number forms of the paradigm. The plural is marked by stress shifts and various vocalic and consonantal alternations, including suppletion: Russ. {ok#n} → pl. {ók#n}, {brát} → pl. {brát'#j}, {graždan'ín} → pl. {gráždan'}, Czech {kuřet} → pl. {kuřat}, {ok} → pl. {oč}, Russ. {čelovék} → pl. {l'úd'}, etc. In conjugation, the present and past tense stems form intermediate levels between the basic F-stem and the individual word-forms of the paradigm, e.g. Russ. {adresová} → pres. {adresúj=}, past {adresová=}. The generation of such intermediate levels can be called *formoobrazovanie*, to distinguish it from flexion proper, or *slovoizmenenie*,²³ but what is important in this context is the parallelism between these intermediate flexional levels and the intermediate levels of derivation. In both systems, intermediate stems need not always be outputted to the subsequent system: {adresúj=} cannot be delivered to the phonetic system by itself, but only after having been concatenated with the affixes {u}, {oš}, etc., and {adresová=} cannot be outputted without its affixes {ø}, {a}, {o}, {'i}; similarly, in the D-system, the derived D-stem {rad'iof'ik=}, which is a necessary intermediate stage between the stem {rad'io} and the stems {rad'iof'icírova}, {rad'iof'ikácij}, is not outputted to the F-system, i.e. does not correspond to any word. A good deal of confusion regarding the status of items such as **obstojatel'* as an intermediate stage between *obstojat'* and *obstojatel'stvo* would be avoided by distinguishing between those entities which are generated within a system and those which are outputted to subsequent, less deep systems. The past tense stem {adresoal=} is a perfectly "natural" entity (i.e. no one objects to forming the past tense by adding {l} to the basic stem), in spite of the fact that there is no word-form in Russian corresponding directly to this stem (which is of course not identical with the masc. sing. past {adresoalø}). Just as {adresoal=} is an intermediate flexional stem which cannot be outputted to the P-system (i.e. which does not correspond

to any word-form of Russian), so is {obstojá+tel'} an intermediate derivational stem which cannot be outputted to the F-system (i.e. which does not correspond to any word of Russian); in both cases, the intermediate form is necessary in order to generate other, less deep forms which are outputted to subsequent systems, and in both cases the intermediate form is both "real" and "unreal", existing on one (deeper) level but nonexistent on another (more superficial) level. It is hard to see how this important distinction could be made without a clear boundary between the derivational and flexional systems.

The general format of the D- and F-systems is thus identical: a single basic stem serves as the descriptive point of departure, i.e. as the deepest element in the given system, from which all subsequent, less deep elements are generated by a fixed set of rules operating on the tripartite feature matrix of the basic stem. When no further rules of a given system are applicable, the unblocked entities of this system are outputted to the subsequent system. Of course, this basic structural parallelism of D- and F-systems cannot obscure the many important differences between these systems. It is obvious that flexion is a relatively closed and derivation a relatively open system. Flexion is more highly structured, both formally and semantically, than is derivation, and it follows that the rules for generating word-forms from F-stems will be more concise and less ad-hoc than those for generating D- (and ultimately F-) stems from DB-stems. The number of F-stem classes will be much smaller than that of DB-stem classes; i.e. the grammatical feature matrices of the D-system will be more complex and more intricately interconnected with the semantic matrices than will be those of the F-system. The morphophonemic rules of the two systems are not identical, although the general format of these rules is very similar.

1.6. An overall view of the interrelations of derivation, flexion and phonetics can perhaps be aided by the following schema:

DERIVATIONAL SYSTEM	Output rule	FLEXIONAL SYSTEM	Output rule	PHONETIC SYSTEM
DB → D _x	→			
→ D' _p	→	F _p → F' _a	→	{WF} → /WF/ → [WF]
→ D' _q			→	{WF} → /WF/ → [WF]
→ D' _r	→		→	{WF} → /WF/ → [WF]
→ D' _y		→ F'' _a		etc.

→ D'_m → etc.
 → D'_n →
 etc.

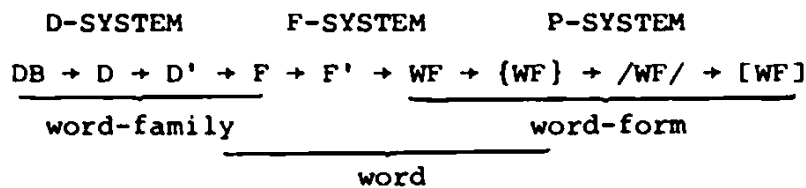
That is, a DB-stem is concatenated with and accommodated to each of a set of derivational affixes, resulting in D-stems D_x, D_y, ...; unblocked D-stems (e.g., D_x) are outputted to the F-system, and are also concatenated with and accommodated to further derivational affixes, resulting in secondary D-stems D'_p, D'_q, D'_r, ...; unblocked secondary D-stems (e.g., D'_p) are outputted to the F-system, and are also subject to further derivation, etc. Blocked D-stems (e.g., D_y) cannot be outputted to the F-system but can undergo further derivation. Output rules between D- and F-systems simply erase derivational boundaries {(+) } between stem and affix. Within the F-system, any given F-stem F_p is rewritten as a set of intermediate stems F'₌, F''₌, etc., each of which is in turn concatenated with and accommodated to a set of flexional affixes, resulting in individual word-forms WF_a (of F_p), WF_b, etc. An output rule between F- and P-systems erases the flexional boundary between F-stem and suffix. Within the P-system, each word form is converted first to phonemic, then to phonetic transcription (taking into account the phonetic environment external to the given WF).

It must be emphasized that the foregoing is only an outline of a possible system, and not itself a formal apparatus by which Slavic morphology can be described. Each arrow within the three systems represents a complicated set of concatenation and accommodation rules (for a small fragment, see p. 158 above); the exact form and order of these rules cannot now be determined, but in section 2. we shall have occasion to examine a few of them.

2. Against the general background outlined in section 1., we shall now examine the three basic entities of Slavic morphology, the word-form, the word, and the word-family, utilizing the concept of deep and surface structure to clarify the relations between these entities and to uncover the hierarchy of phonological structure within each of the three. A more specific goal of section 2. is to demonstrate that derivational and flexional stems are not identical and that the systematic relations between the F-stems of related words must be sought on the derivational level. This section will help to illustrate the theoretical concepts outlined in section 1., and should make clear the extraordinary complications involved in a really precise study of derivational morphophonemics as

well as the insights and significant generalizations that can arise from such study.

The word-form is the most concrete and most superficial of the three morphological entities; it, and only it, can occur in speech and be rendered in a precise phonetic transcription. The word and the word-family are abstractions, entities of *langue* which occur in *parole* only as realized in word-forms. The word is an abstraction derived from and, in a generative description, standing in a predictive relation to, a set of word-forms. Similarly, the word-family is an abstraction derived from and standing in a predictive relation to a set of words. Since as we have seen above the word and the word-family are uniquely specified by their F- and DB-stems, we can reformulate deep and surface relations as follows: the deepest entity of Slavic morphology is the DB-stem, which is predictive to a set of F-stems, each of which is in turn predictive to a set of word-forms. The relation of word-family, word, and word-form to the D-, F- and P-systems can be illustrated by the following schema:



Since each of the three entities (word-family, word, word-form) spans several entities in the morphological system, it follows that each of these entities exists on more than one level of depth. In what follows, we shall examine some aspects of this multi-level structure within each of the three entities, restricting ourselves primarily to phonological problems.

2.1. The word-form, an individual member of a word's paradigm, comes into being at the moment when an F-stem or intermediate F'-stem is concatenated with a flexional suffix (terminal; all nonterminal suffixes result in intermediate stems and are not outputted to the P-system, i.e. they are not word-forms). The word-form whose graphic shape is *otec*, for example, comes into being when the stem {ot#c} is concatenated with the affix {∅}. The deepest structural level of this word-form is thus

$$\frac{\{ot\#c\}}{\text{'father'}} [\gamma] + \frac{\{\emptyset\}}{\text{'nom.'}}$$

where $[\gamma]$ = grammatical feature matrix of the stem. The phonological shape of

this word-form then undergoes a series of changes as each of the applicable phonological rules is applied to it; that is, after the application of each such rule the word-form reappears as a string of symbols one step closer to the phonetic surface and one step further removed from the original shape. The word-form thus exists on a series of increasingly superficial levels as it is subjected to the F- and P-rules, e.g.

F-rules	{ot#c+ø}
(1) # → o/___ø ²⁴	otoc+ø
(2) o → e/___c etc.	otec+ø
(3) Assign stress	otéc+ø
(4) Erase +, ø and output	otéc
P-rules	
(5) o → a	atéc
(6) t → t'/___e	/at'éc/
..., ...	[Λ't'éc]

Three of these levels are more important than the remainder. The phonetic output (the most superficial level) represents the physical data transferred from speaker to hearer and is the only objectively verifiable data. The phonemic level /at'éc/ represents the first (phonemic) stage of decoding by the hearer (who identifies [Λ't'éc] as a chain different from /av'éc/ 'sheep', /at'écč/ 'to flow past', etc.) and is utilized by the speaker both consciously and unconsciously in rhyme, punning, spoonerisms, etc. The deepest word-form level {ot#c+ø} represents the point where morphological and syntactic systems intersect (the terminal strings of the syntactic system will contain strings like 'father' + nom.), and is also the result of the second (morphemic) stage of decoding by the hearer.

2.2. The word, as the central morphological entity of the Slavic languages, is defined by its dual relation to the word-form on one side and to the word-family on the other; the word is an item of deep structure, an abstraction, when looked at from the viewpoint of the several word-forms comprising its paradigm, but this same word (i.e. this same F-stem) is an item of superficial structure compared to the stems of the derivational family which underlies it. The word for 'merchant' is uniquely specified by its F-stem {kup#c} plus the standard rules that will derive the paradigmatic forms {kupéc}, {kupcá}, ... from it, but in regard to the

verb *kupit'* from which it is derived, the word *kupec* shows a more complicated structure. The word *kupec* comes into being at the moment when the derivational stem upon which it is formed is concatenated with the affix {#c} by which it is formed. If one were simply to choose the F-stem of the derivational base *kupit'* as the derivational stem for the formation of *kupec* (a procedure which we shall presently show to be inadequate), then the deepest phonological structure of the word *kupec* would be {kup'i+#c}, and this word will manifest as many additional levels of phonological structure as there are applicable rules necessary to result in the relatively superficial F-stem {kup'#c}, e.g.

D-rules	kup'i+#c
Truncate i	kup'+#c
Erase + and output	kup'#c ²⁵

Although only the phonological derivations are explicit in such illustrations, it must not be forgotten that the pairs of grammatical and semantic distinctive feature matrices (one of each in stem and affix) must also undergo mutual accommodation. For example, the grammatical features [+perfective, +transitive] must be deleted in the environment of the affixal features [+count, +animate, ...]. Similarly, the set of semantic features summarized by 'buy' must be coalesced with the set summarized by 'agent' to give the derived set summarized by 'merchant'.

2.2.1. It is in the generation of F-stems that problems arise concerning the deep structure of the word. In a loose sense, a word's deep structure is its entire generative history,²⁶ that is, the entire set of entities and rules by which the given F-stem was derived from its deepest underlying DB-stem. However, it is clear that not all of this generative history is relevant at any given stage in the generative process (cf. below). The precise formal description of generative history is in our opinion the most important unsolved problem of Slavic morphology. In particular, the principal problem is the precise description of derivational stems (that is, of those entities which, when subjected to a standard set of derivational rules, will result most efficiently in the sets of F-stems upon which the flexional rules operate.²⁷ Of the many problems connected with the formulation of derivational stems, only a few can be examined here; we shall look especially at the utility of the derivational boundary marked {+} as a segment of derivational stems.

The point that flexion and derivation must be based on different stems was first made by Stankiewicz.²⁸ Starting from somewhat different premises, we have come to the same conclusion in an earlier study;²⁹ the impossibility of equating the two notions "F-stem of derivational base" and "D-stem for derived word" has been shown on the basis of Russian material involving pleophonic vs. non-pleophonic derivatives (*bereg* + *beregovoj*, *bezbrežnyj*), variant forms of vowel-zero alternation in flexion and in derivation (*čisló*, gen. plur. *čisel* + *čislennyj*, but *vesló*, *všsel* + *vesél'nyj*), and word-families in which no one F-stem must necessarily serve as derivational base for the other stems of the family (*Makedónija*, *makedónec*, *makedónka*, *makedónskij*).³⁰ We shall now examine some additional evidence for the impossibility of equating the notions of F- and D-stems.

2.2.2. The Russian word *čtec* is defined as "tot, kto čitaet",³¹ but there is no non-ad-hoc way to derive the F-stem {*čtec*} from the F-stem {*čitáj*} of its derivational base; this impossibility is reflected in the awkward groping for formal parallels in the Soviet Academy grammar, "*čtec* (*čest'*, *pro-čest'*, *pro-čtu*)" which does not even mention *čitát'* and which is an apt illustration of the point made on p. 156 above that "the linguist's intuitive understanding has far outrun the formal apparatus at his disposal". In the absence of a descriptive apparatus which would enable them to proceed reasonably from some form of *čitát'* to some form of *čtec*, the authors of this grammar have recourse to related words which happen to show the same superficial form (-*čt*- in *pročtu*), and in citing such words the scholar is in effect recognizing a fact that he cannot formalize, namely that the *čt* of *čtec* is somehow related to the *čt* of *pročtu*, although the former is obviously derived not from the latter, but from *čitát'*. Preoccupation with surface phonology prevents one from seeing the formal connections between *čitát'* and *čtec*, since any rule operating on the F-stem {*čitáj*} to give the derived F-stem {*čtec*} would also operate on, say, {*p'isa*}, to give the spurious *{*psec*} rather than *pisec*. If, however, one looks at the deeper phonological structure of these words, it becomes clear that the relation of *čitát'* to *čtec* can be formalized. First, it is clear that the suffix {#c} requires truncation of the derivational base stem: to remain at the level of the F-stems for a moment, this truncation is evident in {*délaj*} + {*del#c*}, {*lov'i*} + {*lov#c*}, {*boro*} + {*bor#c*}. Unless one wishes to specify all these truncations in terms of the phonological features of the truncated segments ({*aj*}, {*i*}, {*o*}), one must seek a common denominator. Let us assume that these verbs are generated from underlying-

ing DB-stems {del}, {lov}, {bor}; that is, let us posit a deeper layer of phonological structure containing a boundary marker showing where the underlying DB-stem is joined to the word-forming affix, namely {dél+aj}, {lov+i},³² {bor+o}; operating on such deeper stems, a single truncation rule "{...+...} → {...+}/__#c" will automatically generate the correct forms of the deverbative substantives, e.g. {dél+aj}+ #c → {del+}+ #c → {del#c}. In other words, the truncation of {aj} in the derivation {čitáj} → {čtec} is not ad-hoc, but perfectly regular (as we shall see, {#c} is only one of the many suffixes requiring such truncation). There remains the stem vocalism to be accounted for: what synchronic analogue of the former *i* ~ *ī* alternation will enable us to derive *čtec* from *čitát'* without deriving **psec* from *pisát'*? The only reasonable solution is to posit the existence of a vocalic morphophoneme in the underlying DB-stem, different from both the {i} of *čitát'* and the zero of *čtec*, which will be rewritten as {i} and {∅} by standard rules. Let us assume that the DB-stem underlying *čitát'* is {čɤt}, and that Russian has a set of vocalization rules causing the derivational vowel-zero morphophoneme {ɤ} to be rewritten as {i} in the environment of the affixes {aj, yvaj, #k, ...}³³ (cf. {čitáj, pročítivaj, čít#k(a)}, as {∅} in the env. {#c, enij, ...} (cf. {čtec, čtenij}), and as {#} in the env. {∅, ...} (cf. F-stem {č#t} in *čest'*, *čtu*; {uč#t} in *učět, učta*, etc.). Let us call this the $\mathcal{E} \rightarrow i, \emptyset, \#$ rule. The word *čitát'* is formed by concatenating the DB-stem {čɤt} with the verb-forming affix {áj}. The resultant {čɤt+áj} then serves as a point of departure for two morphophonemic processes. On the one hand, the accommodation rules of the D-system operate on {čɤt+áj} to generate the F-stem {čitáj}:

	čɤt+áj
Truncation:	not applicable
$\mathcal{E} \rightarrow i, \emptyset, \#$:	čit+áj
Erase (,), ∅:	not applicable
Erase + and output:	čitáj

On the other hand, this same deep stem {čɤt+aj} is the base upon which derivatives of *čitát'* are formed. The substantive *čtec* is derived by concatenating {čɤt+áj} with the affix {#c}, giving (čɤt+áj)+#c which is then subjected to the same set of rules:

	(čɤt+áj)+#c
Truncation:	(čɤt)+#c

$\% \rightarrow i, \emptyset, \#$:	$(\check{c}\emptyset t) + \#c$
Erase (,), \emptyset :	$\check{c}t + \#c$
Erase + and output:	$\check{c}t\#c$

The generality of these rules is clear if we examine the generation of other words in the same family; this examination will also provide the formal justification for the vague intuitive confrontation of *čtec* with *čest'*, *pročest'*, *pročtu*.

The rather archaic verb *čest'* is formed by concatenating the DB-stem $\{\check{c}\%t\}$ with the verb-forming zero derivational affix $\{\emptyset\}$, giving the deep structure $\{\check{c}\%t + \emptyset\}$, from which the above rules will generate

	$\check{c}\%t + \emptyset$
Truncation:	not applicable
$\% \rightarrow i, \emptyset, \#$:	$\check{c}\#t + \emptyset$
Erase (,), \emptyset :	$\check{c}\#t +$
Erase + and output:	$\check{c}\#t$

i.e. the F-stem $\{\check{c}\#t\}$. The perfective verbs *pročest'* and *pročitat'* are formed on the deep stems $\{\check{c}\%t + \emptyset\}$ and $\{\check{c}\%t + \acute{a}j\}$ respectively. Note that these prefix concatenations must be subjected to the same rules as the underlying stems, i.e. the $\{i\}$ in the root syllable of *pročitat'* is not simply taken over from the $\{i\}$ of *čitat'* (as would be the case if one F-stem were derived directly from another), but is instead derived from the same underlying $\{\%\}$ by the same set of rules; the identity of surface morphophonemes ($\{\check{c}it\acute{a}j\} = \{\text{pro}\check{c}it\acute{a}j\}$) is explained not by a direct causal connection between them, but by the fact that they have a common origin in $\{\%\}$ and are derived by the same rule. There is no doubt that this is a more complicated structural situation than a simple causal link, but it is the price that must be paid for a satisfactory explanation of the morphophonemics of such derivations as *čitat' → čtec*. On the complicated nature of these deep vs. surface connections see also 2.2.12 below.

2.2.3. The prefixed imperfective *pročítivat'* is paired with both *pročest'* and *pročitat'*, i.e. in a formal grammar *pročítivat'* must be derived from each of these perfective verbs. The truncation rule makes this possible:

	$(\text{pro}\check{c}\%t + \emptyset) + yv\acute{a}j$	$(\text{pro}\check{c}\%t + \acute{a}j) + yv\acute{a}j$
Truncation:	$(\text{pro}\check{c}\%t) + yv\acute{a}j$	$(\text{pro}\check{c}\%t) + yv\acute{a}j$
$\% \rightarrow i, \emptyset, \#$:	$(\text{pro}\check{c}it) + yv\acute{a}j$	$(\text{pro}\check{c}it) + yv\acute{a}j$
Assign stress ³⁴ :	$(\text{pro}\check{c}\acute{í}t) + yv\acute{a}j$	$(\text{pro}\check{c}\acute{í}t) + yv\acute{a}j$

..., ...³⁵

pročítivaj

pročítivaj

It is clear that the same rules which derive *čténie* from *čitát'* will derive *pročténie* equally well from both *pročést'* and *pročitát'*:

	(čʒt+áj)+en'ij	(pročʒt+∅)+en'ij	(pročʒt+áj)+en'ij
Truncation:	(čʒt)+en'ij	(pročʒt)+en'ij	(pročʒt)+en'ij
ʒ → i, ∅, #:	(č∅t)+en'ij	(proč∅t)+en'ij	(proč∅t)+en'ij
Erase (,), ∅:	čt+en'ij	pročt+en'ij	pročt+en'ij

2.2.4. The verb *učést'* is formed from *čést'* in the same way as *pročést'*, and its imperf. *učítivat'* from the perf. *učést'* identically to *pročést'* → *pročítivat'*. The zero-affix substantive *učět* is formed from the perf. *učést'* with no difficulty:

	(učʒt+∅)+∅ ³⁶
Truncate:	(učʒt)+∅
ʒ → i, ∅, #:	(uč#t)+∅
Erase (,), ∅:	uč#t+
Erase + and output:	uč#t

However, a problem arises in the fact that *učět* is defined in *Ušak.* as deverbative to both *učést'* and *učítivat'*. According to the principles upon which this report is based, we have no right to speak of derivational relations unless we have a clear, general (non-ad-hoc) formal procedure to account for the morphophonemics of the derivation. That is, unless the F-stem {uč#t} arises automatically by application of the same affix and same rules to equivalent forms of both *učést'* and *učítivat'*, we have no right to consider *učět* derived from both aspect forms. If we examine the several levels of depth of the imperf. *učítivat'*

(učʒt+∅)+yvaj
 (učʒt)+yvaj
 (učít)+yvaj
 učít+yvaj
 učítivaj

it is clear that there is no single phonological shape of the word *učítivat'* to which we could add the affix {∅}, apply the rules so far introduced, and result in the F-stem {uč#t} (if, for example, {∅} were concatenated with the deepest stem shape (učʒt+∅)+yvaj, we should have to change the truncation rules, speci-

fying that both the first, verb-forming {Ø} and the imperfectivizing {yvaj} be cut in order that {ɤ} be followed by the noun-forming {Ø} which causes {ɤ} → {#}; or, we would need to specify that the environments causing {ɤ} to be rewritten as {i, Ø, #} be terminal, that is, introduce new symbols into the derivation, etc.). However, a relatively slight reformulation and reordering of the already-introduced rules will suffice to enable us to derive *učěť* from *učítývat'* as well as from *učěť*'. Let us specify that the stem-boundary markers (and) be erased from the representation immediately following the truncation rule, and that the resulting form (truncated, and without parentheses) serve as the base for further derivation. That is, we define the D-stem as that entity which results from application of truncation and parenthesis-erasure rules; the {ɤ} → {i, Ø, #} rules are applied subsequently. To illustrate this change with the words already discussed: the word *čest'* is formed by concatenating the DB-stem {cɤt} with the affix {Ø}; the T(runcation) and E(rasure) of (,) rules are applied

	(čɤt)+Ø
T:	no
E:	čɤt+Ø

The resulting entity {čɤt+Ø} is then subjected to two sets of rules: first, the rules for {ɤ} → {i, Ø, #} etc. which ultimately result in the F-stem {č#t} of *čest'*; second, the concatenation rules for all derivatives of *čest'* (*učest'*, *pročest'*, *čtenie* if one considers this word derived from *čest'* as well as from *čítat'*, etc.). Let us call the first set of rules D-F rules, since they lead directly from the derivational to the flexional system, and the second set (i.e. the further concatenation rules) D-D rules, since they lead to further derived words. To show this schematically, let {ɤ} stand for the {ɤ} → {i, Ø, #} rules, C-1 = concatenation rule for forming prefixed verbs in *u-*, C-2 that for imperfectives in *yva*, C-3 that for deverbative nouns in zero affix; then

C-1:	u(čɤt+Ø)			
T:	no	C-2		
E:	učɤt+Ø	→	(učɤt+Ø)+yvaj	
ɤ:	uč#t+Ø	T:	(učɤt)+yvaj	
		E:	učɤt+yvaj	
		ɤ:	učít+yvaj	
			T:	(učɤt)+Ø
			E:	učɤt+Ø
			ɤ:	uč#t+Ø

If the output rule then reads "Erase \emptyset , + and output", the entities $\{u\check{c}\#t\}$, $\{u\check{c}i-tivaj\}$, and $\{u\check{c}\#t\}$ will be delivered to the F-system as the F-stems of $u\check{c}est'$, $u\check{c}ityvat'$, and $u\check{c}\check{e}t$ respectively (we omit the stress and $\{y\}-\{i\}$ problems already mentioned; cf. also fn. 41). The same post-T,E form $\{u\check{c}\#t+\emptyset\}$ which served as base for the imperfective $u\check{c}ityvat'$ of course also serves as base for $u\check{c}\check{e}t$:

$$\begin{array}{lcl}
 \text{C-3} & & \\
 u\check{c}\#t+\emptyset & \rightarrow & (u\check{c}\#t+\emptyset)+\emptyset \\
 \text{T:} & & (u\check{c}\acute{\#}t)+\emptyset \\
 \text{E:} & & u\check{c}\#t+\emptyset \rightarrow \text{to } u\check{c}\check{e}tnyj \text{ etc.} \\
 \# & & u\check{c}\#t+\emptyset
 \end{array}$$

In other words, we now have a formal apparatus which derives $u\check{c}\check{e}t$ from both $u\check{c}est'$ and $u\check{c}ityvat'$. The D-system has two sets of rules, one (T,E) which generates D-stems and another ($\#$ and others not yet discussed) which generates F-stems.

Similarly, the deverbative *pročtěníe* can be derived from the imperfective *pročityvat'* (which as we have seen itself comes from both *pročest'* and *pročitát'*). Let C-4 = the concatenation rule for deverbative nouns in *ěníe*; then

$$\begin{array}{lcl}
 \text{C-2} & & \\
 proč\#t+\emptyset & \rightarrow & (proč\#t+\emptyset)+yvaj \\
 \text{T:} & & (proč\acute{\#}t)+yvaj \quad \text{C-4} \\
 \text{E:} & & proč\#t+yvaj \quad \rightarrow \quad (proč\#t+yvaj)+én'ij \\
 & & \text{T:} \quad (proč\acute{\#}t)+én'ij \\
 & & \text{E:} \quad proč\#t+én'ij \\
 \# & & proč\#t+\emptyset \quad pročít+yvaj \quad proč\emptyset t+én'ij \\
 \text{Erase and output:} & & proč\#t \quad pročítivaj \quad pročtén'ij
 \end{array}$$

(C-4 applied to $\{proč\#t+\emptyset\}$ of course also gives $\{pročtén'ij\}$).

2.2.4.1. There is another formal means of accomplishing the same purpose. Concatenation (= further derivation) rules could be applied to the deepest-level shape of stems if we require the truncation rules to be applied more than once (cyclically, from lesser to greater constituents). For example, we could derive *pročtěníe* from *pročityvat'* as follows:

$$\begin{array}{lcl}
 \text{C-4:} & & [(proč\#t+\emptyset)+yvaj]+en'ij \\
 \text{T(1):} & & [(proč\#t)+yvaj]+en'ij \\
 \text{T(2):} & & [(proč\#t)]+en'ij
 \end{array}$$

E: proč̣t+en'ij
 %: proč̣∅t+en'ij

etc. However, there are two disadvantages to this means. First, one needs more complicated rules (cyclical application of T). Second, the form [(proč̣t+∅)+yvaj]+en'ij makes it appear that the {∅} by which *čest'* is derived from the DB-stem {č̣t} is somehow relevant to the derivation of *pročtenie* from *pročityvat'*; that is, a completely irrelevant item of deep structure is introduced into the derivation (the {%} of {č̣t}, however, is as we have seen a relevant item of deep structure). We should like to advance the principle that no unnecessary information be carried along into successive steps of derivation; since the vocalism of *pročtenie* (the *čt*) cannot be explained without recourse to the underlying {%}, this latter must be present in the stem from which *pročtenie* is derived, but the irrelevant {∅} must be left out as soon as possible.³⁷

2.2.5. In the case of *pročitát' → pročtěníe* the problem was to explain the root vocalism of the derivative; this problem was solved by utilizing a stem deeper than the F-stem of the base. The same solution is found for problems involving stem consonantism. Consider the substantive *proězd* which is defined (*Ušak.*) as a deverbative of *proěxat'* and *proezzát'*. Leaving aside the problem of the suppletive *proexat'*, how can we derive a stem containing {zd} from one containing {zž} (or /žž/, /ẓ̌/ etc.)? Starting with a DB-stem {jezd}, and with concatenation rules C-5 = formation of verbs in {i}, C-6 = perfectives in {pro}, C-7 = imperfectives in {jáj} (palatalizing the stem), and the same C-3 = deverbative nouns in zero affix discussed above, we have:

C-5				
jézd	→	(jézd)+i		
T:		no	C-6	
E:	jézd+i	→	pro(jézd+i)	
		T:	no	C-7
		E:	projézd+i	→ (projézd+i)+jáj
		T:	(projézd)+jáj	C-3
		E:	projezd+jáj	→ (projezd+jáj)+∅
		T:	(projézd)+∅	
		E:	projézd+∅	
d → d': ³⁸	jézd'+i	projézd'+i	no	no

d + ž: no no projezž+jáj no
 Erase Ø, +
 and output: jézd'i prójezd'i projezžáj³⁹ projézd

2.2.6. Use of a deep D-stem and truncation rule operating thereon makes it possible to dispense with the awkward search for formal parallels that, for example, leads the Academy grammar to give the perfectives *rastrátit'* and *vydumat'* as the bases of *rastrátčik* and *vydumščik* but the imperfectives *perepísyvat'* and *zakázývat'* as the bases of *perepísčik* and *zakázčik*,⁴⁰ while ignoring the formal problems posed by the suffix *yva* of these imperfectives. If the grammar contains a stress rule to the effect that stressed truncated suffixes lose their stress to the next left syllable (in the absence of other stress indicators), then the substantives can be formed from the perfectives in all cases, e.g.

	(perep'is+á)+sčik	(zakaz+á)+sčik
Truncate: ⁴¹	(perep'ís)+sčik	(zakáz)+sčik
sč → č:	(perep'ís)+čik	(zakáz)+čik
Erase (,):	perep'ís+čik	zakáz+čik
etc.		

Similarly, there is no need to give the imperfective *vkládývat'* as the sole base of *vkládčik*, as is done in *AG* (apparently to account for both the stress and the *d* of the derivative). If end-stressed zero-affix verbs (e.g. *čest'*, *klast'*) are so marked by stressing the affix {Ø} which forms them, then *vkládčik* can be formed on the perf. *vklast'* and for that matter also on the substantive *vkład* with which it is also related (*Ušak.*):

	perfective	substantive
	(vkład+Ø)+sčik	(vklád+Ø)+sčik
Truncate:	(vklád)+sčik	(vklád)+sčik
sč → č:	(vklád)+čik	(vklád)+čik
Erase (,):	vklád+čik	vklád+čik
etc.		

2.2.7. One of the principal advantages of the truncation rule described here is that it formalizes such cases of simultaneous dual derivation, that is, cases where more than one word serves as derivational base for a given derivative. Cases where substantives are simultaneously derived from both members of verbal aspect pairs are especially frequent. We have already seen a few instances

of this. Consider now the case of *zaprávka* (F-stem: {zapráv#k}), formed on both the perf. *zaprávit'* (F-stem: {zapráv'i}) and the imperf. *zapravl'ját'* (F-stem: {zapravl'áj}). Use of the derivational boundary {+} has already been shown to eliminate the need to specify the phonological details of the truncated affixes. An additional benefit becomes clear in the case of *zaprávka*. *Zapravl'ját'* is formed from *zaprávit'* by concatenation rule C-7 and *zaprávka* from both verbs by C-8 ("Add {#k}"):

	C-7		
zapráv+i	→	(zapráv+i)+jáj	
	T:	(zapráv)+jáj	
	E:	zapráv+jáj	
			C-8
	C-8		C-8
→	(zapráv+i)+#k	→	(zapráv+jáj)+#k
T:	(zapráv)+#k	T:	(zapráv)+#k
E:	zapráv+#k	E:	zapráv+#k

after which the D-F rules will create {zapráv'i} and {zapravl'áj} from the two verb stems. Since {zapráv+#k} has already been generated from the underlying D-stem {zapráv+jáj} of *zapravl'ját'*, there is no need to bother about the truncation of {l'} from the F-stem {zapravl'áj}. In other words, use of the deeper D-stem obviates the need to account for "reverse morphophonemics", i.e. for the elimination of the effects of adding the affixes by which the given derivational base was formed. This is equally true of the perfective *zaprávit'*: by using the D-stem {zapráv+i}, we need not account for the depalatalization of {v'} which would have to be specified if only the superficial F-stem were used as derivational base, i.e. {zapráv'i} → {zapráv#k}.

2.2.8. It can in fact be shown that there is no such process as depalatalization in Russian derivational morphophonemics. Consider first another case of simultaneous dual derivation, that of *výkup* by C-3 from both *výkupit'* and *vykupát'*:

C-3:	(víkup+i)+∅	(víkup+áj)+∅ ⁴²
T:	(víkup)+∅	(víkup)+∅
E:	víkup+∅	víkup+∅

There is no need to specify the depalatalization of {p'} which would otherwise be necessary (in the F-stems {víkup'i} → {víkup}).

The substantives *góvor*, *krík*, *xód* can likewise be formed with no reference to

depalatalization of the base stem, provided it is the D- and not the F-stem which is used as base:

C-3:	(govor+í)+∅	(kr'ik+já)+∅	(xod+í)+∅
T:	(govór)+∅ ⁴³	(kr'ík)+∅	(xód)+∅
E:	govór+∅	kr'ík+∅	xód+∅
	etc.		

Similarly, one forms nouns in *-ún* and *-ok* by C-9, C-10:

C-9:	(govor+í)+ún	(kr'ik+já)+ún
T:	(govór)+ún	(kr'ík)+ún
E:	govor+ún	kr'ik+ún
C-10:	(jézd+i)+òk	(xod+í)+òk
T:	(jézd)+òk	(xód)+òk
E:	jezd+òk	xod+òk
	etc.	

2.2.9. The general effect of the D-stems and truncation rule is to permit underlying forms to be "restored", as it were, in the course of further derivation from words which have themselves changed their underlying forms in one way or another. One of the most obvious instances of such change in Russian is the class of verbs in *-nu-* which often causes truncation of stem-final consonants of their derivational bases: *razvernút'*, *vsprýsnút'*, etc. The further derivation, e.g. of affixal imperfectives or deverbative substantives, must restore the consonants which were "lost" in the first derivation, e.g. *razvèrtývat'*, *vsprýskívat'*, *razvèrtka*, etc. There is no non-ad-hoc way to do this on the basis of F-stems: {-an-} gives {-ad-} in {zagl'anu} → {zagl'adivaj} but {-ag-} in {pr'it'anu} → {pr'it'agivaj}, etc. The T-rule operating on D-stems handles all of these cases at once:

C-2:	(zagl'ad+nú)+yvaj	(pr'it'ag+nú)+yvaj	(razv'ort+nú)+yvaj
T:	(zagl'ád)+yvaj	(pr'it'ág)+yvaj	(razv'órt)+yvaj
E:	zagl'ád+yvaj	pr'it'ág+yvaj	razv'órt+yvaj
	etc.		

Such a description, making use of the same stems and truncation rule needed in many other kinds of derivation, formalizes the intuitively recognized fact that F-stems such as {razv'ornú} somehow "contain" a {t} between the {r} and the {n}. This is a natural and intuitively satisfying way of avoiding the (pseudo-)problem

which arises if one attempts to describe derivation in terms of F-stems.

2.2.10. The truncation rule operating on D-stems explains a good many seeming anomalies in the derivation process. The affix {izn(a)}, added to adjective stems, produces the substantives *golubizna* from *goluboj*, *belizna* from *belyj*, *novizna* from *novyj*, etc. but from *redkij* one has not **redčizna* but *redizna*, as is perfectly natural if one starts from the D-stem {red+#k} (cf. also *redet'*). A similar situation obtains with the suffix {in(a)}:

	(bistr)+in	(sed)+in	(t'ix)+in	(glub+ok)+in	(šir+ok)+in
T:	no	no	no	(glub)+in	(šir)+in
E:	bistr+in	sed+in	t'ix+in	glub+in	šir+in
...	bistr'in	sed'in	t'išin	glub'in	šir'in

Similarly, (bogát)+éj → {bogatéj} (skipping the intermediate steps) but (grámot+n)+éj → {gramotéj}; (gus)+'óniš → {gus'óniš} but (ut+#k)+'óniš → {ut'óniš} (likewise *utěna*, *ut'-ut'*).

There is no shortage of similar cases in other Slavic languages. Cf. Old Church Slavic *sladъkъ* (i.e. {slad+ъk}) → {sladostъ}, Czech *krotký* (i.e. {krot+#k}) → *krotitel* or *spotřebič* derived from both verb and substantive:⁴⁴

	Perf. verb	Imperf. verb	Substantive
	(spotřeb+i)+ič	(spotřeb+ova)+ič	(spotřeb+∅)+ič
T:	(spotřeb)+ič	(spotřeb)+ič	(spotřeb+)+ič
E:	spotřeb+ič	spotřeb+ič	spotřeb+ič

2.2.11. Ethnic names show several cases of surface anomaly which turn out to be perfectly regular once one looks at their deep structure. For example, an inhabitant of *Ávstrija* is an *avstriják*, but an inhabitant of *Prússija* is not a **prussiják* but a *prussák*, for the good reason that *Prússija* is itself a derived word containing a {+} boundary upon which the T-rule operates, whereas *Ávstrija* is underived:

	(prúss+ij)+ák	(áfstr'ij)+ák
T:	(prúss)+ák	no
(á)á → (a)á:	(pruss)+ák	(afstr'ij)+ák
E:	pruss+ák	afstr'ij+ák

In the same way, the underived stem of *Índija* combines with {ján#k} to give *indijánka*, but the derived stem of *Grécija*, namely {grék+ij}, combines with the same

affix to give *grečānka*, not **grecijānka*.

2.2.12. It would not be difficult to multiply examples, but the point has been made adequately already: many seeming morphophonemic problems turn out not to be problems at all, and a significant measure of generality is obtained in the rules describing morphophonemic processes in derivation, if one takes as derivational base a deeper, underlying D-stem and abandons the futile attempt to describe derivational processes in terms of flexional stems; the latter are elements of surface structure compared to the deep-structure D-stems, and in a generative description surface entities can only result from, but not explain, the items and processes on deeper levels. Of course, the situation is not always as clear as in the illustrative examples chosen above. In some cases, one and the same affix causes truncation in some stems, but not in others; cf., for example, *širókij* → *širota*, but *grjáznyj* → *grjaznota* (not **grjazota*), or *blízki* → *blízost'* but *gíbkij* → *gíbkost'*. One last example may suffice to show how complicated can be the relations between the deep and the surface structures of Slavic words.

The Academy grammar⁴⁵ describes feminine deverbatives in {in(a)} as based in ad-hoc fashion now on the perfective, now on the imperfective:

<i>vpádina</i> (<i>vpást'</i>)	<i>zaváлина</i> (<i>zaválivat'</i>)
<i>zarúbina</i> (<i>zarubít'</i>)	<i>izgíbina</i> (<i>izgibát'</i>) etc.

In all cases except those where the perf. is formed by prefixation (rather than the imperf. being formed by affixation), e.g. *mórsčít'* → *namórsčít'*, the deverbative can be formed on a D-stem with truncation from both aspect forms, e.g. *vypádina* from both (*vpad+∅*)+in and (*vpad+áj*)+in etc. This is also true of the pair *izgibát'*—*izognút'*, in spite of the apparently great distance from the phonological shape of *izognút'* to that of *izgíbina*. If we add {in} to the list of affixes requiring truncation and *ǰ* → *i*, we can derive *izgíbina* from both stems. Let C-11 = imperfectivization with {áj} (as in *čitat'*) and C-12 the formation of nouns in {in}. Then:

D-D rules		C-11	
	<i>iz#gǰb+nú</i>	→	<i>(iz#gǰb+nú)+áj</i>
T:	no		<i>(iz#gǰb)+áj</i>
E:	no		<i>iz#gǰb+áj</i>
C-12:	→ <i>(iz#gǰb+nú)+in</i>		→ <i>(iz#gǰb+áj)+in</i>
T:	<i>(iz#gǰb)+in</i>		<i>(iz#gǰb)+in</i>

E:		iz#gǫ́b+in		iz#gǫ́b+in
D-F rules				
ǫ́:	iz#gǫ́b+nú	iz#gǫ́b+in	iz#gib+áj	iz#gǫ́b+in
# → ø: ⁴⁶	izogǫ́b+nú	izøǫ́b+in	izøgib+áj	izøǫ́b+in
nu:	izogø+nu	no	no	no

which, after removal of phonetic zero ({ø}), can be outputted by the erase-({+}) rule as

{izognú} {izǫ́b'in} {izgibáj} {izǫ́b'in}

that is, the flexional stems of *izognút'*, *izgibát'*, and *izǫ́bina* (twice). The phonological similarity between *izgibát'* and *izǫ́bina*, and the dissimilarity between the latter and *izognút'*, is a result of rules in that part of the D-system (namely, the D-F rules) which is concerned not with the derivation of words from other words, but with the generation of F-stems out of their underlying D-stems. The formation of words – that is, the application of concatenation rules – takes place at the deeper level of D-stems, as one type of D-D rule; at this deeper level, the {ǫ́} of {gǫ́b} has not yet been resolved as {i} or zero, the {b} has not yet been truncated before {n}, etc. One cannot, of course, exclude the possibility of feedback from surface to deep structure: if the phonological distance from, say, {izognú} to {izǫ́b'in} is disproportionately great compared to that from the latter to {izgibáj}, this may cause a reevaluation in the type or ordering of rules resulting in a broken connection between *izognút'* and the noun *izǫ́bina*. Such feedback and reevaluation may be one of the internal causes of shifts in the derivational patterns as seen diachronically.

The foregoing discussion of deep vs. surface structure within the word has taken us into many problems of derivational morphophonemics. It is only natural that we now look briefly at some of the structural characteristics of the third major morphological entity of Slavic, with which derivation is exclusively concerned, namely the word-family.

2.3. The word-family, as we have seen, consists of a set of F-stems related to each other by a network of derivational relations within the D-system; the F-stems themselves are but surface manifestations of these derivational relations.

The DB-stem need not necessarily coincide in shape with any one D- or F-stem; its only function is predictive. Just as F-stems can contain predictive segments like the vowel-zero morphophoneme {#} (which is not the same as either phonetic

zero or a full vowel, but merely enables the zero or vowel to be generated automatically by the rules), so can D-stems contain "artificial" elements like {ɤ}, from which the flexional morphophonemes {V} (full vowel), {∅} (zero), and {#} can be predicted. Note the difference between this view and the traditional Bloomfieldian view of prediction; the latter chooses one segment on a given level and predicts other alternant segments on the same level on the basis of varying environments, whereas we choose a segment on one level and predict from it a set of segments on a less deep level. Phonetic sets are defined in terms of a predictive phoneme, phonemic sets in terms of a flexional morphophoneme, flexional morphophoneme sets in terms of derivational morphophonemes; in all cases, the "basic variant" is on a deeper level than any of the alternants it predicts.

2.3.1. In many cases, the DB-stems will resemble the etymological roots upon which word-families were historically formed, but this need not necessarily be the case; consider the many instances of deetymologization, recomposition, etc. (Russ. *opěnok, opjata; medved'*, etc.), in addition to the more frequent instances of semantic drift which carry derivatives out of the word-family in which they originated (the original morpheme {raz} 'strike' has entirely disappeared in the family of *ōbrāz*, and the latter is scarcely evident itself in, say, *necelėsobraznost'*). Only a thorough investigation of the concatenation and accommodation rules affecting semantic features matrices will enable us to account for the diachronic shifts that change polysemy to homonymy and break one word-family into two. We have already seen that the phonology of derivation is no simple matter, but there is good reason to suspect that the semantics of derivation is less simple than this phonology. Modern computer technology has made it possible to approach formal problems in derivation with some sophistication, but no comparable tool for semantic research is visible.

2.3.2. Semantic drift and subsequent disassociation of word groups from their historical word-families is one of the two major diachronic processes observable in derivation. The other is the creation of new word-families and new derivational rules by a process which, seen from the viewpoint of a generative description, is "upside down" but nonetheless very real. We have in mind the rapid internationalization of European literary languages, and even more that of technical jargon, which has led in the Slavic languages to a whole series of new word-family types, new morphophonemic alternations, etc. As new international terms are borrowed, their form-meaning correspondences on the flexional surface create new

patterns of alternation which (if we may be forgiven the metaphor) then put down roots in the deep structure of the language, creating entities and operations within the derivational system. This feedback from surface structure to deep structure results in new DB-stems like {okkup=} or {rad=} in the following word-families of Russian:⁴⁷

$$\begin{array}{l}
 \text{okkup=} \left\{ \begin{array}{l} +\text{ant-} \quad +\text{sk} \\ +\text{acij-} \quad +\text{onn} \\ +\text{irova-} \quad +\text{n-} \quad +\#\text{n} \end{array} \right. \\
 \\
 \text{rad=} \left\{ \begin{array}{l} +\text{ist-} \left\{ \begin{array}{l} +\#\text{k} \\ \text{bort+} \end{array} \right. \\ +\text{irova-} \quad +\text{n-} \quad +\#\text{n} \\ +\text{io} \left\{ \begin{array}{l} +\text{l} \\ +\text{fik=} \left\{ \begin{array}{l} +\text{acij} \\ +\text{irova-} \quad +\text{n-} \quad +\#\text{n} \end{array} \right. \end{array} \right. \end{array} \right.
 \end{array}$$

i.e. *okkupant*, *okkupantskij*, *okkupacija*, *okkupacionnyj*, *okkupirovat'*, *okkupirovan*, *okkupirovannyj* and *radist*, *radistka*, *bortradist*, *radirovat'*, *radirovan*, *radirovannyj*, *radio*, *radiola*, *radiofikacija*, *radioficirovat'*, *radioficirovan*, *radioficirovannyj*. Such families create new alternations and reinforce old, Slavic ones (e.g. /k/ ~ /c/ in *radiofikacija*, *radioficirovat'*). If the disintegration of old word-families (*ob-raz*, etc.) can be seen as the elimination of concatenation rules and consequent creation of two new DB-stems for one old one, the formation of new word-families under the increasing pressure of morphophonemic surface structures can be seen as the introduction of new concatenation rules, also accompanied by an increase in the stock of DB-stems, e.g. {okkup=}, {rad=}. Therefore, although the complexity of the system of rules tends to maintain a certain balance (elimination of older C-rules through semantic drift being compensated by the creation of new rules under pressure from surface structures), the number of DB-stems – that is, the number of word-families – tends to increase continually, since there is no natural process which would coalesce two DB-stems into one and hence merge two word-families into a single family.

2.3.3. Many important questions connected with the structure of word-families have been left untouched in this report, and considerations of space prevent us from discussing such theoretical problems as the proper meaning of such terms as "morphology," "lexicology" and "phonology" when seen in the light of the descriptive framework proposed here. As research in the structural analysis of derivation

proceeds,⁴⁸ we hope to return to similar questions of fact and of theory in future studies.

FOOTNOTES

- ¹ On the existence of a morphophoneme {ě} in Czech see our article, "Phonological Levels and Rate of Change", to appear.
- ² See M. Halle, "A Descriptive Convention for Treating Assimilation and Dissimilation", *Quarterly Progress Reports*, Research Laboratory of Electronics, M.I.T., 66 (July, 1962), 295-296.
- ³ The actual situation is somewhat more complicated than this, since on the one hand not all stems undergo such alternations (cf. *hřích hřichu*) and on the other not all such alternations can be explained by zero endings (cf. *míra*, instr. *měrou*, gen. plur. *měr*).
- ⁴ For example, one might assume grammatical constraints on such vocalic alternations, positing one set of alternations in the nom. sing. masc. and a different set in the gen. plur. fem.-neut.; note that Slovak and Serbocroatian alternations cannot be explained purely phonologically (SCr. *marka*, gen. plur. *maraka*), as Ďurovič has pointed out (*Slovo a slovesnost*, 26 [1965], 126-129).
- ⁵ E. Stankiewicz, "The Interdependence of Paradigmatic and Derivational Patterns", *Word*, 18 (1962), 1-22.
- ⁶ "The Notion of 'Stem' in Russian Flexion and Derivation", *To Honor Roman Jakobson*, III (The Hague, 1967), 2269-2288 (henceforth "The Notion of Stem ...").
- ⁷ See "The Notion of Stem ...", 2274f., and fn. 40 below.
- ⁸ See for example Akademiya nauk SSSR, *Grammatika russkogo jazyka*, I, *Fonetika, morfologija* (Moskva, 1952, 1960²) (henceforth AG I). The situation is better in the excellent study of Czech derivation now appearing (*Tvoření slov v češtině*, I, *Teorie odvozování slov*, by M. Dokulil [Praha, 1962]; II, *Odvozování podstatných jmen*, ed. by F. Daneš, M. Dokulil, J. Kuchař [Praha, 1967]), but even here one finds too great reliance on dictionary forms. For example, it is said (I, p. 52) that prefixation is accompanied by shortening of the stem vowel in cases like *brát* + *přibrat*, *zabrat* and *dát* + *odevzdat*, *přidat*. However, the short past tense vowels of *bral*, *dal* make it clear that one has to do not with shortening in prefixal derivation, but rather with lengthening in the formation of the infinitive of non-prefixed verbs: a single rule will account for the length of *dát*, *brát*, whereas it takes two rules to account for the short vowels of *přidat* and *dal* (note that the present tense stem is always long: *dám*, *dáš*, ...; *přidám*, *přidáš*, ...).
- ⁹ "Výbeg ... dejstvie po glag. *vybegát'* - *vybežat'*", D. N. Ušakov, ed., *Tolkovyj slovar' russkogo jazyka*, I (Moskva, 1935-40), col. 428 (Henceforth Ušak.).
- ¹⁰ AG I, 245.
- ¹¹ *ibid.*, 241.
- ¹² *ibid.*, 214; Ušak., IV, 1292.
- ¹³ "The Notion of Stem ...".
- ¹⁴ This view is advocated most convincingly by A. V. Isačenko in *Die russische Sprache der Gegenwart*, I: *Formenlehre* (Halle [Saale], 1962), 3ff. However, it can be argued that derivation, like flexion, "treats the rules for concatenation of morphemes and studies the meaning and formal properties of the entities formed by such concatenation" ("The Notion of Stem ...", 2270). Such different views

are probably based more in terminology than in substantive disagreement.

¹⁵ This approach is clearly illustrated by recent works dealing with Slavic: M. Halle, "O pravilax ruskogo sprjaženija", *American Contributions to the Fifth International Congress of Slavists*, I (The Hague, 1963), 113-132; T. M. Lajtner (Lightner), "Ob alternaciji $e \sim o$ v sovremennom ruskom literaturnom jazyke", *Voprosy jazykoznanija* (No. 5, 1966), 64-80; *idem*, "On the Phonology of the Old Church Slavonic Conjugation", *IJSLP*, 10 (1966), 1-28. For discussion of this approach, see E. Stankiewicz, "Slavic Morphophonemics in its Typological and Diachronic Aspects", *Current Trends in Linguistics*, 3: *Theoretical Foundations* (The Hague, 1966), 495-520 and our comments in *Current Anthropology*, 9 (1968), 139-144.

¹⁶ For the type of description one would need, see P. Sgall, *Generativní popis jazyka a česká deklinace* (Praha, 1967), esp. 162ff.

¹⁷ "The Role of Transformations in the Definition of Syntagmas in Russian and Other Slavic Languages", *American Contributions to the Fifth International Congress of Slavists*, I (The Hague, 1963), 361-383.

¹⁸ Abbreviations: SUB = substantive, INSTR = instrumental, f = feminine, m = masculine, superscript 2, 3 = so-called second and third declension respectively; items in curved brackets are in morphophonemic transcription (by which it is meant only that these items are deeper, more abstract than phonemes), those in slant brackets in phonemic, and in square brackets in phonetic transcription. Where the context makes it clear that entries are in morphophonemic transcription (e.g., in all discussions of derivation), curved brackets may be omitted. Examples are from Russian unless otherwise identified.

¹⁹ AG I, 266-267.

²⁰ See J. Katz, "Recent Issues in Semantic Theory", *Foundations of Language*, 3 (1967), 124-194.

²¹ AG I, 148-149.

²² R. Jakobson, "Russian Conjugation", *Word*, 4 (1948), 155-167.

²³ Cf. A. V. Isačenko, *Die russische Sprache der Gegenwart*, I, 5ff., with further literature.

²⁴ To the extent that we need not be concerned with their precise form, phonological rules will be given in an informal shorthand recapitulating facts that are either well-known or obvious from the stem-changes resulting therefrom. On the vocalization of morphophonemic {#}, see "On Cyclical Rules in Derivational Morphophonemics", *Phonologie der Gegenwart* (Vienna, 1967), 173-186 and "Vowel-Zero Alternations in Russian Derivation", *IJSLP*, 11 (1968). The {o} → {e} rule can be formulated either as assignment of [- low tonality] to the segment [+ vocalic, - consonantal, - diffuse, - compact] or as a change [+ low tonality] → [- low tonality], in either case in an environment preceding sharpened consonants, {c, č} etc. Stems without stress mark are end-stressed; the stress assignment rule here will place stress on the final syllable in the environment of a zero ending. The erasure rule will also affect parentheses (cf. below). For more precise formulation of this kind of rule, see M. Halle, *The Sound Pattern of Russian* (The Hague, 1959).

²⁵ It will be shown below that the derivational stem of the verb *kupit'* (i.e.

the stem upon which the deverbative *kupeo* is formed) is not the F-stem {kup'í}, but the D-stem {kup+í}. A side benefit of the use of such underlying DB-stems as {kup} is that one no longer has internal inconsistency in the notation of palatalization before {#} in F-stems. Use of the F-stem {kup'í} results in the derived F-stem {kup'#c} with sharpened {p'}, whereas such sharpening need not be marked in forms like {ot#c}, since it can be predicted from the context; the D-stem {kup+í} gives the derived F-stem {kup#c}.

26 We propose the term "generative history" as a substitute for the widely-used "derivational history" in order to avoid ambiguity in the term "derivational", which can refer either to the set of entities and rules by which a given form (say, a terminal syntactic string) was generated or to the derivation of words from other words, i.e. derivational morphology.

27 Cf. M. Dokulil, *Tvoření slov v češtině, I: Teorie odvozování slov* (Praha, 1962), 50ff.

28 E. Stankiewicz, "The Interdependence of Paradigmatic and Derivational Patterns", *Word*, 18 (1962), 1-22.

29 "The Notion of Stem ...", 228lff.

30 See "The Notion of Stem ...", 228off. and "Vowel - Zero Alternations in Russian Derivation", *IJSLP*, 11 (1968).

31 *Užak.*, IV, c. 1292.

32 We assume the existence of two morphophonemes {y} and {i}; see "Phonological Levels and Rate of Change".

33 The suffixal environments listed are not exhaustive. Similarly, as will be seen, the truncation rule affects stems concatenated with a wide range of affixes forming verbs, substantives and adjectives.

34 In the case of {yvaj}, stress is assigned automatically to the preceding syllable. A number of problems connected with stress are left unsolved in this paper.

35 We leave out of consideration the problems involved in proceeding from two morphophonemes {y}, {i} to one phoneme /i/ and again to two allophones [y], [i].

36 The first {∅} is the verb-forming affix, the second that forming substantives.

37 This principle differs from those underlying the generative phonological studies of the M.I.T. school (cf. fn. 15), which appears to "recapitulate the entire (generative) history of a word in each and every one of this word's case-number forms" ("On Cyclical Rules in Derivational Morphophonemics", *Phonologie der Gegenwart*, Vienna, 1967, 181); the price one pays for the present view is splitting morphology into two sub-systems, which involves repeating some (not many) rules in both systems.

38 The non-substitutive and substitutive softening rules are well-known. Note however that palatalization in derivation differs from that of flexion: {d+j} → {ž} in {jézd+jáj} → {ježžáj}, but not in *ot"jerat'*

39 We omit the {j} → {∅} rule as irrelevant to the present point.

40 *AG I*, 219-220. This suffix is a good example of information which can be included into either the item or the process part of a linguistic description. The

Academy grammar gives two suffixes *-ščik* and *-čik*, the latter occurring after *s*, *z* and after *t*, *d* not preceded by nasal, liquid or jot, and the former elsewhere. We should prefer to reformulate this information in terms of a single suffix {sčik} (not {ščik}) and attribute the /čik/ of *ukládčik* etc. to a morphophonemic (accommodation) rule of the form

$$sčik \rightarrow čik / \left\{ \dots + \begin{array}{c} \left[\begin{array}{c} l \\ r \\ m \\ n \\ j \end{array} \right] \left[\begin{array}{c} t \\ d \end{array} \right] \right\} \begin{array}{c} [s] \\ [z] \end{array} \end{array} .$$

cf. *besedčik*, *bufetčik*, *vynosčik*, *vozčik* (*sč* and *zč* → *š'* by further, phonetic rules), *flejtščik*, *alimentščik* (i.e. {flejtsčik}, {al'iméntsčik}). Choice of the suffix beginning in {s} rather than {š} makes it possible to view this truncation as another instance of Jakobson's law of truncation (*Word*, 4, 1948, 155-167) of one of two like segments; here it is of course the second segment which is so truncated. The AG item-and-arrangement view misses this generalization.

⁴¹ As mentioned in fn. 34, a number of problems connected with stress assignment must be omitted from this paper for lack of space (and of previous study). One generalization seems to be possible: whenever the post-truncation form of a stem contains stress markers both within and without the parentheses, that without prevails (e.g. (zapráv)+jáj → ... F-stem {zapravl'áj} on the next page). This means that stress should be assigned as part of the D-D component; in most cases, stress conflicts are automatically resolved by the truncation rule. Note that the above generalization neatly accounts for the stress of perf. *výnosit'* vs. im-perf. *vynosít'*: the former is formed by concatenating {ví} with the D-stem of *nosit'*, namely {nos+í}, and the latter by concatenating {í} with the D-stem of *výnesti*, namely {vínes}:

	ví(nos+í)	(vínes)+í
á(á) → á(a):	ví(nos+í)	(vínes)+í
..., ...	vínos'i	vinos'í

(omitting the problem of root vocalism, irrelevant to the stress).

The rule that in the absence of other markers truncated stressed segments lose their stress to the next left segment is another instance of a general rule; cf.

	(perep'is+á)+sčik	
Truncate:	(perep'is+∅)+sčik	stol+∅
a...∅ + á...∅:	(perep'ís+∅)+sčik	stól+∅

The apparent problem of getting rid of the {∅} in (perep'ís+∅)+sčik is easily solved; this is not the morphophonemic {∅} used to derive nouns and verbs, but simply a phonetic zero, which could be marked by a different symbol and erased together with (,).

⁴² This word poses a stress problem. If derived from {víkup+i} by the suffix {áj}, the stress rules in fn. 41 should give the derived D-stem {víkup+áj}, from which truncation would produce *víkúp.

⁴³ *góvor* is a stress exception; most C-3 derivatives simply shift the stress in accordance with the retraction rule of p. 175: e.g. (otxod+í) → (otxód) in deriv-

ing *otxód*.

⁴⁴ Cf. F. Daneš, M. Dokulil, J. Kuchař, *Tvoření slov v češtině*, II, *Odvozování podstatných jmen* (Praha, 1967), 197. Cf. also such Czech evidence for the generality of the truncation rule as the subliterate (obecná čeština) formations *Václavák* and *Karlák* from *václav+sk(é náměstí)* and *karl+ov(o náměstí)*. Of course, truncation can operate on surface phonological facts as well as on deeper entities like {+}: cf. the truncation of /ň/ in Cz. *medicinální + medicínálka disciplinární + disciplínárka*, etc.

⁴⁵ AG I, 245.

⁴⁶ This is the same rule as needed in the F-system, whereas the {ʃ} and {nu} rules occur only in derivation.

⁴⁷ The tables stand for sets of concatenation and accommodation rules. Stems followed by "=" are blocked, i.e. not outputted to the F-system (no words of Russian correspond to them); stems followed by "-" are both outputted to the F-system and subjected to further derivational rules; stems followed by neither "=" nor "-" are terminal, i.e. they are outputted to the F-system but not subjected to further derivational rules. The "+" indicates whether a given affix is suffixed (+ant-) or prefixed (bort+) to the preceding stem.

⁴⁸ Such research is being conducted (primarily on Russian) by the author and his colleagues at the University of California and the RAND Corporation; the research is based on a computer-segmented corpus of 110,000 Russian words. The first volume to result from this work is now in press: D. S. Worth, A. S. Kozak, D. B. Johnson, *Russian Derivational Dictionary*; cf. also D. S. Worth, R. S. Schupbach, *A Deep Index of Derivational Morphology*, RAND Corporation Memorandum RM-5143-PR (Santa Monica, California, 1966).

AMBIGUITY IN RUSSIAN DERIVATION

0. Ambiguity is not the exception but the rule in natural language. Existing on all linguistic levels, ambiguity is responsible for most of the richness of language and for many of the problems of linguists. Hardly a sentence is uttered which is not ambiguous in several ways. The linguist, whose job it is to seek for clarity in what often seems like chaos, to discover structure under the jumble of surface data, to cage restless meaning in rigid form, is inclined to seek one-to-one relations throughout language, ignoring the multiple ambiguity which is inherent to every linguistic level. In this paper, we shall examine some types of ambiguity in the Russian derivational system.¹

Ambiguous relations are of two types, synonymic and homonymic. Since the terms synonymy and homonymy themselves have been preempted for lexicology, we shall introduce (with apologies for further cluttering the terminological landscape) the terms SYNAMBIGUITY and HOMAMBIGUITY to signify these two cardinal types of ambiguity. Synambiguity obtains when one element of deep structure is represented by two elements of surface structure,² or — which often amounts to the same thing — when one unit of meaning is represented by two units of form, as for example when {g} in {lug-} 'meadow' is represented by [g], [g,] and [k] in *luga*, *luge*, *lug*,³ when /e/ appears as [ɛ] and as [e] in *èto* and *èti*, when 'instrumental (singular)' is expressed by {-om} in the context 'non-feminine' but by {-#ju} in the context 'feminine', when the syntactic string translatable by 'the wind carried off the boat' appears as *véter unës lódku*, *lódka unesená vétrom* and *vétrom unesló lódku*, or when the presumably identical underlying semantic features corresponding to English 'brave' are incorporated in the stems of the two adjectives *smélyj* and *xrábryj*. Homambiguity obtains when two morphophonemes are neutralized phonetically (as {g} and {k} in /luk/ = *lug* 'meadow' or *luk* 'onion') or morphophonemically (as {t} and {k} in the /č/ of *bormóčut* < *bormotát*' and of *kličut* < *klikát*'), when two different sets of semantic features share a common phonological expression as in the {vod-} of *vodít*' 'lead' and the {vod-} of *vodá* 'water', in case syncretism such as {-im} = both 'instrumental singular non-femi-

nine' and 'dative plural', or when two underlying syntactic strings correspond to (underlie) a single surface string as in *Já znál egó studěntom*, the embedded sentence of which can be either *Já býl studěntom* or *Ón býl studěntom*. These syn- and homambiguities differ from one level to another, and have been the subject of much scholarly literature. The only part of the Russian linguistic system whose ambiguities have as far as I know escaped attention is derivational morphology.

1. The Russian system of word-formation shows, *mutatis mutandis*, the same two types of ambiguity as the remainder of the language. Both synambiguity and homambiguity can be either complete or partial, as will become clear with the examples below.

DERIVATIONAL SYNAMBIGUITY obtains when one and the same derivational meaning is effected by two distinct affixes, for example *moróz* 'frost' + 'diminutive-affectionate' → both *morózec* and *morózik*, or *lgat* 'lie' + 'agent' → both *lgun* and *lžec*. Aspect formation provides many examples of ambiguity of this type, e.g. *zatopít*' (P) + 'imperfective' → both *zatoplját*' (I) and *zatáplivat*' (I), *zarézat*' (P) → *zarezáť*' (I) and *zarézyvat*' (I). Standard sources provide quite some information about derivational synambiguity.⁴ This is not the case with derivational homambiguity, which appears to be almost completely uninvestigated.

DERIVATIONAL HOMAMBIGUITY obtains when two or more deriving stems give rise to a single derived stem, i.e. when a given word has more than one derivational history. There seem to be two principally different kinds of homambiguity in Russian derivation (although as we shall see they are not always entirely separate from one another). The simpler of the two obtains when the morphophonemics of derivation operate on two quite distinct words to produce homonymic derivatives. The imperfective of *namešít*' (P) 'prepare a certain quantity of something by kneading' is *naméšivat*'¹, which shares an identical phonological structure with the imperfective *naméšivat*'² of *namešát*' (P) 'add, mix into something'.⁵ Such cases are by no means rare; cf. *dopáivat*' (I) to both *dopaját*' 'finish soldering' and *dopoít*' 'finish giving to drink', *doryvát*' (I) to both *dorvát*' 'finish tearing' and *doryť*' 'finish digging', etc. Since this type of ambiguity extends across the boundaries between separate derivational families, it might be termed exocentric homambiguity. Its opposite is then endocentric homambiguity, that is, derivational ambiguity within one and the same word-family. It is this latter type of ambiguity with which this paper is primarily concerned.

2. Derivational ambiguities in Russian involve two distinct but interrelated sets

of problems, one formal (phonological) and one semantic. The formal problem is that of directionality: if two words are derivationally related, is the relation between them directional, that is, is one word always hierarchically subordinated to the other? The material itself leads to no clear conclusion: at one extreme, highly "motivated" derivation (to use Vinokur's term) is obviously directional (the diminutive *dómik* is clearly derived from *dom*), but at the other extreme, there clearly exist derivational sets which can be directionally ordered only with a certain artificiality (e.g., *-izm/-ist/-ičeskij* sets, sexed animal sets like *kozá/kozěl* and *lev/l'vica*, "ethnic" sets like *abxáz/Abxázija/abxázka/abxázskij*.⁶) A generative description is inherently directional, and has only two alternatives: either one of the given set of words is taken as basic and the others derived therefrom, or an abstract form is assumed to underlie all given words, which are then derived from this abstract form; the first solution leads to artificially imposed hierarchies and the second to the multiplication of speculative abstractions. This paper will explore some of the consequences of the first of these approaches; we shall see that the formalization of a directional, one-word-to-another description remains feasible in spite of some problems.

The semantic problem of derivational ambiguity is that of discontinuity, that is, of the incomplete parallelism between the formal and the semantic processes of derivation. Such categorial meanings of affixes as "agentive", "diminutive", "imperfective", while useful in labelling entire derivational models, are not much help in describing the semantics of individual word-formations. Not all meanings of a derivational base are carried over into its derivative, and the latter as often as not adds new, idiosyncratic meanings of its own. The problem of phonological/semantic discontinuity is extraordinarily complicated, as Mel'čuk has recently made clear;⁷ in this paper, we shall merely explore a few semantic problems of derivational ambiguity.

3. The formal and semantic problems of directionality and discontinuity can be explored in the types of ambiguity resulting from derivation involving aspectual pairs. (Whether aspect formation is considered to be part of flexion, part of derivation or somewhere in between is irrelevant to our purpose, since the problems will not be changed or solved by relabelling them.)

Russian shows at least three kinds of homambiguity connected with aspect formation: (1) a single secondary imperfective can correspond to two perfectives (*pročéšt'* [P] and *pročitát'* [P] both → *pročítivat'* [I]); (2) verbs in *-sja* are

derivationally related both to verbs of the same aspect but without *-sja* and to verbs with *-sja* but of different aspect (*doléčivat'sja* is both imperfective to *dolečít'sja* and intransitive to *doléčivat'*); (3) deverbative substantives are correlated with (= derived from) both members of aspectual pairs (*obsúška* from *obsušít'* and *obsušivat'*), or, if there exist both transitive and *-sja* intransitive pairs, from all four verbs (*obrisóvka* from *obrisovát'/obrisóvyvat'* and from *obrisovát'sja/obrisóvyvat'sja*). Endocentrically homambiguous forms can be interrelated with exocentrically homambiguous forms, and the three types of endocentric homambiguity just listed can combine to form multiple homambiguous derived forms. Throughout these complicated patterns run the two threads of (phonological) directionality and (semantic) discontinuity.

3.1. The derivation of secondary imperfectives "simultaneously" from two perfective verbs poses substantial formal problems, but is not impossible if one is prepared to accept the existence of underlying derivational stems containing marked morpheme boundaries and bracketed constituent structure, upon which an ordered set of morphophonemic rules operate;⁸ the imperfective *pročítivat'* can thus be derived from the derivational stems {pro=č#t+aj} and {pro=č#t+∅} of *pročitát'* and *pročést'* respectively. Implied in such a description is the assumption that the secondary imperfective has two distinct underlying phonological shapes, corresponding to the two forms from which it is derived:

$$\text{pročítivat}' = \begin{cases} (\text{pro}=\check{c}\#t+aj)+ivaj & (< \text{pročitát}') \\ (\text{pro}=\check{c}\#t+\emptyset)+ivaj & (< \text{pročést}') \end{cases}$$

That this assumption is less innocent than it seems will become apparent toward the end of this paper.

The formal (phonological) problems of such simultaneous dual derivation are complicated enough by themselves, but the real complexity of Russian derivation becomes apparent only when one attempts to account for the semantic side of the process as well as the phonology. *Pročítivat'* itself provides a simple illustration of this. The perfective *pročitát'* has two basic meanings: 'read through (understanding the contents of what has been read)' and 'spend a certain time in reading' (e.g., *pročitát' knihu* and *pročitát' vsjú nóč'* respectively). Its perfective synonym *pročést'*, however, has only the first of these two meanings, and the same is true of the imperfective *pročítivat'*. Now, even the phonological gymnastics by which we can obtain *pročítivat'* from both *pročést'* and *pročitát'* - in

the case of the latter, by truncating {-aj} from and vocalizing {#} to {i} in the underlying {(pro=č#t+aj)+ivaj} – are quite incapable of accounting for the loss of the second meaning of *pročítát'* in the course of deriving *pročítývat'* (it would be unreasonable to assume that this semantic change is in any way connected with the concomitant phonological changes, namely addition of {-ivaj} and truncation of {-aj}).⁹ Such semantic discontinuities are more the rule than the exception. *Nakládyvat'*, for example, is imperfective to both *naklást'* and *naložit'*. *Naložit'* has seven meanings, but *naklást'* has only two of these seven ('fill up by placing something in' and 'beat severely'). Consequently, the *nakládyvat'* derived from *naložit'* will have seven meanings, while that derived from *naklást'* will have only two. Since *nakládyvat'* must either have, or not have the five additional meanings, the derivational system would appear in such cases to have worked itself into a state of near absurdity.¹⁰ It is true that a certain number of such problems might be due to the prescientific clumsiness of present-day lexicographic techniques, but it would be idle to assume that all the complexities of semantic discontinuity will simply wither away under the glaring light of some new and powerful lexicology.¹¹

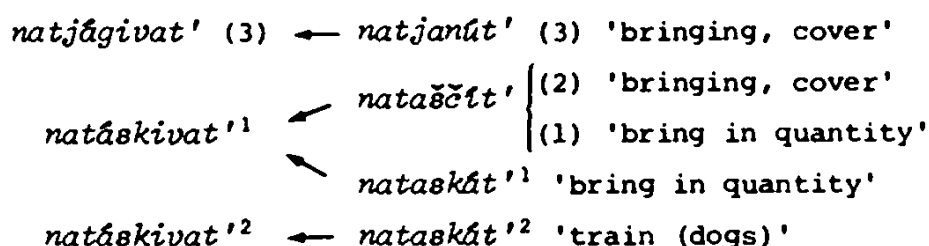
The ambiguity of *pročítývat'* in regard to *pročést'* and *pročítát'* was clearly endocentric, and that of *doryvát'* to *doryt'* and *dorvát'* was just as clearly endocentric. Some cases of ambiguity, however, seem to straddle the fence between endo- and exocentricity. *Dokátývat'*, for example, is imperfective to both *dokatát'* and *dokatít'*. The latter, however, are not merely (near-)synonyms, as were *pročést'* and *pročítát'*; *dokatát'* means 'finish rolling (something)', while *dokatít'* means both 'move (something) to a different place by rolling' and 'ride quickly up (to someplace)', that is, these two perfectives have only the semantic component 'circular motion' in common. Just as was the case with *pročítývat'*, *dokátývat'* clearly has two distinct phonological structures, corresponding to its dual origin:

$$dokátývat' = \begin{cases} (do=katáj)+ivaj & (< dokatát') \\ (do=kat,í)+ivaj & (< dokatít') \end{cases}$$

but unlike *pročítývat'*, *dokátývat'* contains three distinct meanings, one from *dokatát'* and two from *dokatít'*. The ambiguity of *dokátývat'*'s origin is not at question; what is at issue is its status as one word or two (i.e., has one to do with a single but polysemantic *dokátývat'*, or with distinct but partially synonymic *dokátývat'*¹ and *dokátývat'*²). In the absence of an objective method for

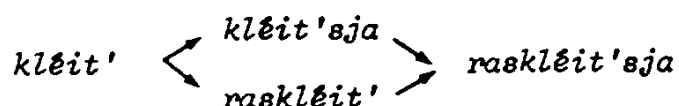
distinguishing polysemy from homonymy, we can do little beyond reiterating the existence of this problem.¹²

The combination of semantic discontinuities and the interrelations of endo- and exocentric homambiguities result — as expected — in further complications. The imperfective *natáskivat'*¹ is ambiguously derived from the perfectives *nataščít'* and *nataskát'*¹. *Nataščít'* has two meanings, 'bring in quantity' and 'bringing, cover'. In the first of these meanings *nataščít'* is synonymous with *nataskát'*¹ 'bring in quantity', and in the second meaning it is synonymous with another perfective verb, *natjanút'*, but only in the third of the latter's meanings, (3) 'bringing, cover'. As a result, the secondary imperfectives *natáskivat'*¹ and *natjágivat'* (the latter from *natjanút'*) are partial synonyms, sharing the meaning 'bringing, cover' (from *nataščít'* (2) and from *natjanút'* (3)). Furthermore, there exists the pair *nataskát'*²/*natáskivat'*² 'teach, train (dogs, etc.)', which are exocentrically homonymous with *nataskát'*¹/*natáskivat'*¹. This complex set of syn- and homambiguous relations may be more readily apprehended in diagrammatic form:



A semantic analysis utilizing semantic distinctive features would undoubtedly show this picture to be even more complicated, since the features corresponding to 'repetitive action' would be present in *nataskát'*²/*natáskivat'*² as well as in the remaining verbs. However, even the rough schema above suffices to show the difficulties any formal grammar will encounter in trying to account for the semantic and formal complexities of Russian aspect formation.

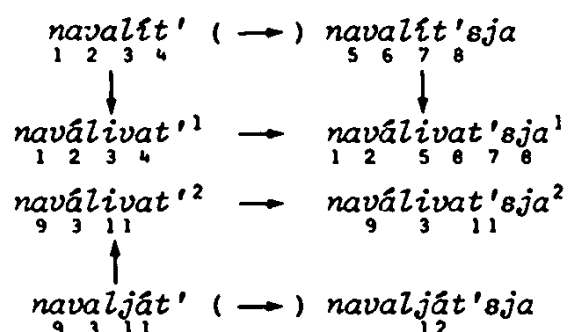
3.2. Another variety of derivational ambiguity in Russian occurs in the formation of intransitives in *-sja*. Here one must distinguish two subtypes. In the first, already noted by Lopatin and Uluxanov,¹³ a perfective in *-sja* can be ambiguously derived both from the corresponding perfective without *-sja*, and from an imperfective intransitive in *-sja*, e.g.



The second and far more frequent subtype occurs when a secondary imperfective in *-sja* is ambiguously derived both from the corresponding perfective verb in *-sja* and from a corresponding imperfective without *-sja*. *Smjagčít'sja*, for example, is both imperfective to *smjagčít'sja* and intransitive (usually mislabelled 'passive', 'strad.') to *smjagčít'*. There are hundreds of similar sets in Russian (over one hundred for *na-...sja* verbs alone), e.g. *narekát'sja* from *naréč'sja* and *narekát'*, *otstráivat'sja* from *otstróit'sja* and *otstráivat'*, *doslúšivat'sja* from *doslúšat'sja* and *doslúšivat'*, etc.

Homambiguous imperfective intransitives in *-sja* show the same kinds of semantic complication as were noted in plain aspect derivation above. One example will suffice. The perfective verb *navalít'* has four meanings: (1) 'place something heavy on top of something', (2) 'toss into a disorderly pile', (3) 'pile up (snow, etc.) in large quantities', (4) 'collect, come together in large numbers'. *Navá-livat'*¹ is listed as imperfective to *navalít'*, presumably in all four of the latter's meanings, though this is not stated explicitly in *SRJa*. There also exists a perfective intransitive *navalít'sja*, which like *navalít'* has four meanings; the four meanings of *navalít'sja* are however by no means merely the intransitive versions of the four meanings of *navalít'*, namely: (5) 'crush by one's weight, create difficulties', (6) 'attack suddenly and furiously', (7) (naval term.) 'cant, tip', (8) 'fall in large quantities'. Although meanings (5)-(8) obviously share a number of semantic features with meanings (1)-(4), the former cannot be derived from the latter merely by subtracting the grammatical meaning 'transitive' from the latter; in other words, there is a substantial semantic discontinuity between the transitive and intransitive perfectives. Further: the imperfective intransitive *navá-livat'sja*¹ is defined by *SRJa* both as intransitive to *navá-livat'*¹ (but, nota bene, only in the first two meanings (1), (2) which *navá-livat'*¹ has inherited from *navalít'*!), and as imperfective to *navalít'sja* (thus presumably inheriting all four of the latter's meanings). To compound the confusion, there exists another perfective verb *navalját'*, one of whose three meanings is equal to meaning (3) of *navalít'*: (9) 'to felt, full (i.e., to produce felt cloth by rolling and crushing)', (10=3) 'pile something up in quantity', (11) 'write or sketch hastily, carelessly'. Note that *navalít'* and *navalját'* even share the same government pattern (acc. or gen.) in meaning (3), i.e., they are really partial synonyms. *Navá-lját'* has an imperfective *navá-livat'*², which would be exocentrically homonymous with *navá-livat'*¹ were it not for the shared meaning (3) which makes these homonyms

partially synonymous (!). Further: *naválivat'*² has an intransitive *naválivat'-sja*², which, inheriting meanings (9) (3) (11) from *naválivat'*, is exocentrically homonymous with *naválivat'sja*¹ (whereas, it will be remembered, the corresponding imperfective transitives *naválivat'*¹ and *naválivat'*² were partly homonymic, partly synonymic). Finally, there exists an isolated perfective intransitive *navaljât'sja* 'to lie around (e.g., in bed) as long as one will', which for convenience sake will be left unconnected with the other verbs in this set, although a semantic feature analysis would of course show *navaljât'sja* to share some such feature complexes as 'quantification' and 'nonlinear motion' with these other verbs. Again, the situation may be clearer in diagrammatic form:



3.3. Deverbative substantives provide a third kind of derivational ambiguity in Russian. Such substantives are occasionally defined as derived from only one member of the aspectual pair (e.g., *obxód* only from *obxodít'*, not from *obojtí*), but this is almost always due to an inappropriate search for identity in the surface phonology of deriving and derived stem.¹⁴ There where there are no apparent phonological complications, the deverbative substantive is considered derived from both the perfective and the imperfective members of the aspectual pair, e.g., *ob"javlénie* from both *ob"javít'* (P) and *ob"javlját'* (I), *obsúška* from both *obsúšít'* (P) and *obsúšivat'* (I), etc. Semantic discontinuities are common in such deverbative derivation, and can take one of two forms. Either the deverbative substantive adds a meaning not in the verb (*obtjážka* is not only deverbative to *obtjanút'/obtjágivat'*, but in addition means 'that by means of which something is covered, closed,' i.e. the instrument by which the action itself is accomplished; cf. also *obtírka*, *obsýpka*, and many others), or it eliminates one or more of the verb's meanings (*obtesát'/obtěsyvat'* means (1) 'level, make even by hewing' and (2) 'teach good manners, cultivated behavior', but only the first of these meanings is carried over to the deverbative substantive *obtěška*). The semantic complications are just as great in sets containing deverbatives as in the formation

of aspectual pairs (3.1) and the derivation of *-sja* intransitives (3.2), but the problem of semantic discontinuity has been adequately illustrated already, and rather than repeat such demonstrations here, it will be more profitable to utilize deverbative substantives to examine a phonological problem connected with directionality in derivation.

We have seen above that a word which is ambiguously derived from two sources must be considered to have two distinct underlying phonological representations. In the case of deverbatives, this means, e.g., that *ob"javlénie* has two phonological structures

$$ob"javlénie = \begin{cases} (ob=jav, í)+en, ij & (< ob"javít') \\ [(ob=jav, í)+áj]+en, ij & (< ob"javlját') \end{cases}$$

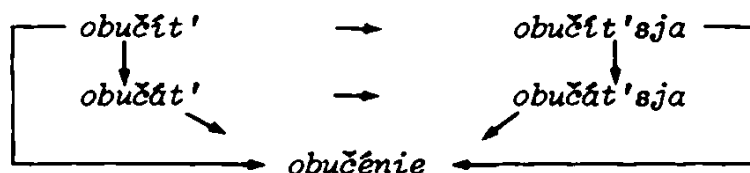
and similarly

$$obtjážka = \begin{cases} [(ob=t, ag)+nú]+#k & (< obtjanút') \\ [(ob=t, ag)+nú]+ivaj]+#k & (< obtjágivat') \end{cases}$$

$$nastríg = \begin{cases} [(na=str, ig)+\emptyset]+\emptyset & (< nastrič') \\ [(na=str, ig)+\emptyset]+aj]+\emptyset & (< nastrigát')^{15} \end{cases}$$

etc., etc. for hundreds of similar cases. Such ambiguous phonological structures do not seem unnatural for deverbative substantives derived from both of two verbs. The situation is not always this straightforward, however.

In cases where the given verb exists not only in transitive (perfective and imperfective) but also in intransitive pairs, deverbative substantives are usually defined as derived from all four verb forms, e.g. *obučénie* is said by SRJa to mean 'action according to the meaning of the verbs *obučít'*—*obučát'* and *obučít'sja*—*obučát'sja*. That is, the deverbative *obučénie* is derived from all four of these verb forms:



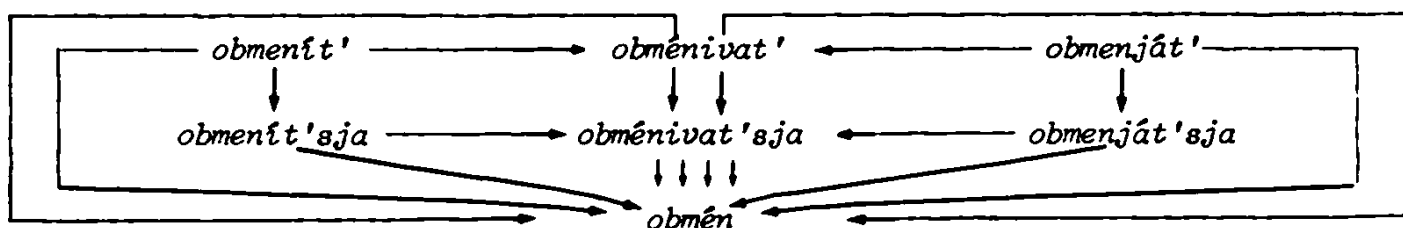
The same logic which led us to posit two phonological structures for *ob"javlénie*, *obtjážka*, *nastríg* etc. above now requires us to admit the existence of FIVE distinct underlying phonological structures for substantives like *obučénie* (five instead of four, because as we have seen the imperfective intransitive is itself ambiguously derived from the perfective intransitive and the imperfective transi-

tive, i.e. it has itself two underlying phonologies, each of which must be carried over to its own derivatives):

$$\text{obučenie} = \begin{cases} (\text{ob}=\text{učí})+\text{én,ij} (<\text{obučít}'\text{'}) \\ [(\text{ob}=\text{učí})+\text{áj}]+\text{én,ij} (<\text{obučát}'\text{'}) \\ [(\text{ob}=\text{učí})+\dots\text{sa}]+\text{én,ij} (<\text{obučít}'\text{'sja}) \\ [(\text{ob}=\text{učí})+\text{áj}]+\dots\text{sa}]+\text{én,ij} (<\text{obučát}'\text{'sja} <\text{obučát}'\text{'}) \\ [(\text{ob}=\text{učí})+\dots\text{sa}]+\text{áj}]+\text{én,ij} (<\text{obučát}'\text{'sja} <\text{obučít}'\text{'sja}) \end{cases}$$

If one could accept the double phonologies of *ob"javlenie* etc. without protest, quintuple phonological structures such as that of *obučenie* are substantially more awkward, and the grammar which gives rise to them is, to say the least, a bit clumsy. And yet there are many dozens, and perhaps hundreds of just such deverbative substantives: cf., within a few pages in the dictionary, in addition to the *obučenie* set, *obrisovka* from *obrisovát' / obrisóvyvat'* and *obrisovát'sja / obrisóvyvat'sja*, *oboróna* from *oboronít' / oboronját'* and *oboronít'sja / oboronját'sja*, *ob"jasnenie* from *ob"jasníť' / ob"jasnját'* and *ob"jasníť'sja / ob"jasnját'sja*. Nor are such quintuple phonologies the worst the language can offer, as the following example will make clear.

The deverbative substantive *obmén* 'exchange (of goods, experiences, etc.)' is said by *SRJa* to be derived from *obmenját' - obmenít' / obménivat'* and *obmenját'sja - obmenít'sja / obménivat'sja* (the *-níť'* and *-nját'* forms are said to be complete synonyms):



The descriptive framework within which we have been working now requires that we posit not two and not five, but TEN separate phonological structures for the word *obmén*:

- (ob=men, í)+∅ (<obmenít')
- (ob=men, áj)+∅ (<obmenját')
- [(ob=men, í)+...sa]+∅ (<obmenít'sja)
- [(ob=men, áj)+...sa]+∅ (<obmenját'sja)
- [(ob=men, í)+ivaj]+∅ (<obménivat' <obmenít')

- [(ob=men,áj)+ivaj]+∅ (< *obménivat'* < *obmenjât'*)
 {[(ob=men,í)+...sa]+ivaj]+∅ (< *obménivat'sja* < *obmenít'sja*)
 {[(ob=men,áj)+...sa]+ivaj]+∅ (< *obménivat'sja* < *obmenjât'sja*)
 {[(ob=men,í)+ivaj]+...sa]+∅ (< *obménivat'sja* < *obménivat'* < *obmenít'*)
 {[(ob=men,áj)+ivaj]+...sa]+∅ (< *obménivat'sja* < *obménivat'* < *obmenjât'*)

It would not be difficult to find further examples of such complications.

It might be well to pause for a moment at this point and consider the significance of decuple phonological notations such as that just described. Considering the fact that *obmén* is, after all, an innocuous little word, simple in its meaning and frequent in the speech of all educated Russians, one's first reaction is that there is something cancerous about a phonological system which generates all these structures for a single word. Let us suppose, for a moment, that the two perfective verbs *obmenjât'* and *obmenjât'sja* were to disappear. With them would vanish a full five of the above ten phonological structures of the derivative *obmén* (since *obménivat'* would then have a single structure and *obménivat'sja* only two rather than four), but is there any way in which either the real (i.e., the intuitively acceptable) phonology or semantics of *obmén* would have changed? I think not. Should one conclude, then, that the whole concept of deep vs. surface phonological structure is wrong, and treat this analysis of *obmén* as a *reductio ad absurdum* of the entire idea of directional derivation? This too, as it seems, would be premature. What is certain is that it makes no sense to say that the word *obmén* has (in any reasonable meaning of "has") ten different phonological structures. If, however, we regard these phonological structures not as properties of the word *obmén* itself, but as specifications of the formal relations obtaining between *obmén* and the words with which it is derivationally related — that is, if we may be permitted the metaphor, as a specification of the geometry of the space, one point in which is occupied by *obmén* and others by *obmenít'*, *obménivat'* etc. — then the ten separate structures seem less monstrously disproportionate to the facts they are supposed to account for. But one still instinctively rebels at the presence of ten separate phonological structures where there are only six derivational relations to account for. And here, it seems, is the crux of the matter. If we say that, e.g., *obménivat'* is derived from both *obmenít'* and *obmenjât'*, the formal phonological implications of this statement can be rendered in a not unsatisfactory way by assigning the two structures {(ob=men,í)+ivaj} and {(ob=men,áj)+ivaj} to *obménivat'*. If we recall at

this point that this dual phonological structure is not a description of the phonology of *obménivat'* itself ('deep' or other), but merely a specification of the formal relationship obtaining between *obménivat'* on the one hand and *obmenít'* and *obmenjât'* on the other, then we see that there is no reason to carry this dual structure on into the ensuing derivations. This is the weakness of the descriptions given so far: in carrying ambiguous phonological descriptions past the given word into subsequent derivational processes, we have in fact acted as if these ambiguous phonological structures were properties of the given word, rather than specifications of this word's relations to others in the family. If we specify that every word has one and only one phonological structure in regard to derivatives from that word, we can eliminate four of the ten structures of *obmén*, leaving only the six that are a not unreasonable specification of *obmén*'s relation to the six verbs *obmenít'*, *obménivat'*, etc. The single phonological structure can be obtained simply: one has only to retain the common elements of the dual (or treble, etc.) structures which specify the relation of the given word to its derivational antecedents. For example, *obménivat'* is related to *obmenít'* and to *obmenjât'* as specified by the two statements

$$(ob=men, í)+ivaj$$

$$(ob=men, áj)+ivaj$$

the common denominator of which is

$$ob=mén, ivaj$$

which from then on (e.g., as a derivational base for *obménivat'sja*) is the only phonological structure of *obménivat'*. Similarly, the intransitive *obménivat'sja* is related to its own three derivational antecedents as specified by the three statements

$$[(ob=men, í)+...sa]+ivaj \quad (< obmenít'sja)$$

$$[(ob=men, áj)+...sa]+ivaj \quad (< obmenjât'sja)$$

$$(ob=mén, ivaj)+...sa \quad (< obménivat'; \text{ cf. just above})$$

of which the common denominator is $\{ob=mén, ivaj...sa\}$ (we ignore here several problems of the formal generation of these "common denominators"), and it is the latter which serves as the only phonological representation of *obménivat'sja* in the subsequent specification of the relations obtaining between *obménivat'sja* and *obmén*; instead of the four distinct structures given above, all four of which

purportedly specified the relations between *obměňivat'sja* and *obměň*, we now have a single phonological statement of this relation: $\{(ob=mén, ivaj...sa)+\emptyset\}$. *Obměň* will of course also be associated with five other structures, specifying its phonological relations to the five other verbs in this set, but none of these structures will be considered to be a description of the phonology of *obměň* itself. By the "common denominator" principle alluded to above, *obměň* will (in regard to further derivations, e.g. *obměňnyj*, and in regard to its own flexional phonology¹⁶ have the simple structure $\{ob=men+\emptyset\}$. It is clear, then, that the apparent absurdity of the phonological framework utilized throughout this paper is resolved by: (1) remembering that ambiguous phonological statements are specifications of relations between words, not descriptions of words, and (2) positing as the phonological description of a word the common denominator of all relational specifications between the given word and its antecedents.

In this discussion of derivational ambiguities connected with aspect formation, we have pointed out some of the problems caused by semantic discontinuities — without yet proposing a formal device for their solution — and have tried to clarify the meaning (and to eliminate a possible misinterpretation) of the ambiguous phonological statements that are a part of the framework in which we have been studying ambiguity. Needless to say, there are many more problems of both phonology and semantics remaining to be investigated.

4. There are many types of ambiguity in Russian derivation other than those closely connected with aspectual pairs. Neither the phonology nor the semantics of these other types is in any way simpler than those of the varieties of ambiguity already discussed, but for reasons of space, we must limit ourselves to a brief indication of some of these as yet undiscussed kinds of derivational ambiguity.

Negated abstract substantives in *ne-...ost'* are usually derived from the corresponding negated adjectives in *ne-...yj* (e.g. *nedorázvityj* + *nedorázvitost'*, *nevozvrátnyj* + *nevozvrátnost'*), but a few dozen such negated abstracts appear to be ambiguously derived. *Nesamostojátel'nost'*, for example, is defined by *SRJa* both as substantive to *nesamostojátel'nyj* and as 'absence of *samostojátel'nost'*', i.e. as ambiguously derived from both bases; the same is true for e.g. *nesorazmérnost'* and *neuvérennost'*.¹⁷ Similar ambiguities obtain in the case of some negated abstracts in *bez-...nost'*, e.g. *bezzakónnost'*, derived both from *bezzakónnyj* and *zakónnost'*.

Many derivational ambiguities are to be found among compounds, esp. in technical terminology. A case in point are compounds containing suffixal elements; these are often ambiguously derived both from the non-suffixal compound, and from the suffixal simplex (= non-compound). *Domovladělíca*, for example, is ambiguously the feminine to *domovladélec* and a compound of *vladélíca* (cf. *dačevladělíca*, *zemlevladělíca*); *èlektroakustíčeskij* is both the adjective corresponding to *èlektroakústika* and a compound of *akustíčeskij*. Examination of several hundred potentially ambiguous cases reveals that the majority of them are suffixal derivatives of compounds, rather than compounds of suffixal forms, but there are without doubt well over a hundred genuinely ambiguous cases.¹⁸

Nouns in *-izm* and *-ist* and related forms, especially those built on borrowed bases, form complicated and often non-directional ambiguities, cf. for example *dógma/dógmat/dogmatízm/dogmátik/dogmátika/dogmatíčeskij*¹ ('osnovannyj na dogmax', 'svojtvennyj dogmatiku')/*dogmatíčeskij*² ('otnosjaščijsja k dogmatike, izlagajuščij dogmaty')/*dogmatíčnosť'/dogmatíčnyj*. Such is often also the situation with ethnic names and their derivatives, e.g. *amérika/amerikánec/amerikánka/amerikánskij*. It seems equally artificial to insist on a single direction of derivation (e.g. from male to female designation) and to deny the presence of any direction in derivation at all;¹⁹ in addition, the morphemic status of items such as the *-an-* in the set just adduced is in need of clarification.

Among the other varieties of ambiguity in Russian derivation, let us indicate only cases such as *áxnut'* from both *ax* and *áxat'*,²⁰ perfective/imperfective pairs such as *zaxodít'* (P) derived directly from *xodít'* and meaning 'begin to go'/*zaxodít'* (I), imperfective to *zajtí* (among such verbs the phonological structure often differs, cf. *zabégat'* (P)/*zabegát'* (I), *zaplávat'* (P)/*zaplývát'* (I), etc. Finally, all the many instances of so-called compound affixes in Russian are illustrations of derivational ambiguity, e.g. *skrjážničestvo* both from *skrjága + ničestvo* and from *skrjážničat' + stvo*.²¹

An assiduous search would doubtless uncover many more varieties of derivational ambiguity in Russian. The formal and the semantic problems connected with ambiguity are, as we hope to have shown, substantial, and most of them are not merely unsolved but unexamined.

One final remark. If ambiguity is as widespread in natural language as we have maintained, how is it that ordinary people go about their ordinary discourse unbothered by the multitude of ambiguities their language contains? One must

assume, it appears to me, that no matter how complex the ambiguities of any level, the speakers of a language are provided with the means not necessarily for resolving ambiguity, but at least for placing it in hierarchical order. Information within the code itself and within the speech situation is almost always adequate to enable the hearer or reader to make a reasonable guess as to the most likely interpretation of the given ambiguous sound, word, phrase or sentence. And here we come to truly unknown territory: what are the linguistic and extralinguistic factors which impose the hierarchical ordering of competing solutions to ambiguous utterances, and what is the role of these factors (and the shifting hierarchies they occasion) in the historical evolution of languages?

FOOTNOTES

- ¹ The research on which this paper was based was supported by National Science Foundation Grant GS-2327.
- ² We use the terms 'deep' and 'surface' not as absolutes, but relatively, as explained in the paper "'Surface structure' and 'deep structure' in Slavic morphology", *American Contributions to the Sixth International Congress of Slavists*, vol. I (The Hague, 1968), p. 396-397. The notion that there could be a single 'deep' layer and a single 'surface' layer of language seems both counterintuitive and unproductive.
- ³ Morphophonemes are given in curved brackets, phonemes in slant brackets, phonetic transcriptions in square brackets, and Cyrillic forms in italics. In rendering the constituent structure of derived forms, however, parentheses and brackets are used without these special meanings.
- ⁴ E.g., AN SSSR, *Grammatika ruskogo jazyka*, I (Moscow, 1960²), p. 210-225 (suffixes forming nouns designating male persons). Cf. also V. V. Vinogradov, *Russkij jazyk* (Moscow-Leningrad, 1947), p. 98ff. and the discussion of onomasiological categories and their realization in M. Dokulil, *Tvoření slov v češtině*, I, *Teorie odvozování slov* (Prague, 1962), p. 29ff.; cf. the "derivational fields" in O. G. Revzina, *Struktura slovoobrazovatel'nyx polej v slavjanskix jazykax* (Moscow, 1969).
- ⁵ Definitions, unless otherwise specified, are taken from *Slovar' ruskogo jazyka*, vv. 1-4, Moscow, 1957-1961. Abbreviated: *SRJa*.
- ⁶ Some of these sets have been discussed in recent literature: E. Stankiewicz, "The interrelation of paradigmatic and derivational patterns", *Word*, 18 (1962), p. 1-22; D. S. Worth, "The notion of 'stem' in Russian flexion and derivation", *To Honor Roman Jakobson* (The Hague, 1967), p. 2269-2288; M. Shapiro, "Concatenators and Russian derivational morphology", *General linguistics*, 7, 1 (1967), p. 50-66, esp. 53-54; V. V. Lopatin and I. S. Uluxanov, "Postroenie razdela 'Slovoobrazovanie'", *Osnovy postroenija opisatel'noj grammatiki sovremennogo ruskogo literaturnogo jazyka*, p. 50-91, esp. 55-59; cf. also M. Flier, "On the source of derived imperfectives in Russian", *The Slavic Word. Proceedings of the International Slavistic Colloquium at UCLA, September 11-16, 1970* (The Hague - Paris, 1972), p. 236-260.
- ⁷ I. A. Mel'čuk, "K ponjatiju slovoobrazovanija", *Izvestija AN SSSR, Serija lit. i jaz.*, 26 (1967), p. 352-362; *idem*, "Ob opredelenii bol'sej/men'sej složnosti pri slovoobrazovatel'nyx otnošenijax", *ibid.*, 28 (1969), p. 126-135; *idem*, "Stroenie jazykovyx znakov i vozmožnye formal'no-smyslovyje otnošenija meždu nimi", *ibid.*, 27 (1968), p. 426-438.
- ⁸ See "'Surface structure' and 'deep structure' ...", *passim*.
- ⁹ The situation is not improved if we accept the Ušakov dictionary's definition of *pročítjvat'* as containing both meanings of *pročitát'*, since one would then have either to add the second meaning while deriving *pročítjvat'* from *pročést'* - something this descriptive framework cannot accommodate - or deny the derivational relationship between these two forms.
- ¹⁰ Note that it is not enough to specify that *nakládyvat'* has seven meanings, receiving two of them twice (from *naklást'* as well as from *naložit'*). If *nakládyvat'* is truly an imperfective to *naklást'*, it must share the cooccurrence re-

strictions which are a function of the latter's narrowed meaning; if *nakládyvat'* does not share these restrictions – that is, if it has all the meanings of *naložit'* – then it is not strictly speaking an imperfective of *naklást'*. The system cannot have it both ways.

¹¹ Some (though surely not all) problems of semantic discontinuity may be solved by treating semantic derivation in terms of derivational and flexional stems, parallel to the phonological description outlined in "'Surface structure' and 'deep structure' ...".

¹² There is a substantial body of literature on this problem, of which one might select O. S. Axmanova, *Očerki po obščej i ruskoj leksikologii* (Moscow, 1957), 296 pp. (with extensive bibliography); V. V. Vinogradov, "Ob omonimii i smežnyx javlenijax", *Voprosy jazykoznanija* (1960), no. 5, p. 3-17; L. A. Nikonov, "K probleme omonimii", *Leksikografičeskij sbornik*, 4 (1960), p. 92-102. Homonymy and polysemy lead one into an even broader circle of problems, that of the identity of the word as a linguistic unit.

¹³ "Postroenie razdela 'slovoobrazovanie'", p. 85.

¹⁴ See "'Surface structure' and 'deep structure' ...", *passim*.

¹⁵ This constituent structure reflects the assumption that secondary imperfectives are derived from their corresponding perfectives; this assumption can be disputed.

¹⁶ See "'Surface structure' and 'deep structure' ...", p. 403-408.

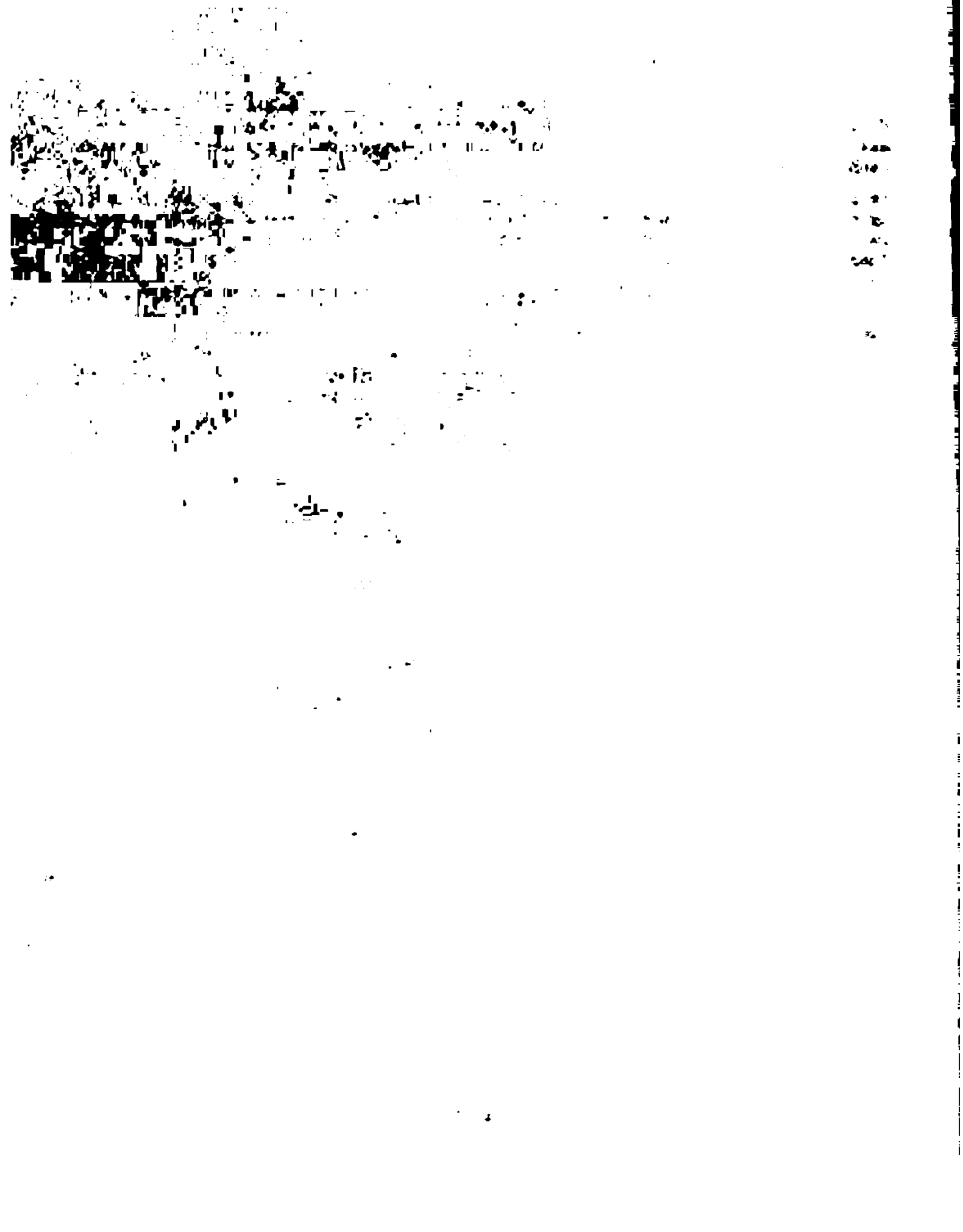
¹⁷ The negated abstract substantives show a number of other semantic peculiarities as well; they will be treated in a separate paper.

¹⁸ This problem has been discussed in the "Introduction" to the *Russian Derivational Dictionary* by D. S. Worth, A. S. Kozak and D. B. Johnson (New York, American Elsevier, 1970), but would merit a more thorough investigation.

¹⁹ See the references in f.n. 6 above.

²⁰ "Postroenie razdela 'slovoobrazovanie'", p. 83 f.n.

²¹ AN SSSR, *Grammatika russkogo jazyka*, I (1960²), p. 257.



ON CYCLICAL RULES IN DERIVATIONAL MORPHOPHONEMICS

The linguist attempting to choose between competing solutions to a descriptive problem can consider himself fortunate if some principle in his methodological framework imposes one of the alternatives upon him and excludes the other. Less happy is he who, when faced by such a choice, finds himself torn by two principles which, although generally complementary, appear to compete and to suggest different solutions in the given instance. Here there can be no simple appeal to the methodological rules of the game; rather, the two contradictory principles must be weighed against each other, and one of the two must be assigned the higher value, thus permitting a choice between the two competing solutions. Since value judgments of this sort can be made only in terms of very general criteria such as "insightfulness", and since entities such as insightfulness are notoriously hard to define precisely, let alone quantify, this is tantamount to saying that such decisions must be reached largely on the basis of subjective, personal preference. Few would argue that this is an ideal scientific situation, but the decision must nonetheless be made, and defended as best one can. As a case in point, we shall examine a problem in the derivational morphophonemics of Russian. The two methodological principles which suggest competing solutions to the problem are descriptive economy on the one hand (specifically, the principle that one rule is better than two) and an updated version of the non-mixing of levels on the other (specifically, the principle that derivation and flexion are two autonomous though interrelated morphological subsystems).

One of the salient features of Russian flexional morphophonemics is the existence of the so-called "fleeting" or "fugitive" vowels, that is, of a morphophonemic alternation between a vowel and phonetic zero. In the nominal declension of contemporary standard Russian, such fugitive vowels appear primarily before zero endings, namely:

In the nom. sing. of masc. substantives: ДЕНЬ 'day', gen. ДНЯ, dat. ДНЮ etc.; similarly, СОН, СНА 'sleep', СОЛОВЕЙ, СОЛОВЬЯ 'nightingale',

наём, на́йма 'hiring';

In the genitive plural of neuters and second-declension feminines: ПИСЬМО́, gen. plur. пи́сем 'letter'; similarly, ребро́, ребе́р 'rib'; земля́, земе́ль 'earth', статья́, статéй 'article';

In the nom. and acc. sing. of a few third-declension feminines: ном.-acc. ложь 'lie', gen.-dat.-prepositional лжи; similarly, любóвь, любв́и 'love'; це́рковь, це́ркви 'church';

In the short (predicative) form of masc. adjectives: masc. ду́рен 'bad', fem. дурна́; similarly, знóен, знóйна 'sizzling hot', свéтел, светла́ 'light, clear'.

The fugitive vowel also occurs before endings the first segment of which is a similar alternating vowel — zero morphophoneme, namely:

In the instr. sing. of third-declension feminines: ло́жью 'by a lie' (morphophonemically (l#ž+#ju)), любóвью 'by love', etc.;

In the suppletive jot-stem plurals (i.e., before the plural suffix {#j}) of some masc. and neut. substantives: ка́мень 'stone', gen. ка́мня, ном.-acc. plur. каме́нья, gen. plur. каме́ньев; similarly, у́голь, угля́, угб́ля, угб́льев 'coal(s)'; дно, дна, дб́нья, дб́ньев 'bottom'; зве́нб, зве́на́, зве́нья, зве́ньев 'link'.

The behavior of morphophonemic {#} could thus be described by rules such as

(1) {#} → ∅ in the env.: __ CV

(2) {#} → V in the env.: __ C $\begin{cases} C \\ \# \\ \emptyset \end{cases}$

The zero ending or morphophonemic {#} is a necessary but not a sufficient condition for the appearance of the fugitive vowel in the stem; therefore, one is obliged to posit the existence of an alternating vowel — zero morphophoneme {#} in all stems in which the fugitive vowel appears: since, for example, the final cluster /lk/ is tolerated in Russian substantives (cf. полк, gen. полка́ 'regiment', шёлк, шёлка 'silk', etc.), the stem of стрелóк, gen. стрелка́ 'gunner' must be rendered as {strel#k-}. The necessity of positing morphophonemic {#} in stems with fugitive vowels is clear from the following word pairs (examples could easily be multiplied): вéтер, gen. вéтра 'wind' ({vét#r-}) vs. метр, мэ́тра 'meter' ({métr-}); судьба́, gen. plur. суде́б 'fate'

{{sud'#b-}} vs. прѳсьба, просьб 'request' ({{prѳz'b-}}); тюрьмá, gen. plur. тюрѳем 'prison' ({{t'ur'#m-}}) vs. пáльма, пáльм 'palm tree' ({{pál'm-}}); ядрѳ, gen. plur. ядер 'nucleus' ({{jad'#r-}}) vs. нѳдра, nom. plur. (plural. tantum), gen. недр 'depths' ({{nédr-}}); there are even a few minimal pairs, such as лáска, gen. plur. ласк 'tenderness' ({{lásk-}}) vs. лáска, gen. plur. лáсок 'weasel' ({{lás#k-}}) and бобр, gen. бобрá 'beaver (the animal)' ({{bobr-}}) vs. бобѳр, gen. бобрá 'beaver (pelt, collar, etc.)' ({{bob'#r-}}).

The descriptive problem with which this paper is concerned arises when a stem containing {#}, such as those above, comes into contact with a derivational suffix which itself begins with just such a {#}. This happens most often with the formation of diminutives in the suffix {#k}, which is used for both masculine and feminine stems, with the flexional paradigm and grammatical gender of the diminutive corresponding to that of the base, e.g. (first, examples of stems without {#}) дом 'house' → домѳк 'little house', дочь 'daughter' → дѳчка 'small daughter'. The suffix {#k} also causes softening of certain stem-final consonants: ногá 'foot' → нѳжка, gen. plur. нѳжек, пух 'down' → пушѳк, частѳца 'particle' → частѳчка, but such alternations are not germane to the vowel – zero alternations we are concerned with here. Examples of stems containing {#} and forming diminutives in {#k}: кусѳк, кускá 'piece' ({{kus#k-}}) → кусѳчек, кусѳчка 'small piece' ({{kusѳč#k-}}); ручѳй, ручья 'stream' ({{ruč#j-}}) → ручѳек, ручейкá 'rivulet' ({{ručej#k-}}); бѳлка, gen. plur. бѳлок 'bun' ({{bŭl#k-}}) → бѳлочка, бѳлочек 'small bun' ({{bŭloč#k-}}); семья, gen. plur. семѳй 'family' ({{sem#j-}}) → семѳйка, семѳек 'small family' ({{semėj#k-}}); such diminutive formations are very productive in modern Russian.

The problem posed by these diminutives is that, while the suffixal {#} behaves as would be expected, that is, in accordance with rules (1) and (2) above, the {#} of the stem is invariably fixed as a full vowel, regardless (or so it seems at first glance) of its phonetic environment. In spite of the fact that Russian permits, e.g., /m'j/ before a morpheme boundary (cf. зазѳмье 'first frost' (= /zaz'ím'ja/ = {zaz'ím'j-o}), раздѳмье 'meditation' (= /razdŭm'ja/ = {rozdŭm'j-o}), we nonetheless find the genitive plural of семѳйка (/s'im'ėjka/) to be семѳек (/s'im'ėjik/) not *сѳмьек (/s'ém'jik/); similarly, the nom. sing. of the diminutive of ручѳй (/ručej/) is ручѳек, (/ručijѳk/), not *ручьяк (/ručjѳk/) in spite of the fact that there is no purely phonetic reason for the {#} of the underlying stem to be vocalized (cf. such cases of /čj/ before

stressed /ó/ on a morpheme boundary as дурачьё 'pack of fools' (/duračjój/), мужичьё 'bunch of peasants' (/mužičjój/), etc.). In general, what is happening is perfectly clear: a derivational stem containing certain morphophonemic alternations is fixed or "frozen" in just one of these alternants as part of the process of derivation (note how frequent this fixation of original alternations is in the case of stress: the mobile stress of ГОЛОВÁ 'head' – cf. the paradigm ГОЛОВÁ – ГОЛОВЫ – ГОЛОВÉ – ГÓЛОВУ – ГОЛОВÓЙ – ГОЛОВÉ; ГÓЛОВЫ – ГОЛÓВ – ГОЛОВÁМ etc. – is frozen onto a single syllable in the diminutive ГОЛÓВКА). What is less clear is how to describe this fixation of alternations, particularly in relation to the rules for the choice of {V} or zero within the flexional system.

The first type of description which suggests itself to the Slavicist is to treat sequences of {# ... #} in modern Russian in much the same way as the historian of this language treats sequences of the reduced vowels (jers) whose vocalization and disappearance gave rise to the vowel – zero alternations of the contemporary language. Details aside, the traditional explanation of the "fall of the jers" counts these reduced vowels as weak or strong, beginning from the end of the word, and paying no attention to any kind of morpheme boundary; jers in Auslaut or before a full vowel are weak, jers before weak jers are strong, and jers before strong jers are weak, so that sequences of several reduced vowels alternate as, e.g., strong – weak – strong – weak; strong jers then become full vowels, and weak jers disappear. Unfortunately, it is simple to demonstrate that an analogous treatment of sequences of {#} in modern Russian will result in spurious forms. If to the stem {búl#k} of the word бУ́ЛКА 'bun' one adds the diminutive suffix {#k}, there will result such sequences as nom. sing. {búl#č#ka} and gen. plur. {búl#č#k#}. If rules (1) and (2) are applied in the "right-to-left" or regressive manner suggested by the traditional treatment of the fall of the jers, they will generate the correct nom. sing. бУ́ЛОЧКА (the second {#}, preceding a full vowel, becomes zero; then the first {#}, preceding a sequence of two consonants, is vocalized), but will also generate the incorrect gen. plur. *бУ́ЛЧЕК, instead of the correct бУ́ЛОЧЕК, since the intermediary stage {búl#ček}, obtaining after the application of rules (1) and (2) to the final and medial {#} respectively, contains conditions requiring the remaining {#} to go to zero rather than to a full vowel. The regressive application of rules (1) and (2) must therefore be dismissed as observationally inaccurate¹. Since such

regressively applied rules are generally and uncritically accepted in Slavic historical linguistics, and are at the same time demonstrably incorrect, it seems useful to examine the formal operations underlying them in some detail, in order to compare them with other perhaps more useful kinds of rules.

Regressively applied rules in effect specify two sets of morphophonemic conditions; morphophonemic {#} finding itself in a condition of the first type is converted to a full vowel, whereas {#} in a condition of the second type becomes phonetic zero, that is:

$$(1) \quad \# \rightarrow V \text{ in env. } \begin{cases} C\# \\ CC \end{cases}$$

$$(2) \quad \# \rightarrow \emptyset \text{ in env. } \begin{cases} CV \\ (C)\& \end{cases}$$

where \emptyset = phonetic zero and $\&$ = word-final boundary. Each {#} of any given form is examined in turn, beginning with the rightmost {#}, and is converted to V or to \emptyset , according to whether its environment is described by rule (1) or rule (2). The effect of such rules, applied to the forms underlying the nom. sing. бѹлочка and the gen. plur. бѹлочек can be shown as:

$$\begin{array}{l} \text{b u l \# \check{c} \# k a \&} \\ \quad \downarrow (2) \\ \text{b u l \# \check{c} \emptyset k a \&} \\ \quad \downarrow (1) \\ \text{b u l o \check{c} \emptyset k a \&} \end{array} \qquad \begin{array}{l} \text{b u l \# \check{c} \# k \# \&} \\ \quad \downarrow (2) \\ \text{b u l \# \check{c} \# k \emptyset \&} \\ \quad \downarrow (1) \\ \text{b u l \# \check{c} o k \emptyset \&} \\ \quad \downarrow (2) \\ \text{b u l \emptyset \check{c} o k \emptyset \&} \end{array}$$

i.e., phonetic [bŭlɔĉkə] and the spurious *[bŭlĉbk]. The reason why these rules don't work is clear: right-to-left application of rules specifying morphophonemic environments assigns descriptive priority to the flexional system over the derivational system, as if the morphophonemics of derivation were dependent on those of flexion; in other words, the form which is assumed by the {#} in the derivational base {bŭl#k-} (the stem of бѹлка) depends on the presence of a zero vs. a vocalic ending in the derived word бѹлочка, as if the latter's stem were {bŭl#ĉ#k-} rather than {bŭloĉ#k-}. Not only is there no clear distinction between the derivational and flexional levels of language, but the normal hierarchy of these levels is as it were inverted. To sum up: the advantage of such regres-

sive rules is that only one set of rules is required; the disadvantages are observational inadequacy, mixing of levels, and inversion of descriptive priority.

The worst feature of regressively applied rules is eliminated by applying the same rules from left to right, or progressively. If one starts with the same underlying forms and rules as above, but applies the rules in the opposite direction, the result is at least observationally adequate:

bul#č#ka& ↓ (1) buloč#ka& ↓ (2) buločøka&	bul#č#k#& ↓ (1) buloč#k#& ↓ (1) buločøk#& ↓ (2) buločøkø&
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i.e. the correct phonetic strings [búləčkə] and [búləčʲk] of the forms б́улочка and б́улочек. However, the observational adequacy of these rules is not founded in any intuitively satisfactory account of derivational and flexional morphophonemics; such an account would have to specify that the first {#} is fixed as {o} in the process of deriving б́улочка from б́улка, — that is, would recognize that the derived word has a stem {búloč#k} containing a full vowel, not {#}, between {l} and {č}. The similarities and differences between derivation and flexion are obscured rather than clarified. The observational accuracy of these progressive rules is not, however, due entirely to chance, but rather to the fact that left-to-right application of vocalization rules corresponds, albeit in a nonexplicit and slightly obscure way, to the derivational structure of words like б́улочка. This can be seen if one marks the immediate constituent structure of the strings underlying б́улочка and б́улочек with plus signs marking morpheme boundaries and parentheses enclosing the first (smaller) construct:

б́улочка (búl#k + #k) + a	б́улочек (búl#k + #k) + #
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Left-to-right rules are then seen to reflect, although not very clearly, the fact that the fixation of the first {#} as {o} is a result of the concatenation of the constituent {búl#k} and the constituent {#k}, whereas the alternation of the second {#} between {ø} in the nom. sing. and {o} in the gen. plur. reflects

the concatenation of the construct $\{(\text{b} \acute{\text{u}} \# \text{k} + \# \text{k})\}$, now functioning as a constituent, and the new constituents $\{\text{a}\}$ and $\{\#\}$ respectively. Such hierarchical organization of morphophonemic processes is made much clearer if the vocalization rules are applied not progressively from left to right, but as it were from the inside out, that is, applied cyclically, first to the smallest construct, then to the next larger construct, etc. Such cyclically applied morphophonemic rules, which were first suggested by Morris Halle², can be demonstrated to result in observationally correct forms, as will be shown with the same examples as have already served above. For the sake of completeness, we add an informal version of the palatalization rule ($[+ \text{ low tonality}] \rightarrow [- \text{ low tonality}]$ in the env.: $\left. \begin{array}{l} - \text{vocalic} \\ + \text{consonantal} \end{array} \right\} + \{\#\text{k}\}$ ³; let us call this the "k + č" rule). The "derivational history" (in the synchronic sense) of the word-forms is marked in their IC structure, with the plus sign marking morpheme boundaries. If we reformulate and reorder rules (1) and (2), taking advantage of the simplification in statements of environment permitted by ordering, as

$$(3) \quad \# \rightarrow \emptyset \text{ in env.: } \left. \begin{array}{l} \text{C+V} \\ \& \end{array} \right\}$$

$$(4) \quad \# \rightarrow \text{V in env.: } \text{C+}$$

and apply the three rules first to the smaller construct (formed by the constituents: derivational base + suffix) and then to the larger construct (formed by the constituents: stem + ending), the correct phonetic shapes of б́улочка and б́улочек will be derived as follows:

	<i>nom. sing.</i>	<i>gen. plur.</i>
<i>First cycle:</i>	$\text{b} \acute{\text{u}} \# \text{k} + \# \text{k}$	$\text{b} \acute{\text{u}} \# \text{k} + \# \text{k}$
$\text{k} \rightarrow \text{č}:$	$\text{b} \acute{\text{u}} \# \text{č} + \# \text{k}$	$\text{b} \acute{\text{u}} \# \text{č} + \# \text{k}$
(3):	no change	no change
(4):	$\text{b} \acute{\text{u}} \text{lo} \text{č} + \# \text{k}$	$\text{b} \acute{\text{u}} \text{lo} \text{č} + \# \text{k}$
<i>Second cycle:</i>	$\text{b} \acute{\text{u}} \text{lo} \text{č} \# \text{k} + \text{a} \&$	$\text{b} \acute{\text{u}} \text{lo} \text{č} \# \text{k} + \# \&$
$\text{k} \rightarrow \text{č}:$	no change	no change
(3):	$\text{b} \acute{\text{u}} \text{lo} \text{č} \emptyset \text{k} + \text{a} \&$	$\text{b} \acute{\text{u}} \text{lo} \text{č} \# \text{k} + \emptyset \&$
(4):	no change	$\text{b} \acute{\text{u}} \text{lo} \text{č} \text{ok} + \emptyset \&$ ⁴

which, after boundary removal and application of phonetic rules, results in the correct phonetic strings $[\text{b} \acute{\text{u}} \text{lə} \text{č} \text{k} \text{ə}]$ and $[\text{b} \acute{\text{u}} \text{lə} \text{č} \text{b} \text{k}]$. The advantages of such

cyclical rules are observational accuracy and the non-inversion of descriptive priority (the morphophonemic processes of derivation are accounted for before those of flexion, since the effect of the first cycle is to generate the flexional stem of the derived word *булочка*, namely {búloč#k+} while the second cycle accounts for the morphophonemic alternations which occur within this derived flexional stem). At the cost of introducing additional entities into the stem notation (parentheses and plus signs), such cyclical rules at least make a step in the direction of distinguishing between derivation and flexion. Upon closer examination, however, it becomes clear that cyclical rules still involve a serious mixing of levels. To remain for a moment with the same example: the strings underlying the nom. sing. *булочка* and the gen. plur. *булочек* are {(búl#k+#k)+a} and {(búl#k+#k)+#} respectively; both these strings contain an entity, namely the first {#}, that exists only in the derivational history of *булочка* (as the alternating vowel – zero morphophoneme of the derivational base *булка*) but which is artificial, a fiction as it were, within the flexional stem of the derived word *булочка*. In other words, the introduction of boundary markers and constituent structure markers can disguise, but cannot eliminate a weakness which was already present in the regressive rules discussed above: the derived stem, which factually contains only a full vowel, is made to appear to contain (albeit now at a deeper level) an alternating vowel – zero morphophoneme which exists only in the derivational base from which the given word is derived. This is not just a detail of notation. Cyclical rules do not distinguish between derivational and flexional stems, and generate the stems of derived words only incidentally, as a transitory by-product on the way from the deepest underlying derivational structure of a word to the most minute details of its surface phonetics. One cannot say that cyclical rules eliminate flexional stems entirely, since these stems do appear as intermediate steps in the derivation, but their importance, and for that matter the importance of the word itself as a linguistic unit, is certainly downgraded by rules of this sort. Furthermore, the binary nature of the derivational process is lost to view, and in the more complicated derived words, there obtains a cumbersome repetition of rules (such as the $k \rightarrow \check{c}$ rule above, which had to be reapplied, with "no change" as the result, in the second cycle). These drawbacks become more obvious when one considers a multi-layered derivative such as Russian *льди́ночка* 'small ice-cube'.

The derivational history of *льди́ночка* is as follows: from the word *лед*, gen. *льда* (stem {l'd+}) 'ice', Russian derives a singulative *льди́на* ({l'd'ín+}) 'piece of ice, ice floe', from which a diminutive *льди́нка* ({l'd'ín#k+}) 'ice-cube' is formed by addition of the suffix {#k} already discussed; from *льди́нка* a further diminutive, with affectionate shading, is formed by readdition of the same suffix: *льди́ночка* ({l'd'ínoč#k+}). The strings underlying the nom. sing. *льди́ночка* and the gen. plur. *льди́ночек* must then be marked as having the following constituent structure:

<i>nom. sing.</i>	<i>gen. plur.</i>
<[(l'd+ín)+#k]+#k>+a	<[(l'd+ín)+#k]+#k>+#

The three rules used in the cyclical derivation of *бу́лочка*, *бу́лочек* plus another softening rule which we can call the "d → d'" rule (something like [-sharp] → [+sharp] in the env.: __{+i})⁵ can then be applied in four cycles, and will result in the correct phonetic strings [l'd'ínəčkə] and [l'd'ínəčɤk], as follows:

	<i>nom. sing.</i>	<i>gen. plur.</i>
	<[(l'd+ín)+#k]+#k>+a&	<[(l'd+ín)+#k]+#k>+#&
<i>First cycle</i>	l'd+ín	l'd+ín
d → d':	l'd'+ín	l'd'+ín
k → č:	no change	no change
(3):	l'ød'+ín	l'ød'+ín
(4):	no change	no change
<i>Second cycle</i>	l'd'ín+#k	l'd'ín+#k
d → d':	no change	no change
k → č:	no change	no change
(3):	no change	no change
(4):	no change	no change
<i>Third cycle</i>	l'd'ín#k+#k	l'd'ín#k+#k
d → d':	no change	no change
k → č:	l'd'ín#č+#k	l'd'ín#č+#k
(3):	no change	no change
(4):	l'd'ínoč+#k	l'd'ínoč+#k
<i>Fourth cycle</i>	l'd'ínoč#k+a&	l'd'ínoč#k+#&
d → d':	no change	no change

$k \rightarrow \check{c}$:	no change	no change
(3):	l'd'inočøk+a&	l'd'inoč#k+ø&
(4):	no change	l'd'inočok+ø&
<i>Phonetic rules:</i>	[l'd'ínəčkə]	[l'd'ínəčbk]

There is no doubt that these rules "work" in the sense that they result in verifiably accurate phonetic strings. What is wrong with them is nonetheless obvious: the number of morphophonemic operations to be performed is out of all proportion to the differential results obtained. In four cycles of four rules each, applied here to two underlying strings, there are thirty-two distinct operations, twenty-one of which result in "no change", eight of which result in identical changes in both columns, and only three of which (application of rules (3) and (4) in the fourth cycle) result in different phonetic strings. When one remembers that the paradigm of a Russian substantive consists not merely of two, but of twelve case-number forms, so that the total number of morphophonemic operations to be performed is really one hundred and ninety-two, it becomes clear that rules of this sort are indeed a morphophonemic mountain, the result of whose labors is a very small phonetic mouse. This kind of rule recapitulates the entire derivational history of a word in each and every one of this word's case-number forms, which is obviously uneconomical, since the flexional rules operate on flexional stems alone — in other words, the derivational history of a word is completely irrelevant to the functioning of the morphophonemics of flexion. There is no {#} between the {l'} and the {d'} in ЛЬДИНОЧКА, and in order to account for the fact that this word's nom. sing. contains a cluster /čk/ whereas the gen. plur. has /čik/, one has no need to refer to rules of the sort $d \rightarrow d'$.

A further weakness of this type of description, but one which cannot be discussed in any detail here, is corollary to the view that words such as ЛЬДИНОЧКА consist of no more and no less than a string of morphemes embedded in a certain IC structure: any underlying string, such as those just considered, must have a meaning of equivalent "shape", i.e. the meaning of ЛЬДИНОЧКА must be equal to

<[('ice' + 'singulative') + 'diminutive'] + 'affectionate diminutive'>
plus the particular case-number meaning involved in the particular form. Even if one grants the dubious assumption that it makes sense to speak of the IC structure of semantic entities, it is still clear that the meanings of most

derived words are not equal to the organized sum of the meanings of their parts; once again, this means that cyclical rules fail to represent adequately the binary nature of the derivational process. One may conclude, then, that although cyclically applied morphophonemic rules are observationally accurate, and while these rules reflect more explicitly than non-cyclical rules the distinctions between derivation and flexion, they are nonetheless mechanistic in their semantic implications, force the derivational history of words to protrude into their flexional morphophonemics and (the most serious charge against them) are very uneconomical, involving a high number of morphophonemic operations for a very low yield.

All three types of rule examined so far share one common methodological feature: they apply a single set of rules to every individual paradigmatic word-form, attempting to account simultaneously for the morphophonemic processes of derivation and those of flexion. Since each of the three types of rule has been judged inadequate (to varying degrees, and for varying reasons), it seems natural to suggest that a different methodological framework might provide a more satisfactory description.

The methodological framework underlying all three types of rule discussed so far takes as its primary criterion descriptive economy and subordinates the non-mixing of levels thereto; to state this differently, one can say that these three types of rule begin with the premise that a single set of rules exist (or should exist), and attempt to force both derivation and flexion through this set of rules. If one begins with a different premise, namely that derivation and flexion are two autonomous but interrelated morphological subsystems⁶, and then defines the morphophonemic rules which are operative in each of these subsystems, one has a better chance of specifying both similarities and differences. Since some theoretical considerations and a formal description of such a framework have been treated in detail elsewhere⁷, we shall only recapitulate the salient features of it here, with particular reference to the vocalization of (#).

The morphological system of Russian (and presumably of most languages) has two major subsystems, derivation and flexion. The first has descriptive priority over the second; that is, the output of the derivational system serves as input to the flexional system. The flexional system's output then serves as input to the system of phonetic rules which determine the final sound shape of

the utterance. For example: the derivational base {búl#k} (that is, the stem of the word б́улка) is concatenated with the affix {#k}, and the morphophonemic rules of the derivational system specify the results of this concatenation to be {búloč#k}, i.e. the flexional stem of the derived word б́улочка; this output of the derivational system {búloč#k} is input to the flexional system, where it is concatenated with each of the several case-ending forms nom. sing. {a}, dat. sing. {e}, gen. plur. {#}, etc., after which the morphophonemic rules of the flexional system specify the results of this second (set of) concatenation(s) to be nom. sing. {búločka}, dat. sing. {búločke}, gen. plur. {búločok}, etc. These lowest-level morphophonemic entities are then inputted to the phonetic system, which determines their final sound shape to be [búləčkə], [búləčk'ɘ], and [búləčɛk] respectively. At the same time, the output of any given derivational operation can serve as input to further stages of derivation, so that, for example, the results of concatenating {l'd'ín} 'ice' with {in} 'singulative', namely {l'd'ín}, serve not only as input to the flexional system determining the shape of the case-number forms of the word л́ьд́ина, but also as input to further stages of derivation, e.g. {l'd'ín} + {#k}; the results of this latter, namely {l'd'ín#k}, then serve as input both to the flexional system which will generate nom. sing. {l'd'ínka}, gen. plur. {l'd'ínok}, etc., and to the next stage of derivation, {l'd'ín#k} + {#k}, giving {l'd'ínoč#k}, the flexional stem of the last word in the derivational chain.

In such a framework, there is no need for the uneconomical repetition of rules of the type $d \rightarrow d'$ within the flexional system, and in general it becomes possible to define the morphophonemic processes which are specific to the derivational or to the flexional system, or common to both these systems (e.g., alternations of the type $k \rightarrow c$ occur only in the derivational system, whereas the type $k \rightarrow \check{c}$ occurs both in derivation and in verb flexion, but not in non-suppletive noun flexion). When one examines the behavior of {#} in each of these systems, one can see immediately that the same general rule applies to derivation and to flexion. Informally, this rule states that any {#} becomes zero when followed by a syllabic segment or a word boundary, and becomes a full vowel everywhere else. This is, however, merely an informal version of rules (3) and (4) on p. 213 above. Within the derivational system, these rules will have the form

(3a) $\# \rightarrow \emptyset$ in env.: $_ C+V$

(4a) # → V

which are simpler than (3), (4) in that they require fewer contextual conditions. As a matter of fact, it turns out that with one slight readjustment, these same rules are entirely adequate for the flexional system as well. The "readjustment" consists of recognizing that the so-called "zero ending" of the nom. sing. masc. etc. is not quite the same morphophonemic entity as the alternating vowel - zero morphophoneme {#}, but simply a (morphophonemic and) phonetic zero, i.e. {∅}. The gen. plur. of бѹлка appears as {bŭl#k+∅}, which by (4a) becomes {bŭlok} and phonetically [bŭlək]. These rules are simpler than any of those previously considered, they involve none of the artificialities of cyclical rules, and they observe the intuitively obvious descriptive priority of derivation over flexion - i.e., they are insightful, general and economical.

We conclude, then, that a descriptive framework which assigns highest value to the non-mixing of levels results - paradoxically enough - in a description which is not only intuitively more satisfactory, but actually clearer and more economical than the descriptions resulting from a framework in which the criterion of economy is paramount.

FOOTNOTES

¹ This observation implies that the traditional description of the fall of the jers needs to be reexamined.

² Morris Halle, "O pravilax ruskogo sprjaženija (predvaritel'noe soobščenie)," *American contributions to the Fifth International Congress of Slavists*, vol. 1, The Hague, 1963, p. 113-132.

³ A formal statement would have to account for the [-continuant] → [+continuant] of {g} → {ž}, as well as devise a feature notation for the morphophoneme {#}.

⁴ The symbol {V} in the rules stands for a

+ vocalic	segment,
- consonantal	
- diffuse	
- compact	
+ low tonality	

i.e. for {o}; the phonetic rules will reduce unstressed {o} to [ʌ], [ə], or (after soft consonant not on a morpheme boundary) [b].

⁵ This may be the same rule as the k → č rule above; cf. {žémčug} 'pearl' (collective) → {žemčúžina} 'a pearl', {górox} 'peas' → {goróšina} 'a pea' etc.

⁶ Cf. E. Stankiewicz, "The interdependence of paradigmatic and derivational patterns," *Word*, 18, 1962, p. 1ff.

⁷ "On the notion of 'stem' in Russian flexion and derivation," *To Honor Roman Jakobson*, The Hague, 1968, p. 2269-2288.

LINGUISTICS AND HISTORIOGRAPHY

A PROBLEM OF DATING IN THE GALICIAN-VOLHYNIAN CHRONICLE

The old Russian chronicles are of interest not only to the historian, although he quite rightly treasures them as a precious, in some cases almost unique source of data on the early history of the Eastern Slavs.¹ For the linguist these chronicles, which — unlike most of their Western counterparts — were written in a language close to the vernacular, have preserved a wealth of information on many aspects of the literary, juridical, and even of the spoken language of ancient Rus'. The historian of literature for his part notes that these same chronicles, far from being a dryly narrative account of recorded history, contain a vast and variegated display of literary wares: one finds in them traces of the Slavic and non-Slavic epos, separate war-tales, hagiography and secular biography, ritual laments and prayers, proverbs and panegyrics. It is not astonishing that texts which offer so much to different disciplines should provide a fertile area for interdisciplinary cooperation, and an unusual opportunity for the specialized tools of one discipline to contribute to the knowledge of another. The present paper attempts to show how an investigation originally undertaken for purely linguistic purposes can produce a by-product which may be of some small service to the historian and to the historian of literature.

The paper deals with the so-called Galician-Volhynian Chronicle, which follows the Primary and Kiev Chronicles to form the third and final section of the Hypatian Chronicle.² The Galician-Volhynian Chronicle is an almost unique record³ of the events which took place in Southwestern Rus' during the turbulent thirteenth century, specifically from 1201-1292.⁴ Furthermore, it is one of the most highly decorated of the early chronicles from the literary point of view. As its title suggests, the chronicle consists of two main sections, the first of which is basically a secular biography of Prince Daniil Romanovič of Galicia (1245-1264)⁵ and the second of which deals principally with the reign of Daniil's nephew Vladimir Vasil'kovič of Volhynia (1272-1288). The problem to be treated below is that of determining as precisely as possible the exact location

in text of the border between these two sections.

There have been almost as many opinions as to the year in which the border between the Galician and the Volhynian section of the chronicle must be sought as there have been scholars who have read the chronicle. Among the historians, Hruševs'kyj⁶ placed this border at the year 1254, and Čerepnin⁷ at either 1256/57 or 1260/61. Among the literary historians, Lixačev⁸ follows Čerepnin in positing 1256/57, Tšchižewskij⁹ mentions both 1260/61 and the less definite 1260-63, whereas Orlov¹⁰ opts for 1267. Recent years have seen two attempts to break the Galician-Volhynian Chronicle down into several superimposed redactions, thus denying (at least by implication) the earlier and generally accepted division into two main sections. The historian Pašuto¹¹ assumes the existence of borders between these several redactions at the years 1238, 1246, 1263, 1269 (?) and 1289/90. On the other hand, the linguist Hens'ors'kyj,¹² making more use of linguistic data but less of historical fact — and conjecture — appears to discern borders at 1234, 1266, 1285/86, 1289 and 1292. One's suspicions are of course aroused by the almost total lack of concord among these various scholarly opinions. Figure 1 correlates all of these suggested dates with the 1843 edition of the chronicle used here.¹³

As we shall see below, there is compelling linguistic evidence in support of only one of these fourteen scholarly suppositions, and indirect evidence concerning a second.

The present method of analysis is almost mechanical in its simplicity. It grew out of an accumulation of data on various linguistic levels (phonological, morphological, lexical, etc.) destined eventually for a description of the language of this chronicle. As the amount of material collected increased, it became apparent that whereas certain forms occur more or less constantly throughout the chronicle,¹⁴ other forms are restricted to particular types of subject matter,¹⁵ and yet others occur only in certain sections of the text. It is this last type of restriction that is of interest for the problem of dating. Following the example given by Čiževskij in his discussion of the dative absolute constructions in this same chronicle,¹⁶ these restricted data were plotted on graphs and correlated with the dates given in the chronicle.¹⁷ The presence or absence of sharp peaks and sudden drops in these graphs provides objectively verifiable evidence for and against the presence of major borders at various points within the text. It is proposed to call this graphic method of

nated, but the ending *-a* (long form *-ai*) in the East Slavic area which includes Galicia and Volhynia. One thus has pairs such as *nesa* or *nesy* "carrying," *dada* or *dady* "giving" etc.¹⁸ A thirteenth-century scribe, born in East Slavic territory, would himself tend to use the *-a* forms. Since, however, this scribe was imbued with a church-oriented tradition of written literature, deeply influenced by Old Church Slavic, in which the *-y* forms predominated, it is only natural to find both *-a* and *-y* forms in the chronicle. Further, since the Galician-Volhynian Chronicle (like the Kiev Chronicle which precedes it) makes extensive use of quoted speech, both direct and indirect, as a means of rendering the narrative more immediate and more vivid,¹⁹ one finds these alternate endings more frequently with the verb "to say" than with any other single verb, namely *reka* and *reky* "saying."²⁰ Although both types of ending can be found throughout the chronicle, the Church Slavic form in *-y* definitely dominates in the Galician section, whereas the Eastern Slavic *-a* forms are noticeably more frequent in the Volhynian section. The distribution of these forms is shown in Figure 2, in which "x" to the right of the pagination represents *reka(i)* and "x" to the left *reky(i)*. Figure 2 also shows the similar distribution of nominative masculine plural forms of these same participles, in which the reflexes of common Slavic **tj* oppose the Old Church Slavic forms in *-št-* (*-šč-* in the Eastern Slavic reading thereof) to the native Eastern Slavic forms in *-č-*, namely *rekušče / rekuče*, which are shown in Figure 2 as "o" to the left and right of the pagination respectively.

The most obvious break in the distribution of these forms occurs at p. 196, where the Church Slavic forms suddenly cease and the East Slavic forms increase markedly. If one tentatively assumes this to be a major border between redactions (an assumption that will have to be revised slightly; cf. p. 180 f.), one can state the numerical occurrences as follows: *reky(i)* and *rekušče* occur thirty times in the Galician but only three times in the Volhynian section, whereas *reka(i)* and *rekuče* occur seventeen times in the earlier but forty-nine times in the later section. The fact that the East Slavic *reka(i)*, *rekuče* are more evenly distributed throughout the entire chronicle than are the Church Slavic *reky(i)*, *rekušče* is of course explained by the fact that the scribe of the Volhynian Chronicle also copied the Galician section, and hence had the occasion to introduce, probably largely unconsciously, his native forms into the earlier section, whereas the Galician scribe obviously had no such opportunity to influence the language of the Volhynian section.

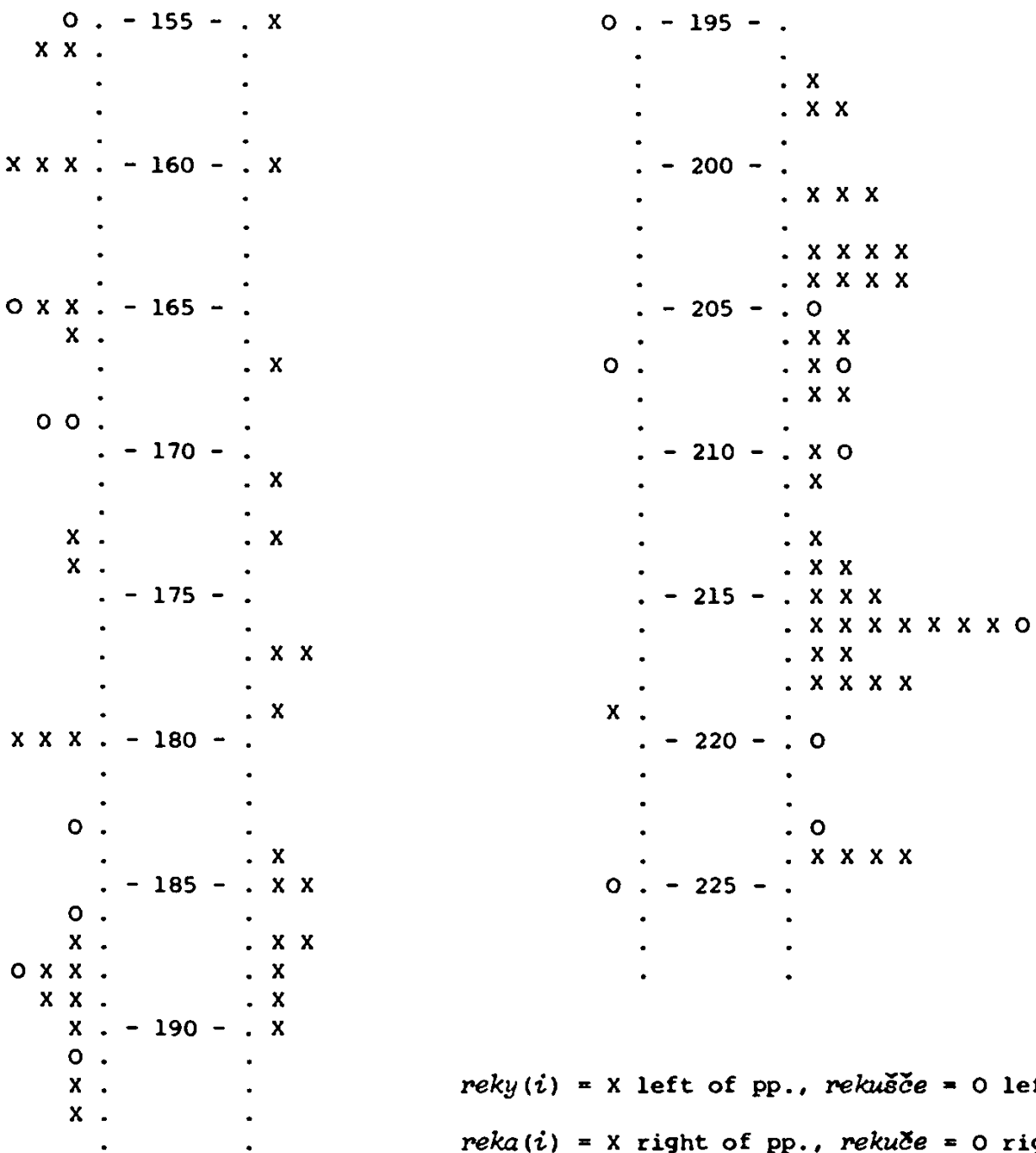


Figure 2. Distribution of participial forms.

It is also worth noting that the only occurrence of Church Slavic *reky* in the Volhynian section falls on p. 219, exactly where the previously frequent forms in *-a* suddenly cease for several pages. One might tentatively assume a break of some sort in the text at this point; however, this question must be postponed until more factual material has been accumulated.

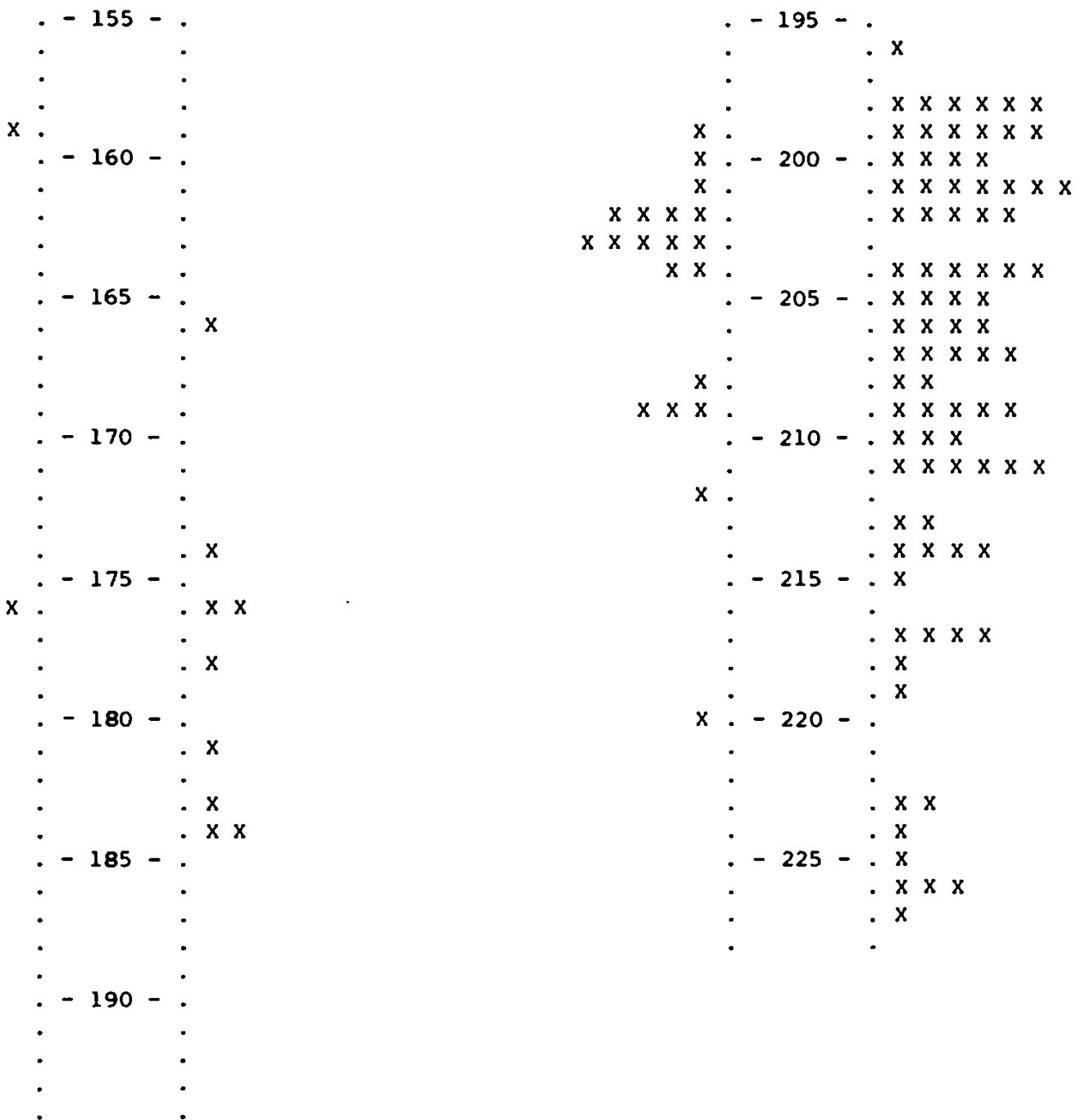


Figure 3. Distribution of compound past tense consisting of *nača(ša)* (= X right of pp.) or *poča(ša)* (= X left of pp.) + imperfective infinitive.

SYNTAX: *načati*, *počati* + INFINITIVE. One of the most distinctly individual features of the Volhynian Chronicle is its frequent use of aorist forms of *načati* and *počati* "to begin" with the imperfective infinitive²¹ to form what appears to be a compound past tense replacing the imperfect or the dative absolute construction, more frequent in the Galician section, e.g. (*Vasil'ko*) *nača otдавati dščer' svoju Olgu za Andrea knjazja* 198.8-9 "(Vasil'ko) was preparing to marry his

daughter to Prince Andrej." To be sure, one cannot always determine from the context whether these forms are being used as auxiliaries in a compound past tense, or with their full meaning of "to begin (to do something)"; however, this semantic vagueness is of no import for the purposes of this paper, since it is the occurrence of the forms themselves, and not our subjective and perhaps erroneous interpretation of their meanings, that is an objective feature of the text.²² The occurrence of these compound past tense forms is shown in Figure 3, in which "x" right and left of the pagination represents forms of *nača(ša)* and *poča(ša)* respectively.

Here one notices a much more sharply defined border than was the case with the participial forms *reka / reky* etc. above. Compounds with *nača(ša)* and *poča(ša)* occur only sporadically before p. 198, but at that point they suddenly become very frequent, averaging some 5½ instances per page for the next fourteen pages, and then dropping off slightly. These frequent occurrences begin just after a noticeable break in the text, where an unknown amount of the archetype (or, to be more cautious, of the penultimate copy) of the Galician Chronicle was omitted in copying. This break, which occurs between the years 1260 and 1261 (between lines 6 and 7 of p. 198 in the edition used here), is of considerable importance as evidence itself, since it is the only indubitable interruption within the entire Galician-Volhynian Chronicle. These facts suggest that the major break in text between the Galician and Volhynian sections of the chronicle should be placed at p. 198, rather than at p. 196; the distribution of the participles *reka* and *reky* etc. shown in Figure 2 does not contradict this amended assumption, since the one case of *reka* on p. 197 can easily be explained as a later addition, similar to the other instances of *reka* scattered throughout the Galician section of the chronicle. The occasional instances of *nača(ša)* and *poča(ša)* within the Galician section are likewise to be attributed to the later, Volhynian scribe, who introduced them into the earlier text he was copying. These compound past tense forms are noticeable, furthermore, by their absence from pp. 220-223, which corresponds almost exactly to the drop in occurrence of the participle *reka* discussed above, thus lending more weight to the assumption that this small section of text is somehow different from that which surrounds it.

LEXICON: *jako* VS. *ože* AND *aky (aki)*. Of all the distributional factors investigated thus far, the most striking is the lexical opposition of the subordinating conjunction *jako* in the Galician section to *ože* in the Volhynian section, e.g.

X X X X X . - 155 - . *	X X X X X X X . - 195 - .
X X X . .	X X X X X X X . .
X X X X . .	X X X . .
. . *	X . . X
X . .	. . O O O O
X X . - 160 - .	. - 200 - . X
X . .	. . .
X . .	. . X O O
X . .	. . X X X O
X X X X X X X . .	. . X
X X X X X X X X X X . - 165 - .	. - 205 - . X X X
X X . .	. . X X
X X X X . .	. . X X X X O
X X X . .	. . .
X X X X X X . .	. . O
X X X X X X . - 170 - . O	. - 210 - . X X X X O O O
X X X X X . .	X . . X
X X X X . .	X . . X X
X . . *	. . X X X X
X X X . .	. . X X
X X X X X X X X X X X . - 175 - .	. - 215 - . X X X ***
X X X X X X . .	. . X X X X O O
X X X X . .	. . X X
X X X X X X X . .	. . X X X O
X X X X X X . .	. . O
X X X X X X X . - 180 - . O	X X X X X X X . - 220 - . O O
X X X X . .	X . . O O
X . .	X X X . .
X X X X X X X X X . .	X . . X O
X X X . .	. . X X X X X X ***
X X X X X . - 185 - . *	. - 225 - .
X X X X X X X X X . .	. . X X O
X X X X X X X . .	X . . .
X X X . .	. . .
X X X X X . .	. . .
X X X . - 190 - .	. . .
X X X X . .	. . .
X X X . .	. . .
X X X X X X X . .	. . .
X X X X X X X X X X X X . .	. . .

Figure 4. Distribution of *jako* (= X left of pp.), *ože/aže* (= X/* right of pp.) and *aky/aki* (= O right of pp.).

Knjaginja ... reče: jako "syna mi poiimi ko dščeri" 194.27 "The Princess said, 'Take my son (as a husband) for your daughter'" on the one hand, and *rari že prišedši k gorodu, poznaša, ože Ruskaja rat'* 217.34-35 "When the army had come up to the city, they recognized that it was the Russian army" on the other. In the Galician section of the chronicle *jako* has another function as well; it is used as a conjunction of a comparison, e.g. (*Skomond*) *borz že bě jako zvěr'* 182.21

"(Skomond) was swift as a wild beast." In this Volhynian section, this function is filled by the form *aky* (*aki*), e.g. *staša okolo goroda, aki borove veliči* 209.38 "They stood about the city like a great forest." As was the case with the participial opposition *reky / reka* discussed above, the opposition of *jako* vs. *ože* as subordinating conjunctions represents an opposition of Church Slavic forms on the one hand to Eastern Slavic forms on the other; the pair *jako* vs. *aky* (*aki*) as conjunctions introducing comparisons, however, apparently represents only an opposition of different regionally-based varieties in the Russian recension of Church Slavic.²³ Figure 4 above shows the distribution of all these forms throughout the chronicle: *jako* as both subordinating conjunction and conjunction of comparison is represented by "x" to the left of the pagination, the conjunction *ože* by "x" to the right, and the conjunction of comparison *aky* by "o" to the right. Six occurrences of the spelling of *aže* for *ože* on pp. 215 and 224 are shown by asterisks, as are four cases of *ože* with different or somewhat unclear meanings on pp. 155, 158, 173, and 185 of the Galician section.²⁴

Again it is striking that the instances of *jako* cease abruptly at exactly the point where those of *ože* and *aky* begin, namely at the border between 1260/1261 on p. 198 of this edition. Even the one case of *jako* on p. 198 itself comes before the missing fragment of text at lines 6/7, and the one case of *ože* occurs after this break. The numerical distribution is also impressive: *jako* occurs almost two hundred times in the Galician section but only nineteen times in the Volhynian section, whereas *ože* (*aže*) and *aky* (*aki*) occur only six times in the Galician but almost eighty times in the Volhynian section. Furthermore, of the nineteen examples of *jako* that do occur within the Volhynian section, sixteen occur in the brief passage on pp. 219-224, which the morphological and syntactic evidence discussed above has already led us to suspect. This passage, stylistically quite distinct from the surrounding text, describes the illness and death (in 1288) of Prince Vladimir Vasil'kovič of Volhynia, including an extended panegyric to Vladimir as well as a list of his many good deeds.²⁵ It extends from the very top of p. 219 nearly to the bottom of p. 223, at which point there begins the brief account of the reign of Prince M'stislav Vasil'kovič, Vladimir's brother. This twofold unity, linguistic and thematic, suggests strongly that this passage on the illness, death, and glory of Vladimir should be considered a separate item within the Volhynian section of the chronicle, written in all probability by a different scribe, or at the very least by one who showed such

mastery of this more solemn genre that he automatically employed only the more solemn Church Slavic forms appropriate thereto. One may conclude, then, that there is certain linguistic evidence that Pařuto and Hens'ors'kyj were correct in positing 1289 (p. 223) as a border within the Volhynian Chronicle, although one must also note that both scholars appear to miss the equally clear border (p. 219) at the beginning of this passage.

. - 155 - .	. - 180 - . X	. - 205 - .
.
. . . X	. . .	. . .
. . . X	. . . X	. . .
. - 160 - .	. - 185 - .	. - 210 - .
. . . X	. . . X X	. . .
. . .	. . . X	. . .
. . . X	. . . X	. . .
. . .	. . . X	. . .
. - 165 - . X	. - 190 - . X X X	. - 215 - .
.
. . .	. . . X	. . .
. . .	. . . X	. . .
. . . X	. . . X X	. . .
. - 170 - .	. - 195 - . X	. - 220 - .
. . .	. . . X X	. . .
. . .	. . . X	. . .
.
.
. - 175 - . X X	. - 200 - .	. - 225 - .
.
.
.
.

Figure 5. Distribution of explanations with *rekše*, *rekomyj*, etc.

PHRASEOLOGY (1): EXPLANATIONS WITH *rekše* ETC. It has not escaped the attention of earlier investigators that one of the typical stylistic devices of the Galician section of this chronicle is the explanation of strange words, and indeed of some words that could not have been too strange to the scribe,²⁶ by means of a synonym introduced by the form *rekše* "that is to say," *rekomyj* "called" etc., *vratišasja v strany svoja, rekše v pole* 196.10²⁷ "they returned to their own lands, that is to say, to the steppe." All twenty-six such explanations that were found occur within the Galician section of the chronicle, as shown in Figure 5 above; n.b. that the last such explanation falls on p. 197, immediately before the major border that other evidence has already pointed to.

"GALICIAN" PHRASES

- 1 left of pp. = *mnogoe množestvo* "a great multitude"
 2 left of pp. = *plěn velik* "booty great"
 3 left of pp. = *s velikoju čest'ju* "with great honor" and *vo veličě česti* "in great honor"

"VOLHYNIAN" PHRASES

- 1 right of pp. = *besčislenoe množestvo* "countless multitude"
 2 right of pp. = *so množestvom* ± genitive "with a multitude of ..."
 3 right of pp. = *polona mnogo* "of booty much"
 4 right of pp. = *ot mala i do velika* "from the small even to the great"
 5 right of pp. = *s (pobědoju i) čest'ju velikoju* "with (victory and) honor great"
 6 right of pp. = *i tako byst' konec'* "and such was the end of ..."
 7 right of pp. = *ne malo bo pokaza muž'stvo svoe* "to no little degree did he show his manliness"
 8 right of pp. = *složiti s sebe sorom* "divest oneself of shame"

Galician section

.	.	.	- 180 -	.	3	.	- 205 -	.	4 5
.	- 155 -	.	.	.	3	.	.	.	.
3	.	.	2	.	.	.	.	.	1 5
.	.	.	.	.	.	.	.	.	3 8
.	.	.	.	.	.	.	.	.	2 4
3	.	.	3	- 185 -	.	.	- 210 -	.	1 1 2 5 5 8 8
2	- 160 -	.	2	.	.	.	.	.	1 1 5
.	.	.	3	.	.	1	.	.	1 1 1 1 2
.	.	.	2	.	.	.	.	.	1 2 5
.	.	.	2	.	.	.	.	.	.
.	.	.	2 1	- 190 -	.	.	- 215 -	.	.
- 165 -	.	3	.	.	.	.	.	.	4
.
.	.	.	.	.	.	.	.	.	2
2	.	.	.	.	.	.	.	.	.
.	.	.	1	- 195 -	.	.	- 220 -	.	4
- 170 -	.	.	.	.	.	.	.	.	.
3 2	.	.	3	.	2	.	.	.	.
.
2	.	.	Volhynian section			.	.	.	4
2	.	.	.	.	1 4	.	- 225 -	.	1
- 175 -	.	.	.	- 200 -	3 3 4 5 6	3	.	.	1 1 2 4 5 5 7
.	.	.	.	.	1 1 6	.	.	.	.
3 1	.	.	.	.	5 6 7	.	.	.	.
.	.	.	.	.	3 3 7	.	.	.	.
3	.	.	.	.	6	.	.	.	.

Figure 6. Distribution of fixed phrases typical of Galician and Volhynian sections of chronicle.

PHRASEOLOGY (2): FIXED PHRASES. The chronicle contains a considerable number of fixed or semi-fixed phraseological units, e.g., *ot mala i do velika* "from the small even unto the great," *s pobědoju i čest'ju velikoju* "having conquered and

with great honor," etc. Certain of these phraseological units are limited in their occurrence to one or the other section of the chronicle, as were the other linguistic data already discussed. Since these phraseological units have been described in some detail elsewhere,²⁸ Figure 6 above will only recapitulate in condensed form some of the results of this earlier analysis. Figure 6 shows the distribution of three phraseological units typical of the Galician section of the chronicle and eight such units typical of the Volhynian section. It will be noted that certain units listed as Galician or Volhynian respectively are very similar to each other in form, being distinguished by such relatively minor features as word order (e.g., *s velikoju čest'ju* "with great honor" is a Galician feature, whereas the almost identical *s čest'ju velikoju* "with honor great" is a specifically Volhynian feature). This fact serves *i.a.* to emphasize the detail with which phraseology must be studied if it is to be a useful tool for textual analysis.

Once again it is clear that the major linguistic break falls on p. 198, and once again there is a noticeable absence of specifically Volhynian features from pp. 219-223. It seems obvious to conclude that there is overwhelming linguistic support for one, and only one, major border within the entire Galician-Volhynian Chronicle, namely, the border posited by Čerepnin and Čiževskij between the years 1260 and 1261. Whatever historical arguments may or may not be adduced, there seems to be no convincing linguistic evidence for any of the other borders which have been proposed.²⁹

FOOTNOTES

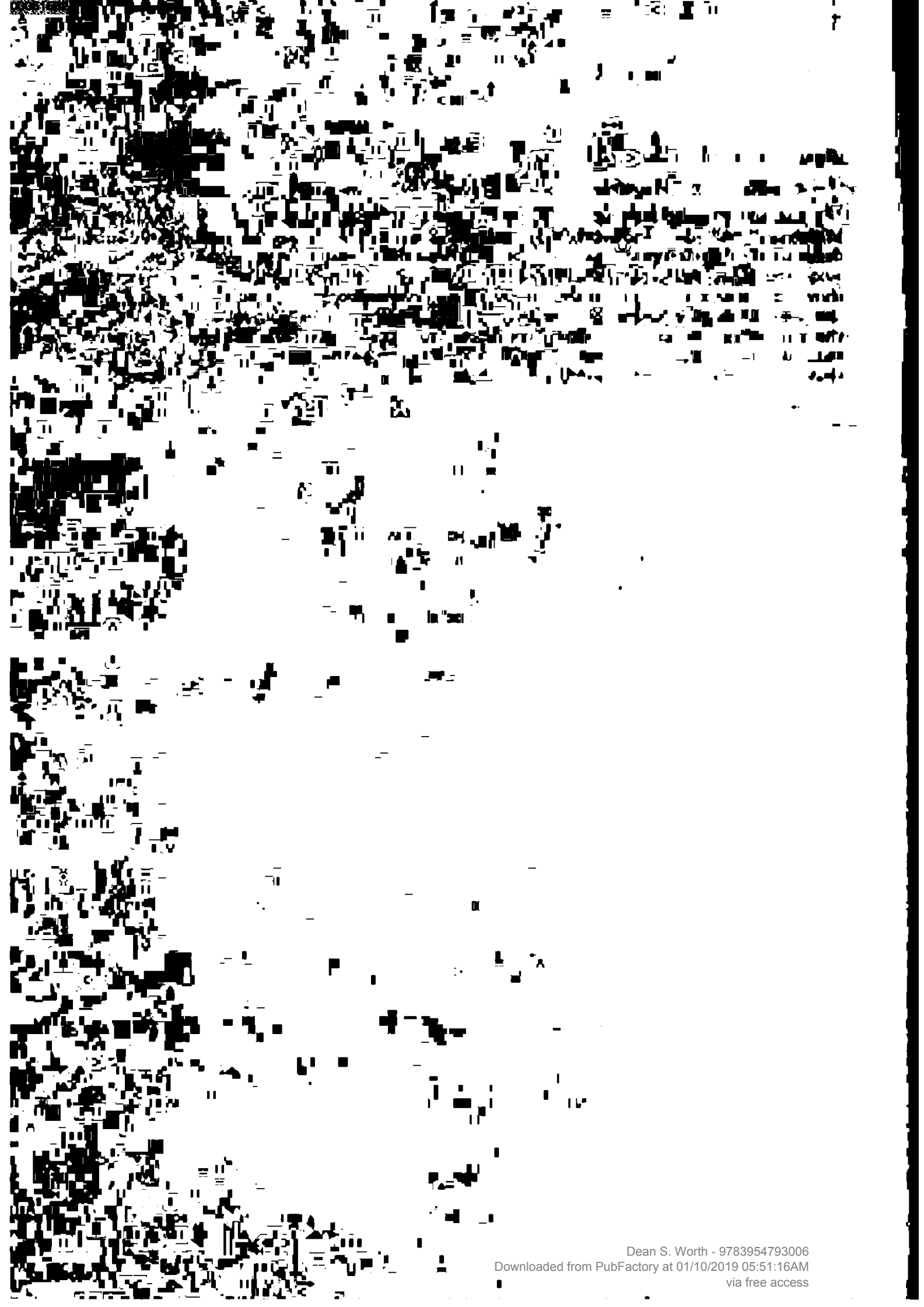
- ¹ An earlier version of this paper was read at the VIIIth Congress of the International Federation for Modern Languages and Literatures at Liège, Belgium, September 2, 1960.
- ² On the Mss. and editions of the Hypatian Chronicle see D. S. Lixačev, *Ruskie letopisi i iz kul'turno-istoričeskoe značenie* (Moskva-Leningrad, 1947), pp. 431-433.
- ³ Some of the events mentioned in the Galician-Volhynian Chronicle are of course described in other chronicles as well, e.g., in the *Voskresenskaja letopis'* (= *Polnoe sobranie russkix letopisej*, VII) (SPb., 1856). According to V. T. Pašuto, *Očerki po istorii Galicko-Volynskoj Rusi* (Moskva, 1950), p. 26 ff., the Polish chronicler J. Długosz made use of the same extended version of the Kiev Chronicle (to 1238) that was used by the first scribe of the Galician-Volhynian Chronicle.
- ⁴ It is well known that these dates were not in the archetype of the Galician-Volhynian Chronicle, and are inaccurate by as much as four years; the most thorough investigation of this problem is still to be found in M. Hruševs'kyj, "Xronologija podij Halycko-Volynskoj l'jtitopisy," *Zapysky Nauk. Tov. jim. Ševčenka*, XVI, 3 (L'vov, 1901).
- ⁵ Genealogical tables are appended to D. Tschizewskij, *Geschichte der altrussischen Literatur im 11., 12. und 13. Jahrhundert. Kiever Epoche* (Frankfurt a/Main., 1948).
- ⁶ Hruševs'kyj, *op. cit.*; cf. also his *Istorija Ukrajinj-Rusy*, III, 2nd ed. (L'vov, 1905) (reprinted New York, 1954).
- ⁷ L. Čerepnin, "Letopisec Daniila Galickogo," *Istoričeskie zapiski*, No. 12 (1941), pp. 228-253.
- ⁸ D. S. Lixačev, *op. cit.*, p. 256.
- ⁹ D. Tschizewskij, "Zum Stil der Galizisch-Volynischen Chronik," *Südostforschungen*, XII (1953), pp. 88, 99.
- ¹⁰ A. Orlov, *Drevnjaja russkaja literatura XI-XVI vv.* (Moskva-Leningrad, 1937), p. 119.
- ¹¹ V. T. Pašuto, *op. cit.*, pp. 21-133. A criticism of Pašuto's methodology and conclusions can be found in I. P. Eremin, "Volynskaja letopis' 1289-1290 gg.," *Trudy Otdela Drevnerusskoj Literatury*, XIII (1957), 102-117.
- ¹² A. I. Hens'ors'kyj, "Redakciji Halyc'ko-Volynskoho Litopysu," *Akad. Nauk Ukr. SSR, Instytut suspil'nyx nauk, Doslidžennja z movy ta literatury* (Kiev, 1957), pp. 68-72.
- ¹³ *Polnoe sobranie russkix letopisej*, II, 3. *Ipat'evskaja letopis'* (SPb., 1843); later and better editions were unavailable during the preparation of this paper.
- ¹⁴ E.g. the dative absolute constructions; cf. D. Tschizewskij, "Zum Stil . . .," pp. 83-84.
- ¹⁵ E.g. the phrase *v silě tjažcě* "in great force"; cf. D. S. Worth, "Phraseology in the Galician-Volhynian Chronicle," *Annals of the Ukrainian Academy of Arts and Sciences in the U.S.*, VIII, 1-2 (New York, 1960), pp. 55-69.

- 16 D. Tschizewskij, "Zum Stil . . .," pp. 82 ff.
- 17 These dates are given only as guideposts within the text, not as historically accurate; cf. above, footnote 4.
- 18 For the O.C.S. facts see Paul Diels, *Altkirchenslavische Grammatik*, I (Heidelberg, 1932), pp. 232-33, 277; for Old Russian (with some parallel material from Czech) see N. Durnovo, *Očerkek istorii russkogo jazyka*, photomechanic reprint ('s-Gravenhage, 1959), pp. 254-56.
- 19 D. Tschizewskij, "Zum Stil . . .," p. 81.
- 20 Although the choice of a single verb gives a smaller number of occurrences, it avoids the danger that the distribution of forms (-y vs. -a) be complicated by the distribution of various lexical items.
- 21 Some fifty such infinitives occur, including *byti*; most frequent (with more than five occurrences each) are *povědati*, *molviti*, *dumati*, *voevati*, and *knjažiti*.
- 22 A. I. Hens'ors'kyj unfortunately fails to mention such compounds in his otherwise interesting study *Značennja form mynuloho času v Halyc'ko-Volyns'komu litopysu* (Kiev, 1957).
- 23 Both *jako* and *aky* are attested in O.C.S. manuscripts, the former being more widespread than the latter; details and literature in L. Sadnik and R. Aitzetmüller, *Handwörterbuch zu den altkirchenslavischen Texten* ('s-Gravenhage, 1955), pp. 3, 7, 211, 247.
- 24 In two cases *ože* means "if" (*poj že emu pēsni Poloveckija; ože ti ne vosxočet, daj emu pouxati zel'ja, imenem evšan (emšan in Xlebnikov = X and Ermolaev = E Mss.) 155; Rekšu emu: "Danilo! čemu esi davno ne prišel, a nyně ože esi prišel, a to dobro že;" 184-85*), and in two more apparently "still," "yet" (*Polovci že uzrěvši ě, krěpci nalegoša na nja, oněm že ěduščim napredi imi k Ljutoj rěčě, ože byša ne přiexalě Ljaxove i Rus', i sošedše odva preprovadiša rěku Ljutuju 158; ljuto bo bě boj (ljuto bě bo X, E) u Černigova, ože i taran na n' (na ny X, E) postaviša, metaša bo kamenem poltora perestrěla 173*).
- 25 This passage, as has been remarked e.g. by Tschizewskij, *Geschichte der altrussischen Literatur*, p. 312, is strongly influenced by the *porvala* to Vladimir in Metropolitan Ilarion's *Slovo o zakone i blagodati*. I. P. Eremin, *op. cit.*, pp. 113-114, has already demonstrated that the scribe of the latter part of the Volhynian Chronicle was not adverse to such copying.
- 26 In some cases the scribe may be explaining dialect variants (*stjudenec, rekomyj kladjaz', bliz eja bě 196-97; Volodislav (poslav added in Ipat'ev Ms.) vož'že (požže X, E) vsja okrest'naja vsi (vesi X, sela E), rekomaja okolnjaja 190*), in others, clarifying a learned borrowing (*riks ti Ugor'skyj, rekše korol' 194*), retreating from an overly audacious metaphor (*Sudislav že vo zlato přeměnisja, rekše, mnogo zlata dav izbavisja 159*), or underlining the orthodoxy of his religious views (the Lithuanians were *vsja bogy svoja pominajušče, rekomyja bšsy 195*). In a few cases the explanations consist only of an added personal name or nickname (pp. 175, 184, 190). In general, these explanations appear to be primarily a literary device, permitting a certain exotic *ostranenie* to color the narrative.
- 27 This reading from X, E seems preferable to that of Ipat. (*v stany*), which seems to have confused this explanation with two cases where *kolymag* is ex-

plained as *stan* (158, 186).

28 D. Worth, "Phraseology in the Galician-Volhynian Chronicle," pp. 64-66.

29 For additional data see A. I. Hens'ors'kyj, "Redakciji Halyc'ko-Volyns'koho litopysu," and his "Spoterežennja nad vživannjam povnoholosnyx i nepovnoholosnyx form u Halyc'ko-Volyns'komu litopysi," L'vov University, *Voprosy slavjanskogo jazykoznanija*, kniga 4 (1955), pp. 82-83 et al. In fairness to Hens'ors'kyj it should be noted that he speaks not only of a "redaction of 1265," but also of the year 1260 as a major border between the Galician and Volhynian sections of the chronicle, so that he should perhaps be listed with Čerepnin and Tschizewskij as one of those who have — according to our evidence — correctly identified this single major border within the chronicle.



LEXICO-GRAMMATICAL PARALLELISM AS A
STYLISTIC FEATURE OF THE *ZADONŠČINA*

Most of the extant literature concerning the fourteenth-century battle tale known as the *Zadonščina* is concerned more with the reconstruction of archetypes and with the relation of the *Zadonščina* to the *Slovo o polku Igoreve* than with the analysis of the former as a self-contained work of artistic prose.¹ In the present paper we shall ignore all problems of origin, Mss. filiation, authenticity etc., and concentrate on one feature of the literary style of this often-underestimated literary work, namely its consistent and effective use of lexical and grammatical (including syntactic) parallelism as a stylistic device. Such parallelism, e.g. the repetition of near-synonyms or the antithetical pairing of antonyms, is well known from other works of Old Russian literature (the most striking case being Metropolitan Hilarion's *Slovo o zakone i blagodati*; cf. also the *Molenie Daniila Zatočnika*), but this parallelism is brought into particularly sharp relief in the *Zadonščina* due to the highly rhythmic, semi-poetic organization of verses in this work.

By "lexical parallelism" we shall understand the repetition of lexical (and derivational) morphemes; by "grammatical parallelism" the repetition of like word-classes in like functions, e.g. of instrumental substantives of manner modifying verbs, two verbal aorists as predicate to a single subject, etc. (the various types will be discussed on the basis of concrete examples in what follows). Either type of parallelism, lexical or grammatical, can occur without the other, although the most obvious and striking cases are those where both lexical and grammatical morphemes are repeated. In many cases, as we shall attempt to show, the lexico-grammatical parallelism of the *Zadonščina* is reinforced by metrical repetition, i.e. by the organization of parallel words or phrases into rhythmic units with similar or identical distribution of stressed and unstressed syllables.

The simplest types of parallelism in the *Zadonščina* are those where a noun, verb or adjective is conjoined to a like unit, for example the double subject of

147 Уже по Рýсьской землѣ прострѣся весѣлье и буйство (grammatical parallelism) or, with negative conjunction, 90 *** ни ратаи ни пастуси не кличють *** (grammatical parallelism reinforced by lexical similarity). Verbal predicates can contain redoubled finite forms, e.g. 48 *** поганьи Мамáи пришѣл на Рýсь и вбе своё привѣл *** (G, L-;² n.b. the phonic reinforcement *prišel-privel*), or repeated infinitives, e.g. 25 *** Татáрове *** хотѣть брестѣ и предати живót свои нашей слáвѣ (G). In verse 4 the subject is reinforced by repetition of both noun and adjective modifier: *** родѣшася Хáнове поганни, Татáрове бусормáнове (G, L), whereas in 68 only the adjective is redoubled: *** удáришася на мнóгая стадá гусиная и лебедина (G, L). Most lexico-grammatical parallels in the *Zadonščina* contain two terms, although there are several instances of triple repetition, e.g. 68 Уже бо соколи и ястреби и Бълóзёрсти крѣчети бóрзо зá Дон перелетѣша *** , and it is not unusual to find double and triple units juxtaposed, as in verses 72 and 73:

72: *** протоптáша хóлмы и лугы.

73: Възмутѣшася рѣкы и потóкы и озѣра.

That such juxtaposition is not fortuitous can be seen in the 3-2-3-2 pattern of verse 6, *** поминаючи:

- (3) князѣ и бояры и уда́лые люди, ***
- (2) дóмы своё и богáтельство,
- (3) жены и дѣти и скóт,
- (2) чѣсть и слáву мѣра сегó получѣвши ***

Imperatives not infrequently occur in twos (115 Не устанáи, *** не потакáи коромбльником; 26 *** пбидем тамо, укупим животу́ слáвы; 178³ простѣте мя, брáтье, и благословѣте ***), threes (17 *** възлетѣ под сѣняя небеса́, посмотрѣ к сѣльному граду Москвѣ, въспбѣ слáву великому князю ***) and fours (35 *** всядем, брáте, посмóтрим бѣстро́го Дбну, испием шеломом Мечѣ, испытáем мечѣв свойх ***), and in one instance a group of five imperatives is organized into a 2 + 3 arrangement by the preverbs: 9

с-: { Снѣдем, брáтье и дружи́но, ***
сѣстáвим Слбво к Слбву,

въз-: $\left\{ \begin{array}{l} \underline{\text{възвеселѣм}} \text{ Рѹсьскую зѣмлю и} \\ \underline{\text{възвѣрзѣм}} \text{ печаль но } \underline{\text{въстѣчную}} \text{ страну,***} \\ \underline{\text{въздадѣм}} \text{ поганому Мамѣю побѣду***} \end{array} \right.$

Such sets are reminiscent of the imperative sequences in Hilarion's apostrophe to Vladimir in the *Slovo o zakone i blagodati* (въстани, о честная главо, etc.), repeated i.a. at the end of the Volhynian Chronicle.

Vocatives as well as imperatives tend to occur in groups of two and three, although the single vocative брѣте and брѣтьѣ are frequent as well. Paired vocatives are usually arranged in groups of similar metric structure, with an equal number of stressed syllables in each unit of the pair, e.g. 9

'...': брѣтьѣ и дружѣно,
'...': сѣнове Рѹсьсти

(n.b. the identical no. of syllables in each half of the pair); in verse 30 the metrical parallelism is complete:

'...': Ѡ соловѣи,
'...': лѣтъня птѣца

A vocative pair consisting of two substantives (or of a single substantive repeated) is balanced by a second pair consisting of adjective + substantive, e.g. verse 9 cited above, verse 121, where the single брѣтьѣ is followed by

'...': бояре и воеводы
'...': и дѣти боярьскыѣ

and the formulaic onset of verse 107,

'...': Москвѣ, Москвѣ,
'...': бѣстрая рѣкѣ!

(cf., with different metrical pattern, 95 Дбне, Дбне, бѣстрая рѣкѣ!). A variation occurs in verse 176, where the first vocative pair is balanced by two adjective + noun pairs: Брѣтьѣ, бояре, князи молодѣи, и дѣти боярьскыѣ!. Such sets of noun + noun + adjective + noun are one of the favorite devices of the *Zadonščina*'s presumed author, Sofonija Rjazanec: cf., for example, б***князѣ и бояры и удалыѣ лбди***; 29*** ни соколу, ни ястребу, ни бѣлу крѣ-чету*** (similarly 52, 68); 93***княгѣнѣ, и болярѣнѣ и воеводини женѣ***.

Oblique-case noun parallels are frequent both with near synonyms and with antonyms. As examples of the former, one may cite verses 6 *** тúгою земля и печалью покрѣшася *** (cf. 143 *** встона́ земля Татарская, бѣдами и тúгою покрѣшася ***), 15 *** всхваляя пѣсньми и гúсльными Бояни словесы ***, 126 И помоляся Бóгу и Пречистѣ егò Мáтери и всѣм святѣм ***, etc., whereas antonymic parallels appear in 83 Луче бы нам потя́тым па́сти, нежели полонены́м бѣти ***, 26 *** ста́рым повѣсть, а молоды́м я́мь, etc. The antithesis of 'old' vs. 'new' appears in a more complicated form in verses 86 and 123, where the lexical morpheme *molod-* appears not only as a dative noun in the second half of the parallel, but is also incorporated into a verb in the first half thereof:

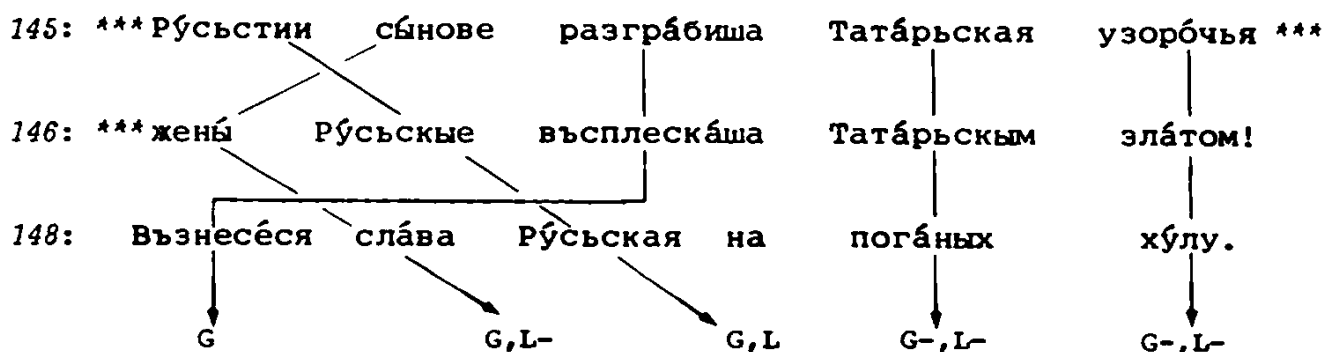
86: *** ста́ру помолоди́тися,
 а молодóму плéчь свойх попытáти.
 L -L,G G

123: *** ста́ру помолоди́тися,
 а мблodu чьстѣ́ добѣти
 L -L,G G

Antithetical parallels are particularly frequent between the Russians and the Tatars, as is only to be expected in such a work, e.g. 74

Кли́кнуло дѣво в Рúсьскои землѣ,
 велѣть послушати грозны́м земля́м
 -L L

The Russian-Tatar antithesis comes to a climax in verses 139-148: 139 Трúпы Татарскими поля насѣяше *** 142 *** в Рúсь нам уже рáтью не хáживати, а вѣхода нам у Рúсьских князе́и не пра́шивати! 143 *** встона́ земля татарская *** (уныша) князе́м похвалá на Рúсьскую зéмку ходи́ти and finally, in a strikingly similar set of three aorist phrases,



The lexico-grammatical parallels in the *Zadonščina* are sometimes expanded to the size of entire catalogues, e.g. the paired nouns cataloguing the booty carried off by the Russian princes after their final victory over the troops of Мамаѣ: 145 *** доспѣхы и конѣ, волы и верблуды, и вино и сахарь, *** Камкы и насычи ***. A similar catalogue occurs in the description of the rigorous training of the Russian warriors in verse 31: *** на щитѣ рожени, крещени в ратном времени, под трубами повити, под шеломы възлелѣяни, конець копья въскормлени, с вострого меча поени ***. An equally extensive list, this time of animals and birds and the sounds they utter, is given in verse 50: вброни часто грають, галицѣ ... говорятъ, орли въсклѣкчють, волци ... вбють, и лисицѣ ... брешють. If this framework is expanded to include all the noises and motions of fauna in verses 45-52, one can see how skillfully Sofonija creates an uneasy, fearful symphony of sound and movement, expressing Nature's own anxiety and alarm before the battle:

- 45: притекоша сѣри волци ... ставше вбють
 47: гуси възгоготаша и лебеди крилы въсплескаша
 48: ни гуси възгоготаша ни лебеди крилы въсплескаша
 49: птыцы ... лѣтають
 50: Вброни ... грають, галицѣ ... говорятъ, орли
 въсклѣкчють, волци ... вбють, лисицѣ ... брешють
 52: соколы и ястреби и ... крѣчети рвахуся от ...
 колбдицѣ ... възлетѣша ... възгремѣша.

Note that with almost no exceptions, the verbs in these verses express either sound or motion: 44 въскрипели, идутъ; 45 притекоша, ставше, вбють, хотять наступати; 46 приидоша, хотять проити; 47-48 възгоготаша bis, въсплескаша bis, пришел, привел; 49 пасучеся, лѣтають; 50 грають, говорятъ, въсклѣкчють, вбють, брешють; 52 рвахуся, възлетѣша,

възгремѣша; the visual and aural imagery is welded into a coherent whole by the frequent occurrence of the prefix morpheme *въз-/въс-*, which underscores the parallelism of rising sound and upward motion.

Sofonija's predilection for sound imagery is combined with another favorite word type, the place- or proper name, in a four-unit catalogue in verse 19,

КОНІ ржѹть на Москвѣ,
Трубы трубятъ на Колѣмнѣ,
бѹбни бѹбятъ в Серпѹховѣ
звеніть слава по всеи землѣ Рѹсской.

the units of which are related not only by their lexical parallels and identical syntactic structure, but also by phonological repetitions in the stressed vowels of subject and verb: /í/ - /ú/ - /í/ - /ú/ - /ú/ - /ú/ - /í/. Place and proper names play an important role in another extended catalogue in verse 63, listing the armor borne by the Russian warriors: золочѣныя доспѣхы, шеломы Черкасскыя, щиты Москвѣскыя, сѹлицы Нѣмецкыя, кончары Фрязскыя, мечи булатныя, as well as in more simple lists such as the place names of verse 75 Шибла слава (за Волгу), по морю к Желѣзнымъ вратѣмъ и к Орнѣчи, к Рѣму и к Кафѣ и к Торнѣву и оттолѣ к Царѹ граду or the names of the Russian dead in verse 80 and 173. Toponyms occur not only in catalogues, but also in paired sets, in which the river Don figures with particular frequency; the Don is associated with the Moskva by the paired vocatives discussed above, with the Dnepr in prepositional pairs (42*** на устьѣ Дону и Днѣпра, similarly 45; 176*** межъ Дѣномъ и Днѣпромъ) and with the Kulikovo field in the phonically reinforced (/l'íkov/ - /l'íkov/) verse 80 на поли Куликѣвѣ, у Дѣну великого, while the latter is linked with the brook Neprjadva in 71 на поли Куликѣвѣ, на рѣчцѣ Непрядвѣ (*idem* 110, 176). Pairs are even more frequent with proper names, not only the ubiquitous Dmitrij and Volodimer (*Title*, 1, 8, 11, 17, 24, 167, and many others), but also Boris and Gleb (54), Shem and Japhet (жрѣбни Афетѣв 3, жрѣбни Сѣмов 4), God and the Virgin (16, 53, 126), Peresvet and Osljabja (81-89), even to the lamenting women (Марья да *** Оксинья, 100) and the day of the year (на Акѣма и Аннинъ день 105). Is it only a chance occurrence that such striking emphasis on paired forms is found in a work which, according to the ingenious hypothesis of R. Jakobson,⁴ itself formed the second half of a physical pair, namely a diptych version of the *Slovo* and the *Zadon-*

ščina? However, this is mere speculation; let us return to the parallels within the *Zadonščina* itself.

The *Zadonščina* contains two types of prepositional-phrase parallel. In the first, presumably borrowed from folk poetry, the preposition itself is repeated, e.g. 5 на рѣцѣ на Кайле, 25 на рѣцѣ на Мечѣ, 11 о похвальныхъ сихъ о нынѣшнихъ повѣстехъ, 13 в городѣ в Киевѣ. The phrase за зѣмлю Рѹсьскую и за вѣру христьяньскую (15, 26, 152), which itself consists of a coordinated pair за + Noun + Adj., repeats the first за to read (6, 37, 65, 89, 177)

'---'--: за зѣмлю за Рѹсьскую (и)

-'--'--: за вѣру христьяньскую

which, excepting only the conjunction, has halves of identical length. The second type of prepositional pair is antithetical, with opposed prepositions ОТ-ДО, С-В, etc. emphasizing the spatial and temporal tensions so characteristic of the *Zadonščina*: 6 от Калѣцкыя рѣти до Мамѣева побѣща (*idem* 15), 159 от вѣстока и до запада, 79 из ѹтра до полѹдне, 18 с землѣ залѣсьскыя в поле Половѣцкое (in the last example the parallel is strengthened by the initial ze- ... za-, pol- ... pol- and the off-rhyme -lēs'skye = -veskoe).

After this survey of the various types of lexico-grammatical parallelism in the *Zadonščina*, we need only adduce a sufficient number of examples to demonstrate that this parallelism is no chance affair, but rather an essential — we would say *the* essential — stylistic feature of this work. In verse 64, for example, Дорѹги им вѣдомы, а перевѣзи ѹм изготовлѣни the grammatical categories are practically identical (except for the present—past opposition in the participles), the subjects are closely associated lexically, and the pronouns are identical. A similar instance occurs in verse 154 Трубы ѹх не трѹбять, унѣша гласи ѹх, while in 71, excepting the adjective, the lexical and grammatical parallelism is complete:

костымя Татарьскыи поля насѣяна,
крѹвью земля поляна.

Such parallels can be included into the middle of a sentence, as in verse 143, describing the Tatars after the battle,

унѣша бо | царем ѹх хотѣние | на Рѹсьскую зѣмлю ходѣти
и князѣм похвала |

It is an easy matter to cite other examples, of which the following few may suffice:

141 (Татарове) побѣгоша***,
скрѣгчюче зубы своими,
деручѣ лица своя

116 погáни
поля нáша наступáють, а***
дружину у нас стирають.

70 Удáриша ко́пьи харалужными о dospѣхы Татарьские
възгремѣли мечи булатнии о шело́мъ Хынóвьские.

In verse 126, the parallelism is less obvious at first: и прослезйся гóрько и утер слѣзы seems to show only the derivational relation слеза > прослезитися. From another point of view, however, the symmetry is more nearly complete: *proslezitisja* is a verb formed on the base *slez-* with the formants *pro-*, *-sja*, while *utereti slezy* is a verb phrase formed on the base *slez-* with the elements *u-*, *ter/tir*. The semantic change involved in the derivation *sleza* > *utereti slezy* is no greater than that in *sleza* > *proslezitisja*. Rather than insist on this example at too great length, however, we shall examine some more complicated cases of lexico-grammatical parallelism.

In verse 77,

Тогда́ бо сѣльные тучѣ съступѣшася.
(а из нѣх) сѣяли сѣние молнѣи,
гробми гремѣли велѣици.

one notes not only the lexical parallels тучѣ — молнѣи — громи and the paronomastic linkage both within and among units (*si-* ... *sъs-* ... *sja* ... *si* ... *si*, *grom-* ... *grem-*), but also the artful rearrangement of word order, with adjective, noun and verb appearing as ANV (normal order), VAN (reversed order of subject and predicate, but normal order within subject), and NVA (with the adjective emphasized by separation from its noun head and relocation after the verb). Furthermore, the verse comes close to following a regular dactylic pattern:

' - - ' - - ' - -
- ' - ' - - ' -
' - - ' - - ' -

A different type of variation occurs in verse 108,

*** Мбжешн ли *** веслы Днѣпр запрудѣти,
а Дбн шеломы вѣчерпати,
а Мечб рѣку трѣпы Татарьскыми запрудѣти?

where the first two units are exactly parallel in grammar and lexicon, but vary in word order; the third unit repeats the word order of the second (object-instrument-infinitive), but adds modifiers to both object and instrument, effectively doubling the number of syllables to provide the balance $(1 + 2) + (3)$ discussed above on the basis of noun adjective sets (князѣ и бояры и удалые люди б, etc.). Word order plays a less, and stress distribution a more important role in the quadruple parallel of verse 42,

- ' - ' - - ' -: възвѣѣша сѣльнии вѣтри ***
- - - ' - ' - - ' -: прилелѣѣша тѣчу велѣку ***
' - - - - ' - - - ' -: вѣступиша кровѣвѣ збрѣ, ***
- ' - ' - - ' -: трепѣщють сѣние мблньи.

The same types of parallel structure which obtain within phrases and verses are used to bind together different verses into larger coordinated sets.⁵ On the sound level, for example, the same reversal of enclitic order (*da ne - ni da*) which is one of the phonological parallels between the halves of a pair in verse 125

*** да не постыжѣся въ вѣкы.
 X
 ↙ ↘
ни да посмѣють ми сѣ вразѣ мой

joins together the separate verses 66 and 67,

66 Пѣшють бо сѣ (ѣкы жѣвы) хорюгбѣ.
 X
67 Ищють собѣ чѣсти и слѣвного имени.

in an even more artful manner, since the reversal of order *бо сѣ - собѣ* leaves the palatalization feature in the same place, i.e.

/bo/ /s'a/
/so b'ě/

On the lexical and syntactic levels one may note, for example, that in verses

94-96 and again in 97-99 one woman laments her dead husband (Mikula's wife Mar'ja and Timofej's wife Fedos'ja respectively), whereas the third lament, verses 100-102, is that of two women together (Ondrej's wife Mar'ja and Mixail's wife Oksin'ja). After a brief return to the battle scene in verses 103-104, a new lament occurs in 106-109, this time that of all the wives of Kolomna. Both the first set of three laments, ([Mar'ja] + [Fedos'ja]) + (Mar'ja + Oksin'ja) — n.b. that this first set repeats the (1 + 2) + (3), with (3) = (1 + 2) pattern mentioned above — and the second, longer lament (all the Kolomna women) are introduced by negative parallels (Въспѣли бѣше птицѣ жалостныя пѣсни *** in 92, *** шброве рѣно въспѣли жалостныя пѣсни in 105-106), and thus grouped into a larger coordinate pair.

The coordinate structure of different verses is particularly apparent at the beginning of the *Zadonščina*, for example in the first antithesis between Russians and Tatars:

3	Пбидем *** в полунбчную страну, жрѣбии Афѣтов, сѣна Нбева, от негб же родѣся Русь преслѣвная	4	Възбѣдем *** на въстбчную страну, жрѣбии Сѣмов, сѣна Нбева, от негб же родѣшася Хѣнове погѣнни ***
---	--	---	--

in which the parallelism at times reaches the point of identity, and is reinforced by the paronomastic opposition of prefixes (Пбидем — полуночную : Въз-бѣдем — въсточную).

A similar prefix opposition is reinforced by lexical antithesis in verses 7-8,

7 Прѣже въсписѣх жалость землѣ Русьскыя ***
 8 Потбм же списѣх жалость и Похвалу ***

and the въз-/съ- opposition, one of the organizing devices within verse 9 (cf. pp. 238-39 above), also recalls verse 4 (Възбѣдем ***), thus opposing the verse groups 4-8 (4 Възбѣдем на горы Кѣевьскыя *** — 8 Потбм же списѣх жалость ***), in which Sofonija looks back both in the historical sense (to the unfortunate events of 1185 and 1224) and in the creative sense (to his having copied the *Slovo o polku Igoreve* "from books"), to verses 9-13, in which he announces his intention of refuting the pessimism of the Igor' Tale and of bringing joy back to

the Russian land (9*** Снидем*** възвеселим Рѹсьскую зѣмлю) and describes the artistic methods he considers appropriate, namely an imitation of the style of Bojan: unlike the author of the Igor' Tale, who rejects the "zamyšlenie" of Bojan, Sofonija rejects the imaginary lands (13 Не пора́жмся мѣсльными землями) but praises Bojan (13 похва́лим вѣщего Бояна) and announces directly his intention of imitating the Kievan bard (15 Яз же помяну́, Софѳония Рязанец, въсхваля́я пѣсньми и гѹсльными Бояни словесѣ). In verse 4, Възведем is a signal of retrospective sadness, whereas the Снидем of verse 9 announces the end of sadness and looks forward to the joy of victory. Verses 4-13 thus serve as an introduction to the *Zadonščina* as a whole: the opposition of sadness (4-8) to subsequent joy (9-13), like the introduction at the beginning of a musical composition of themes to be more fully developed later on, subsumes in an artistic hint the dual parallelism of external reality which motivates and permeates the entire *Zadonščina*, namely that of the two halves (defeat and subsequent victory) of the battle on the Kulikovo field, on the one hand, and that of the two historic battles of 1185 (disaster) and 1380 (subsequent victory) on the other.

The functions of oppositional pairs are many in the *Zadonščina*, and we have been able to inspect only a sampling thereof in this brief article. It is hoped, however, that even the relatively meager choice of examples offered in the foregoing pages has been sufficient to demonstrate that such oppositional pairs, on the phonological, morphological, word, syntagmatic and verse levels, represent the organizing principle which takes the *Zadonščina* from the realm of ordinary description and transports it into the realm of poetry. We shall end this short study by expressing the wish that the *Zadonščina* no longer be treated as a poor stepchild, as a pale and confused reflection of the *Slovo*, but rather that it be studied in its own right, as the fascinating and highly developed artistic work it is⁶.

FOOTNOTES

- ¹ A survey of the relevant literature on the *Zadonščina*, *Slovo*, and *Skazanie o Mamaevom poboišče*, as well as of all manuscripts of or containing excerpts from the *Zadonščina*, will be found in R. Jakobson and D. S. Worth, eds., *Sofonija's Tale of the Russian-Tatar Battle on the Kulikovo Field*, The Hague, 1963, pp. 7-11. All quotations from the *Zadonščina* refer to the reconstructed archetype therein, pp. 28-39. In cases of conflicting evidence regarding the place of the stress, the more archaic Undol'skij Ms. variant has been chosen; cf. *ibid.*, p. 15. For technical reasons it has not always been possible to distinguish between stressed and unstressed $\bar{\text{b}}$.
- ² G = grammatical parallelism, G- = partial grammatical parallelism; L and L- = complete and partial lexical parallelism and -L = antithetical lexical parallelism, i.e. antonymy. These symbols will be used only in the first portion of this paper, since the types of parallelism involved will soon become self-evident from the examples cited.
- ³ This passage occurs within the final dozen lines (168-180), which may not have been part of the archetype; see *Sofonija's Tale ...*, p. 16.
- ⁴ Most recently and fully developed in *Sofonija's Tale ...*, p. 16ff.
- ⁵ It should of course not be forgotten that the division into verses is to some extent artificial; in any case, the units involved are larger than those discussed within verses.
- ⁶ This wish only echoes that of D. S. Lixačev, *Literaturnaja učeba*, 1941 (3) and R. Jakobson (orally, at 5th Intern. Congress of Slavists, Sofia, 1963).

WAS THERE A "LITERARY LANGUAGE" IN KIEVAN RUS'?

Few problems of Russian philology have been debated so long and so passionately, and have resulted in so few conclusions, as that of the origins of the Russian literary language. In one or another of its aspects (usually in the evaluation of the Church Slavonic and native East Slavic components of the literary vocabulary), this problem attracted the attention of Ludolf in the seventeenth century,¹ of Lomonosov in the eighteenth,² of Shishkov, Dobrovsky, K. S. Aksakov, Bulich, Sreznevsky, and others in the nineteenth,³ and of such scholars as Shakhmatov, Obnorsky, Vinogradov, Unbegaun, and Issatschenko (to name but a few) in our own time.⁴ In the space available here we cannot begin to give an adequate survey of the convoluted history of this question;⁵ we can only recapitulate the main lines of controversy and try to identify certain methodological weaknesses which have too often flawed discussions of the history of the Russian literary language.

The principal controversy over the Kievan origins of literary Russian is well-known and attached to the names of Shakhmatov and Obnorsky. The so-called Shakhmatov view draws heavily, as Shevelov has shown, on the earlier opinions of Aksakov,⁶ and has been upheld and refined by Unbegaun and Shevelov among others. This view holds that the first Russian literary language was Church Slavonic, which was imported with Christianity in the late tenth century and then gradually penetrated by native East Slavic elements until, in the eighteenth century, there was achieved that final amalgamation we call modern literary Russian. The Obnorsky school is a mirror image of the Shakhmatov: the first Russian literary language, this view contends, existed prior to Christianization and consisted entirely of autochthonous East Slavic elements; this native East Slavic literary language was then subjected to increasing Church Slavonic influence until, again in the eighteenth century, this mixture gave rise to the modern literary language. A somewhat more sophisticated version of the Obnorsky position was expounded in 1953 by Iakubinsky,⁷ who believed he saw evidence for two independently-arisen

*An earlier version of this paper was presented at the November 1973 meeting of the Far Western Slavic Association.

literary-and-administrative languages, an imported Church Slavonic one in the Kievan south and a native East Slavic one in Novgorod. The Obnorsky view is repeated in works by Chernykh, Efimov, and others.⁸ A compromise position was adopted by Vinogradov, in whose opinion Kievan Rus' had a single literary language existing in two variants, one used for religious oratory and hagiography, the other serving more secular goals.⁹ More recent studies, e.g., by N. I. Tolstoy, G. Hüttl-Worth, R. I. Avanesov, I. S. Ulukhanov, etc.,¹⁰ have contributed to the study of Slavonisms in Russian but have not proposed overall views which differ in principle from those outlined above. An exception is the more radical stance of Issatschenko, who denies altogether the continuity of the historical evolution of literary Russian before the eighteenth century and emphasizes the Gallicized conversation of the gentry as the source of the modern literary language.¹¹

If the Shakhmatov view was superficially rectilinear, that of the Obnorsky school bordered on the ludicrous, since it stretched the meaning of the term "literary language" to cover not only the *Igor' Tale* and *Supplication of Daniil the Exile* but also the *Pouchenie* of Vladimir Monomakh and even the patently non-literary *Russkaia Pravda*, whose formulaic terseness obviously derives from orally codified legal norms having nothing to do with "literature."¹² Nonetheless, this wildly exaggerated Obnorsky view had, albeit involuntarily, a salutary effect on subsequent scholarship. For the first time, the philological community was forced to confront the really basic issue: just what is meant by the term "literary language" in such varying chronological periods and social situations as pre-Tatar Kievan Rus', during the stagnating period of so-called "Second South Slavic influence" in the fifteenth century, during the linguistic chaos of the Petrine epoch, or in a modern multi-national state? Where are the borders between literature and other forms of *pis'mennost'*? Was there a spoken supradialectal *koinē* in Kievan Rus'? Can and should one distinguish genetic from functional Slavonisms, borrowed Slavonisms from their later imitations, etc.?

Recent scholarship has grappled with these and similar questions, often in an original and enlightening way.¹³ One must still regret, however, the frequent repetition of hackneyed views¹⁴ and the continued appearance of articles whose purpose seems as much polemical as scientific.¹⁵ Furthermore, many if not most investigations of the history of literary Russian suffer from a simplistic binarism, a tendency to deal in polarized absolutes only tenuously connected with the objective testimony of the texts. The basic and continuing dichotomy of "Church Sla-

vonian" versus "Russian" too often forgets that Church Slavonic itself was a highly complex mixture before it ever reached Kievan Russia (containing East Bulgarian, Macedonian, Moravian, and some Bohemian and Polish elements) and this Church Slavonic may well have reached the ancient Russians in more than one variant, for example, a glagolitic Macedonian version in Novgorod and a Cyrillic Bulgarian version in Kiev. Once in East Slavic territory, Church Slavonic evolved throughout the centuries, acquiring first some native Russian features and later, in the period of archaization known as the "Second South Slavic influence" in the fifteenth century,¹⁶ being subjected to a renewed South Slavonicization, the Bulgarian and Serbian components of which have yet to be sorted out. The autochthonous Old Russian language itself evolved and not without influence from Church Slavonic. The intermingling of Church Slavonic and Old Russian elements in such mixed genres as the chronicles is well-known,¹⁷ but Church Slavonic penetrated deep into the spoken language as well; even today, Russian dialects contain large numbers of unmistakable Slavonisms, many of them unknown to the literary language.¹⁸ And indeed, the very concept of Church Slavonic as foreign to ancient Rus', as an alien import which must have been opposed to the native East Slavic, overlooks the fact that Old Church Slavonic in the East (and its continuations in the several national Church Slavonics), as Latin in the West, was a truly international language, as the community of educated and religious men was itself an international community; the attitude of *svoe i chuzhoe*, so typical of nation-states from the early Renaissance to our own day, was totally foreign to the high Middle Ages.¹⁹

An artificially dichotomous view often informs discussions of written and spoken Russian, which are at times equated with "literary" and "non-literary," overlooking the available evidence which points to an early intermingling of spoken and written forms. Ulukhanov mentions a sentence from the Primary Chronicle, "i reche emu Volga ...: progreb mia, idi zhe iamozhe khocheshi," but can we really believe that in Kievan times conversational Russian (even that of princesses) made use of past active participles?²⁰ And even the major dichotomy itself, that of literary versus non-literary, must be suspect to anyone who has read widely in Old Russian sources. Within one and the same genre, language can vary widely in the complexity of its syntax and vocabulary. For example, the ornate cadences of Hilarion's *Slovo o zakone i blagodati* have but little in common with the laconic *Pouchenie* of the northerner Luka Zhidiata, while the Old Russian charters (*gramoty*), which are sometimes treated as examples par excellence of native

East Slavic, in fact show a wide range of Russian *and* Church Slavonic elements, according to the circumstances (normal treaties, deathbed testaments, etc.) in which they were written. Or, to take an example from a later period, one might compare the neoslavonic weaving of words (*pletenie sloves*) of Ivan IV's official correspondence with Kurbsky — assuming it to be original — to the blunt, simple reproaches Ivan wrote to his hapless subordinate Vasilii Griaznoi. Even the chronicles, often adduced as examples of the Old Russian literary language, vary not only from north to south (less and more ornate, respectively) and from genre to genre (simple recounting of annual events as opposed to well-constructed literary tales such as that of the blinding of Vasilii of Terebovl'), but also from topic to topic within a single genre (as in the three parts of the *Pouchenie* of Vladimir Monomakh), and sometimes even from word to word, the choice of Slavonic or East Slavic forms (*strana / storona*, etc.) occasionally prompted by nothing more profound than the fact that the scribe, approaching the edge of his parchment or the bottom of his page, needed a greater or lesser number of syllables in order to "justify his margins."²¹ In much the same way, centuries later, Lomonosov chose Slavonic or Russian forms to suit the needs of his metrics and rhyme, for the most part ignoring his own theories about the distribution of such forms among the famous "three styles." All in all, then, it is clear that little can be expected of oversimplified binary accounts of the history of the Russian literary language.

The answer to the question which serves as the title of this paper clearly depends on our definition of "literary language." One of the few clear and convincing definitions of this much-abused term was given by Issatschenko in 1958: (1) a literary language is polyvalent, that is, accessible to all members of the given society and serving their various communicatory needs; (2) it is normalized in its orthoepy, orthography, grammar, and lexicon; (3) its use is obligatory for all members of the given society; and (4) a literary language is stylistically differentiated.²² These four attributes, however, are really but four aspects of a single state, a state which we can characterize by saying that a literary language has a *neutral core*, a codified system whose internal coherence serves as the point of departure for characterizing all deviant styles. Indeed, if we say that Sholokhov uses dialectisms, that Sakharov writes in the nominalized, complex syntax of scientific Russian, that Maiakovsky's vocabulary is replete with punning nonexistent forms, that student jargon is expressively elliptic, etc., what are we

saying but that these several types of Russian *differ* from a standard, a neutral form of speech which — hard put as we might well be to define it precisely — serves as the normalized base for most of the communication occurring in twentieth-century Russian society. To put it another way, a literary language is *monocentric*: it has but one norm, and all its stylistic richness and polyvalent functions are viewed, so to speak, from the inside looking out, that is, as deviations from the neutral center. Note that we are now speaking not of a philological or linguistic but of a *sociolinguistic* phenomenon: modern society regards the stylistic variation of its language as just that, namely as *variation* from the standard, neutral norm.

Here we see an essential difference between the modern situation and that of ancient Russia. There is absolutely no evidence that would enable us to posit the existence of a neutral core in Kievan times. On the contrary, the available textual evidence and our informed guesses about other forms of language not preserved in early texts (e.g., *byliny*) lead to just the opposite conclusion: ancient Rus' had several kinds of normalized language (the degree of permissible variation differing from genre to genre). A few examples are sufficient to illustrate the point. The norms of the language of the law, orally codified in preliterate times and preserved in texts from 1282, were terse, formulaic, paratactic, and certainly not identical with the spoken language of the time. The norms of hagiographic texts or of sermons had conventionalized framing devices, wandering *topoi*, rhetorical exclamations and questions, and of course a heavily Slavonized vocabulary. And we can assume, without too much danger of error, that the Kievan folk epic had its own fixed norms, perhaps not identical with those of the *byliny* recorded only since the seventeenth century (syntactic parallelism, extensive use of diminutives, the dactylic clausula, etc.) but certainly of the same general type. In similar fashion, treaties, testaments, perhaps even private correspondence (if we can judge by the Novgorod birchbark letters) had their own linguistic conventions. These conventions were specific to each genre although some overlapping was of course possible, but they were in no sense considered departures from some neutral core unspecified as to genre. The most telling evidence for our viewpoint is provided by the chronicles, whose wide variety of genre and language styles is universally described as a *mixture* of those several norms which, in unalloyed form, were to be found in legal documents, in sermons or hagiography, in the folk epic or fairy tale, etc. To my knowledge, it has never occurred to a scholar to treat

the language of the Old Russian chronicles as an example of a "standard language," as a neutral norm, and to consider the language of legal texts or church oratory as departures from such a norm.

The conclusion to which these considerations bring us is unambiguous: unlike the present, the sociolinguistic situation of Kievan Rus' was *polycentric*: there were several types of language, each bound to a specific social function, and each with its own set of phonetic, morphological, syntactic, and lexical norms. To some extent, differences among these norms corresponded to differences in the origins of the formal devices themselves (East Slavic pleophonic *gorod*-type words versus Church Slavonic *grad* forms; Slavic parataxis versus borrowed Greek hypotaxis), and there was of course a good deal of overlapping (the language of *gramoty* resembling that of legal texts, the sermons containing many elements also found in patristic literature, etc.).²³ Since we have defined a literary language as monocentric, as consisting of a neutral core and genre-bound deviations from that core, and since on the other hand, as we have just shown, the sociolinguistic situation in ancient Russia was polycnetric, we have no choice but to conclude that there was no literary language in Kievan Rus'. There was a language of literature, and a highly polished one at that (consider only Hilarion, Cyril of Turov, the unknown author of the Igor' Tale, the *Molenie* of Daniil Zatochnik, etc.), and there were other normed, refined, socially effective forms of speech and writing, but there was no standardized literary language per se. Only in the course of subsequent centuries, as the interrelations among genres shifted in accord with social and economic changes, was that originally empty space at the center of the polycentric Old Russian linguistic system gradually filled: the norms of the original genres weakened, forms and formulae from one genre gradually penetrated other genres (e.g., the gradual penetration of Church Slavonic spellings and grammatical endings into the language of the Russian law),²⁴ and new genres developed, unbound by tradition and free to take their linguistic material where they wished (e.g., diplomatic correspondence, translated newspapers, the drama). Through all this complicated and lengthy process there was created a larger and larger stock of forms which were specific to no genre but common to all. With this there was finally created that neutral core without which there can be no literary language — that is, no standard language, no *Hochsprache*. The history of any literary language is the history of its norms. The contemporary standard Russian literary language was created by the gradual shift from polycentric to monocentric normalization.

FOOTNOTES

- 1 H. W. Ludolf, *Grammatica Russica* (Oxford, 1696).
- 2 M. Lomonosov, *Predislovie o pol'ze knig tserkovnykh v rossiiskom iazyke* (St. Petersburg, 1758).
- 3 A. S. Shishkov, *Rassuzhdenie o krasnorechii Sviashchennogo Pisanii i o tom, v chem sostoit bogatstvo, obilie, krasota i sila Rossiiskogo iazyka* (St. Petersburg, 1811); J. Dobrovsky, "Vorrede. Literatur der russischen Sprachlehren," in A. J. Puchmayer, *Lehrgebäude der Russischen Sprache* (Prague, 1820), pp. ix-xli; K. S. Aksakov, *Lomonosov v istorii russkoi literatury i russkogo iazyka* (St. Petersburg, 1846); S. Bulich, *Tserkovnoslavianskiie elementy v sovremennom literaturnom i narodnom russkom iazyke*, Part 1 (*Zapiski istoriko-filologicheskogo fakul'teta Imperatorskogo S.-Peterburgskogo universiteta* 32) (St. Petersburg, 1893); I. I. Sreznevsky, *Mysli ob istorii russkogo iazyka i drugikh slavianskikh narechii* (St. Petersburg, 1849).
- 4 A. A. Shakhmatov, *Ocherk sovremennogo russkogo iazyka*, ed. S. P. Obnorsky (Leningrad, 1925); S. P. Obnorsky, "Russkaia Pravda kak pamiatnik russkogo literaturnogo iazyka," *Izvestiia AN SSSR, Otdelenie obshchestvennykh nauk*, 1934, no. 10, pp. 749-76; V. V. Vinogradov, *Osnovnye problemy izucheniia obrazovaniia i razvitiia drevnerusskogo literaturnogo iazyka* (Moscow, 1958); B. O. Unbegaun, "Le russe littéraire, est-il d'origine russe?" *Revue des études slaves* 44 (1965): 19-28; A. V. Isachenko, "K voprosu o periodizatsii istorii russkogo iazyka," *Voprosy teorii i istorii iazyka. Sbornik v chest' professora B. A. Larina* (Leningrad, 1963), pp. 149-58. A more complete survey of the literature can be found in the works cited in the following note.
- 5 The best survey of pre-twentieth-century works is found in Bulich, *Tserkovnoslavianskiie elementy*.... A judicious outline of later developments is given by G. Y. Shevelov, "Die kirchenslavischen Elemente in der russischen Literatursprache und die Rolle A. Shakhmatovs bei ihrer Erforschung," in A. Shakhmatov and G. Y. Shevelov, *Die kirchenslavischen Elemente in der modernen russischen Literatursprache* (Wiesbaden, 1960), pp. 43-107. A good English recapitulation of twentieth-century views, with emphasis on fifteenth-century events, is provided by Henrik Birnbaum, "On the significance of the second South Slavic influence for the evolution of the Russian literary language," *International Journal of Slavic Linguistics and Poetics* 21 (1975), pp. 23-50.
- 6 Shevelov, "Die kirchenslavischen Elemente," pp. 49-52.
- 7 L. P. Iakubinsky, *Istoriia drevnerusskogo iazyka* (Moscow, 1953).
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16 On this period see most recently Henrik Birnbaum, "On the significance of the second South Slavic influence...."

17 See, e.g., G. Hüttl-Worth, "Spornye problemy izucheniia literaturnogo iazyka v drevnerusskii period," *Wiener Slavistisches Jahrbuch* 18 (1973): 29-47.

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21 T. N. Kandaurova, "Sluchai orfograficheskoi obuslovlennosti slov s polnoglasiem v pamiatnikakh XI-XIV vv.," *Pamiatniki drevnerusskoi pis'mennosti. Iazyk i tekstologia* (Moscow, 1968), pp. 7-18.

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23 On the complex hierarchy and interrelations of genres see N. I. Tolstoy, "K voprosu o drevneslavianskom iazyke...."

24 D. S. Worth, "Slavonisms in the *Ulozhenie* of 1649," *Russian Linguistics* 1, (1974), pp. 225-49; —, "O iazyke russkogo prava," *Voprosy iazykoznanii*, 1975, no. 2, pp. 68-75.

ON RUSSIAN LEGAL LANGUAGE

In the works of some scholars the history of literary Russian is presented as a nearly thousand-year-long contest between two opposed forces — the one an imported and alien Church Slavonic, the other autochthonous East Slavic. The many and varied theories of the rise and development of literary Russian can be traced back to V. E. Adodurov, M. V. Lomonosov, S. T. Aksakov et al. and are connected above all with A. A. Šaxmatov, S. P. Obnorskij, L. P. Jakubinskij, V. V. Vinogradov, B. O. Unbegaun, F. P. Filin, A. V. Issatschenko, and R. I. Avanesov. Individual problems have been discussed in the works of G. Hüttl-Worth, N. A. Meščerskij, M. A. Sokolova, E. T. Čerkasova, L. P. Žukovskaja, I. S. Ulaxanov and other investigators.¹ Unfortunately, the works of even the greatest specialists on the history of literary Russian occasionally suffer from oversimplification, a predilection for ready-made schemes, and an incomplete grasp of the complex and often contradictory factual material.

In his many publications in this field B. O. Unbegaun has defended the view that until the eighteenth century there existed two written languages, a Church Slavonic literary language on the one hand and a non-literary Russian on the other; the first was used in religious writing of all kinds and in belles-lettres, and the second in jurisprudence, administrative documents, diplomatic and personal correspondence, etc.² These two written languages remained hermetically sealed off from each other right up to the eighteenth century. According to this view, Church Slavonic elements began to penetrate the language of jurisprudence only in the reign of Peter the Great, when the barriers separating Church Slavonic from the chancery language began to disappear.³ Although noting such Church Slavonic words and expressions as *krestnoe celovanie*, *iskuplenie plennyx*, *naprasnstvo* and *nebreženie* in the *Uloženie* of 1649 and earlier codices, Unbegaun nonetheless maintains that "there are no Church Slavonisms in the *Russkaja Pravda*. There are none in the codices of 1497, 1555 (? — DSW) and 1589, just as there are none in the 1649 *Uloženie* ... This situation changed only in the eighteenth century, when the merger of the chancery and Church Slavonic lang-

uages was completed."⁴ This view denies any influence of Church Slavonic on the Russian legal language until the eighteenth century. The *Russkaja Pravda* of 1282 is equated with the codices of 1497, 1550 and 1589 (for some reason Unbegaun fails to mention the so-called *Svodnyj Sudebnik* of 1606-07), and the *Uloženie* of Aleksej Mixajlovič of 1649: they are equally free of Church Slavonic influence and show no developmental tendencies in this respect from the thirteenth century right up to the eighteenth. The facts are somewhat more complex.

It goes without saying that from the very beginning the Russian legal language was quite different from that of literary texts (we do not include juridical documents or the Novgorod birchbark letters among "literary" works). Indeed, one of the basic distinctions between the chancery and "literary" languages was the rarity of Church Slavonic elements in the former and their frequency in the latter. But this does not mean that the Russian legal language developed (or rather, according to Unbegaun, failed to develop) in complete isolation from Church Slavonic. It is a simple matter to show that legal Russian was affected by Church Slavonic from its very beginnings and that this Church Slavonic influence increased steadily from 1497 to 1649. Without claiming to present an exhaustive account of this matter, we should merely like to bring certain factual material to the reader's attention.

As far back as 1934 S. P. Obnorskiij claimed that the *Russkaja Pravda* was devoid of Church Slavonisms (or that these were later accretions). The inaccuracy of his views was demonstrated in 1941 by A. M. Seliščev, who adduced a whole series of obvious Slavonisms such as *razboj*, *razgrablenie*, *vražda*, the endings *-ago* (*bojar'skago tiuna*, *do tret'jago rěza*, etc.), *-oja* (*bez" vsjakoja svady*) et al.⁵ Seliščev's arguments are compelling. Less well known are certain facts from documents of the fifteenth to seventeenth centuries which will be discussed here.

In the 1497 codex, which according to Unbegaun contains "no Slavonisms," we find a whole series of them. This first major juridical document of the Muscovite state, preserved in a sixteenth-century copy,⁶ contains both orthographic Slavonisms (doubtless due to the so-called "Second South Slavic influence") such as *rat' tatarskaa* 56⁷, *ot cerkvi božia* 59, *kotoraa vdova* 59, *č'a zemlja oranaa* 61, *podvojskym pravago desjatka* 64, *pered velikym knjazem* 68 and such more traditional Church Slavonisms as *s osmago dnja* 28, *do Novagoroda do Velikago* 30, *po syna bo-jarskago* 45, *s spieka sudnago* 64, *Knjaz' velikij Ivan Vasil'evič vseja Rusi* Introduction (it is interesting to note that the next major codex, of 1550, has the more archaicized *vsea Rusi*), *ot pravvyja gramoty* 22, *ot bezsudnyja gramoty* 25,

otpusknyja gramoty ne dati 41, etc. The codex of 1497 also contains Slavonic *šč* from **tj* and **kti*: *ili kto star, ili nemoščen* 52, *xoščet na pole s poslucom' lezet* 48, *Ašče kto pošlet pristava* 45. The prefixal spelling *raz-*, noted by Seliščev in the *Russkaja Pravda* in the words *razboj, razbojnik*", *raznameniati, razgrablenie*, occurs in the 1497 codex only in *razboj* 7, 8, 38, 39 and *po tomu rasčetu* 4. Nonpleophonic forms are attested only from the root **perd*, namely in the adverbs and adjectives *prežnej, prežnij, prež* and the preposition *pred*, e.g. *a v inoj tatbe i prežnej dovoda na nego ne budet* 10, *v prežnem dele* 12, *v kakove dele v prežnem* 14, *prež tego neodinova kradyval* 13, *što pred nimi kupil* 46. The copyist clearly felt no difference between the pleophonic and nonpleophonic variants, as is clear from such an example as *postaviti pred namestnikom ili pred volostelem ili pered ix tiuny* 37⁸. The codex of 1497 preserves the traditional Slavonic formulae *po krestnomu celovaniju* 12, *bez naprazdn'stva* 55, and, alongside the older *poslux*, the innovations *svidetel', svidetel'skoj* 59. There is one instance of a preserved (or rather, restored) reflex of the second velar palatalization: *a ezd na verstu po denze* 44. The 1497 codex is, then, by no means devoid of Church Slavonic influence; on the contrary, it manifests restricted but nonetheless clear traces of that interaction of Russian and Slavonic elements inherited from Kievan times and evident in many genres of written Russian, including the language of the law.

The situation changes somewhat in the codex of 1550⁹, in which one finds fewer artificial Slavonic spellings without jototation, although they do occur occasionally, e.g. *Knjaz' Ivan Vasil'evič vsea Rusi* (Introduction). Some lexical Slavonisms are retained, e.g. *svjatitel', svjatitelskoj* 91, *i tot tovar pogubit bez naprasn'stva* 90. The word *razboj*, going back to the thirteenth-century *Russkaja Pravda*, is also found in the 1550 codex: *A dovedut na kogo razboj, ili dušegubstvo, ili jabledničestvo* 59. Like the 1497 codex, that of 1550 uses the form *prež, prežnij, pred*, but even more frequently: *I budet po obysku v kakove v prežnem dele priročnoj čelovek z dovodom* 57, *v prežnix delax* 58, *a v ynoj v prežnij tatby dovoda na nego ne budet* 55, *kogo v prežnix kupčix v posluser net* 85, *ta votčina prežnemu prodavcu bezdenežno* 85, *a gde dvorskogo net i prež sego ne byval* 62, *kotorye dela prež sego Sudebnika veršeny* 97, etc. The 1550 Codex contains a few Slavonic innovations, compared to that of 1497: the numeral *sed'moj* with a *d* and the nonpleophonic adjective *gradskoj*: *a ne priedut sami k otvetu ... posle sroka za sto verst v sed'moj den'* 75, *A gosudar'skomu ubojce, i*

gradskomu zdavcu ... života ne dati, kazniti ego smertnoju kazn'ju 61. Thus, in comparison to the codex of 1497, that of 1550 shows fewer orthographic Slavonisms (as if the first archaizing wave had already passed), but slightly more Slavonisms of other types (*sed'moj, gradskoj*). The 1550 codex shows the first few signs of that flowering of Slavonic elements that was to occur in the second half of the sixteenth century, especially in the codex of 1589.

The codex of 1589, although basically still an East Slavic document, shows an increasing Slavonic influence, alongside such autochthonous forms as *po rozžetu* 10, *v rozboe* 17, *poxočet* 19, *pered sud'ju* 29, *ne možno veršiti dela* 30, *k namesnič'im ljudem ili k volostelnym* 35, *po gorodckix i po volosnyx posylati pristava* 35, *z golovy* 83, etc. The 1589 codex was systematically Slavonized, often replacing (in comparison with the codex of 1550) *-ogo* by *-ago*, *rozboj* by *razboj*, *semej* by *sed'moj*, etc.¹⁰ A few examples:

CODEX OF 1550.

-ogo

ili delo zapišet ne po sudu, ... bez
bojarskogo, ili bez dvoreckogo ...
vedoma 4

i okolničemu poltina da za dospex
ubitogo tri rublja 11

-ie, -ej

i vo vsex gorodex Moskovskie zemli,
i Nougorodckie zemli 99

a zemli emu ostaviti v meru stolko,
skolko on svoej zemli promenil 85

roz-

da na puti u nego tot tovar uter-
jaetca bezxitrostno ... ili rozboj
vozmet 90

In the immediately preceding article, however, the *rozboj* of 1550 is preserved:

A ub'jut kotorogo krest'janina na
pole v rozboe ili v ynom v ktorom

CODEX OF 1589

-ago

ili spisok podpišet bez bojarskago
ili bez sud'ina vedoma 4

i okolničemu poltina da za dospex
ubitago tri rubli 15

-ija, -eja

i vo vsex gorodex Moskovskija zemli
i Naogordckija (sic) 202

a zemli emu ostavit' stolko, skolko
svoeja votčiny zemli promenil 167

raz-

da na puti u nego tot tovar uter-
jaetca bezxitrosno ... ili razboj
vozmet 181

A ubijut kotorago krestijanina na
pole v rozboe il v ynom lixom

v lixom dele 89

dele 180

(N.B. that in the 1589 codex *ь* is changed to *і* twice and the multiple prepositions are eliminated, i.e. the text is generally "corrected" on the Slavonic model.)

*semej**sed'moj*

a podpisati na ego spisok za sto
verst po sroce *semym* dnem 69

a podpisati na vinu, budet ne stanet
v *sed'moj* den' za sto verst 124

(N.B. that in another case the Slavonic form with *d* was already introduced in the 1550 codex.)

The most interesting changes in the Codex of 1589 are those concerning pleophonic and nonpleophonic forms. Although the 1550 codex does show a few nonpleophonic forms (*prežnij, gradskoj*), and although pleophony is by no means a rarity in the 1589 text, comparison of these two codices nonetheless shows a clear development from East Slavic pleophony toward Slavonic *trat*-type forms. Compare:

PLEOPHONY

NONPLEOPHONY

**gord*

A detej bojarskix suditi namesnikom
po vsem *gorodom* po ... gosudarevym
žalovalnym po ix vopčim gramotam 64

A detej bojarskix suditi namesnikom
po vsem *gradom* po carevym gramotam
po žaloval'nym 118

**serd*

A trgovym ljudem i posadckim ljudem
i vsem *serednim* bezčest'ja pjat'
rublev 26

A trgovym ljudem posadckim i vsem
srednim bezčestija pet' rublev 47

**perd*

i d'jaku iscevy i otvečikovy reči
veleti zapisati *pered* soboju 28

i bojarom veleti ego dati na krepkuju
poruku, xto emu budut *vpered* inye
iscy 55

i dijaku iscevy i otvetčikovy reči
veliti zapisyvati *pred* soboju 75

i sudijam dat' ego na krepkuju poruku,
xto emu budet *vpredb* iscy 107

i *vpered* kto tu kabalu obolživit,
i ta kabala veršiti po sudu 78

I *vpred'* xto kabalu obolživit,
i ta kabala veršit' po sudu 141

A *vpered* vsjakie dela suditi po semu Sudebniku 97

A torxannyx *vpered* ne davati nikomu 43

A kotoromu namesniku dan v kormlen'e gorod s volost'mi, ... a v kotoryx volostex *napered* sego starost ... ne bylo 68

A kotorye ljudi učnut iskati na namesnikex ili na *volostel'ax* i na ix ljudex po žalobnicam 22

kak te namesniki ili *volosteli*, eduči na žalovan'e 24

A namesnikom i *volostelem*, kotorye deržat kormlen'ja bez bojarskogo suda 66

ino *volostelju* ili posel'skomu imati na nem za boran dva altyna 87

A namesnikom, i *volostelem*, ... v gorodex i v volostjax neprodažnyx i domoroščenyx lošadej ne pjatnati 96

A vzyščet seleckoj na seleckom, a sudit ix že *volostel'* 100

A kogo namesniči ili *volosteliny* ljudi učnut davati ot kogo na poruki 70

A *vpred'* vsjakie dela suditi po semu Sudebniku 200

A tarxannyx gramot *vpred'* ne davati 92

A kotoromu namesniku dano v kormlenie gorod s volost'mi, a *preže* tego v tex volostjax, starost ne bylo 122

**vold*

A kotoroi ljudi učnut iskati na namesnikax, i na *vlasteljax*, i na inyx ljudex po žalobnicam 34

i kak namesniki ili *vlasteli*, eduči na žalovan'e 36

A kotoroj namesnik ili *vlastel'* bez bojarskogo suda ... 120

ino *vlastelju* na nem vzjat' za boran dva altyna 173

A namesnikom, i *vlastelem*, ... v gorodex i volostex neprodažnyx domoroščonyx konej ne pjatnat' 198

A vzyščet ego seleckoj na seleckom, ino ix suditi ix že *vlastelju* 204

A kogo namesničii ljudi ili *vlastelnye* stanut davat' na poruki 125

Pairs of the opposite type (nonpleophony in 1550 replaced by pleophony in 1589) were not encountered. Altogether, these facts testify to the increasing significance of Slavonic elements in the juridical language of the latter sixteenth century.

The growth of Slavonic in Russian legal language continues in the so-called *Svodnyj Sudebnik* of 1606-07, but in a somewhat different form. On the one hand, the 1606-07 text reproduces that of 1550 almost exactly, with no attempt, for example, to replace pleophonic by non-pleophonic forms. E.g.:

1550	1589	1606-07
A namesnikom, i vo- lostelem, ... v goro- dex i v volostjax ne- prodažnyx i domoro- ščenyx lošadej ne pjatnati 96	A namesnikom, i vlastelem, ... v go- rodex i volostex ne- prodažnyx domoro- ščonyx konej ne pjat- nat' 198	A namestnikam, i vo- lostelem, ... v goro- dex i v volostex ne prodažnyx i domoro- ščonyx losadej ne pjatniti [19] 95

In a few, rare cases the 1606-07 codex is even more "East Slavic" than that of 1550; e.g.:

1550	1606-07
a ne priedut sami k otvetu ... posle sroka za sto verst v <i>sedmój</i> den' 75	A ne priedut sami k otvetu ... posle sroku za sto verst v <i>semoj</i> den' [11] 75

On the other hand, the *Svodnyj Sudebnik*, for the first time, introduces or frequently uses certain Slavonic forms which henceforth (for example in the *Uloženie* of 1649) become usual. Such are:

1) nonpleophonic *črez*: *A xto votčinu svoju bes carja velikogo knjazja vedoma črez ses' ukaz komu prodast ...* [13] 125;

2) *vladyka* 'archbishop' [3] 104, [13] 121, [25] 162 et al., and its derivative *vladyčnyj* [24] 166, 168 et al.;

3) the toponym *Velikij Nov"gorod*" also occurs in the nonpleophonic variant *Velikij Nov"grad*": *A kotoroj čelovek zem'skoj Velikogo Novagrada, ili pskovitin ...* [5] 151 (along with *v Velikom Novegorode* [12] 148; it is interesting to note that less significant cities appear only in the East Slavic variant: *Vyšegoroda, Zvenigoroda, Nižnjago Novagoroda, Ivanja goroda* [6] 46);

4) *xram* 'church' appears in the heading of the twenty-first verse of the 1606-07 codex (*O rugax v monastyre, i k xramom, kotorye dany vmove*), although the text of this verse uses only *cerkov'*.

The most remarkable feature of the *Svodnyj Sudebnik* is that it contains, for the first time in the history of the Russian legal language, entire passages written in a clearly Slavonic register. These passages naturally deal with

affairs of the church. The first of them is [13] 164, which reproduces with minor omissions the Synodal Edict (*Sobornyj prigovor*) of 1580, which forbade further acquisition of land by monasteries. The opening sentence of 164 contains *vsea Rusii* (2x), a nonphonetic *o* in the preposition of *so otcem svojim*, *šč* from **tj* and a vocalized prefix and double *nn* in *osveščennym soborom*. The text itself is replete with Slavonisms, e.g.: *milostiju prečistyja i preblagoslovennyja vladyčica našeja bogorodica; sobraxomsja v preimenitom grade Moskve; s nim že sovokupišasja jarym obrazom Pol'ša; rospyxaxusja gordostiju, dnjaščesja, xotjaxu potrebiti pravoslavie; my ... pobolexom zelne; blagočestivyi car' naš ... so vsem svojim singlitom sotvori, jako dovleet ego car'skoj vlasti; mmogija že v zapustenie priidoša, jako že ubo po monastyrem sija zapustevoxu*, and so forth.

Second, [22] "O krestnom celovan'e," which likewise goes back to the edict of 1580, although not itself entirely in the Slavonic register, contains (often for the first time in the Russian legal language) a whole series of individual Slavonisms, for example *v sredu* 141, 145, *umreti* 141, *zaneže* 141, *vlast'* (in the abstract meaning) 142, *svešči* 142, *is xraminy* 143, *obščuju muku* 146, etc.

These two passages show two new types of Slavonic influence on the legal language. In the first, a Slavonic passage is inserted ready-made into the codex and becomes an integral part thereof; in the second, the text becomes saturated with individual Slavonisms, which are, however, used alongside a good many East Slavic forms (*sveča, polon, nuža*, etc.). Both types show that the growth of Slavonic influence was continuing into the seventeenth century.

This development is confirmed yet more eloquently by the Synodal Codex of Aleksej Mixajlovič in 1649. The Slavonisms of the 1649 codex have already been treated in detail,¹¹ so we shall restrict ourselves here to a few typical examples. The *Uloženie* contains some morphemes appearing only in their Slavonic non-pleophonic variants (*blažennyj, vražda, vremja*), but others which occur in both pleophonic and nonpleophonic shapes; in this case the choice of variant can be free (*sередниј – srednij, čerez – črez*), or stylistically conditioned, in which case the choice of Slavonic or native form can depend on the immediate context, or on the register of the entire passage (*zoloto – zlato, polonjanoj – plennyj, srebro – srebro, xoromina – xramina*), while in still other cases the choice is conditioned lexically or derivationally (*bran', branitisja* 'quarrel' – *boronitisja* 'defend oneself', *volost'* 'territory' – *vlast'* 'church dignitary', *poperek – prekoslovie, xoroniti* 'hide' – *bogom xranimyj*, etc.). The 1649 codex not only

contains many new Slavonisms, hitherto unknown in juridical Russian, but is also the first legal text to attempt to distribute Slavonisms and East Slavic forms according to lexico-derivational and stylistic criteria.

Much remains to be done in the study of Russian legal language. The precise filiation of juridical texts has yet to be established. The distinctions between northern and southern texts have yet to be drawn. The possibly differing "dialects" of the Moscow department offices (*prikazy*), from which articles were entered into the various codices, are yet to be examined. Preliminary data appear to indicate that the "Second South Slavic influence" affected legal texts primarily in the latter's orthography (such spellings as *-aa-*), but not in the shape of lexical morphemes, but this is only a preliminary impression. A complete and manysided description of the origins and development of the Russian legal language, from the *Russkaja Pravda* to the present, will become possible only when these and other preliminary tasks have been accomplished. Nonetheless, even the preliminary observations offered here appear sufficient to force us to reject as oversimplified the thesis of complete isolation of legal Russian from Church Slavonic. More reasonable is the view that juridical Russian and Slavonic were connected from the very beginning and have not ceased to interact until the present day. But most reasonable of all, perhaps, would be to repudiate preconceived binary schemas until such time as an adequate body of texts of various genres has been investigated.

FOOTNOTES

- ¹ A survey of opinions may be found in the numerous works of V. V. Vinogradov. See, for example: V. V. Vinogradov, "Osnovnye voprosy i zadači izučeniya istorii russkogo jazyka do XVII v.," *VJa*, 1969, No. 6; ———, "O novyx issledovanijax po istorii russkogo literaturnogo jazyka," *VJa*, 1969, No. 2. From the most recent literature we can cite F. P. Filin, "Ob istokax russkogo literaturnogo jazyka," *VJa*, 1974, No. 3. An understanding of the complexity of the Russian literary language's historical development in its multifarious genres can be found in N. I. Tolstoj, "K voprosu o drevneslavjanskom jazyke kak obščem literaturnom jazyke južnyx i vostočnyx slavjan," *VJa*, 1961, No. 1, and also in the works of B. A. Uspenskij and V. D. Levin (see, for example: *IV Meždunarodnyj s'ezd slavistov. Materialy diskussii*, 11, *Problemy slavjanskogo jazykoznanija*, M., 1962).
- ² From B. O. Unbegaun's works one can select: B. Unbegaun, "Razgovornyj i literaturnyj russkij jazyk," *Oxford Slavonic Papers*, 1, 1950; ———, "La formation des langues littéraires slaves: problèmes et état des questions," *Langue et littérature. Actes du VIII Congrès de la Fédération internationale des langues et littératures modernes*, Paris, 1961; ———, "L'héritage cyrillo-méthodien en Russie," *Cyrillo-Methodiana: Zur Frühgeschichte des Christentums bei den Slaven, 869-1963*, Köln-Graz, 1964; ———, "Proisxoždenie russkogo literaturnogo jazyka," *Novyj Žurnal*, 10, New York, 1970; ———, "The Russian literary language: a comparative view," *The Modern Language Review*, 68, 1973.
- ³ See: B. O. Unbegaun: "Russe et slavon dans la terminologie juridique," *RÉSl*, 34, 1957.
- ⁴ B. O. Unbegaun, "Jazyk russkogo prava," *Na temy russkie i obščie* (a collection in honor of Prof. N. S. Timašev), New York, 1965.
- ⁵ S. P. Obnorskij, "Russkaja Pravda kak pamjatnik russkogo literaturnogo jazyka," *Izvestija AN SSSR*, 7th series, 1934, 10; A. M. Seliščev, "O jazyke Russkoj Pravdy v svjazi s voprosom o drevnejšem tipe russkogo literaturnogo jazyka," [written in 1941], *VJa*, 1957, 4.
- ⁶ Cited in the edition: *Pamjatnik prava perioda obrazovanija russkogo centralizirovannogo gosudarstva XIV-XV vv.* (= *Pamjatniki russkogo prava*, edited by L. V. Čerepnin, 3), M., 1953.
- ⁷ The figures refer to separate articles in the Sudebnik.
- ⁸ On the history of this root see: I. S. Ulašanov, "Predlogi pred' –pered v russkom jazyke XI-XVII vv." in the collection *Issledovanija po istoričeskoj leksikologii drevnerusskogo jazyka*, M., 1964, pp. 125-160; ———, "Slavjanizmy i narodno-razgovornaja leksika v pamjatnikax drevnerusskogo jazyka XV-XVII vv. (Glagoly s prstavkami pere- i pred'-)", *Voprosy slovoobrazovanija i leksikologii drevnerusskogo jazyka*, M., 1974.
- ⁹ See: *Pamjatniki prava perioda ukreplenija russkogo centralizirovannogo gosudarstva XV-XVII vv.* (*Pamjatniki russkogo prava*, 4), M., 1956.
- ¹⁰ From this standpoint, the 1589 Sudebnik is closer to the 1497 than to that of 1550. It would have been desirable to determine the specific, successive relationship of the individual manuscripts of all the Sudebniki cited here.
- ¹¹ See: D. S. Worth, "Slavonisms in the Uloženie of 1649," *Russian Linguistics*, 1/3, 1974.

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