EXTRA-LINGUISTIC, NON-SEMOLOGICAL CONDITIONING OF CATEGORICAL ALTERNATION

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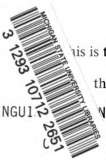

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ABSTRACT

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By

Earl Myron Herrick

This dissertation proposes that the present stratificational synchronic model of language, which can describe only categorical alternations conditioned through the semology or from within the form of a language, should be enlarged by adding a new portion which can describe categorical alternations conditioned by phenomena that are outside language and are not handled by the semology.

All alternations in a language are either categorical or probabilistic, and are conditioned from either inside or outside the language. (A categorical alternation can be represented by only one of its alternants in any given place in an utterance, the one which occurs depending on the environment of that place; a probabilistic alternation can be represented by any of its alternants in any place it occurs, but all of its alternants must occur in a certain proportion within the entire utterance.) Linguistic alternations that are probabilistic or extra-linguistically-conditioned or both, and which can be described by this new portion insofar as they are categorical, occur in: the differences among geographical, caste, social class, age, or sex dialects; differences among registers or degrees of formality; differences conditioned by speeds of utterance; differences occurring within situations of diglossia; other differences that signal a speaker's identification with a certain social group; and differences between spoken and written

utterances. Some of these kinds of differences have been referred to as styles.

After reviewing the attitudes of various linguists and linguistic schools toward categorical, extra-linguistically-conditioned alternations, this dissertation presents in detail the eclectic portion which, it proposes, should be added to the stratificational model of language to describe such alternations. The position of this portion within the linguistic model is first defined. The network for this portion, and the several patterns which compose it, are then described as they would appear in a statement of a person's linguistic competence, and as they would ideally perform during downward and upward transduction. Unusual features of this portion include a second interface between language and human experience, a separate eclectic tactics which checks on the eclectic self-consistency of an utterance, a sign pattern which must be reversed in its direction in order to perform properly during both downward and upward transduction, and certain other parts of the portion's network which do not perform equivalently during transduction in the two directions.

Examples of eclectic portions from four languages are then described. A complete analysis is made of the eclectic portion of Serbo-Croatian which handles its two alternative orthographies; some of the simplifications in this eclectic network are made possible by the several kinds of similarity that exist between the Roman and Cyrillic scripts. An eclectic portion for Yana is described, which analyzes its sex dialects to the extent possible from the published data. The way in which an eclectic portion may be used to compare geographical dialects is illustrated by a restatement of a structural comparison of the

phonologies of six Sicilian dialects. An eclectic portion for Javanese is described which can handle the parts of its system of linguistic etiquette that involve categorical alternations; other parts of that system will require probabilistic analysis.

Throughout the presentation of these four examples, remarks are made about how the networks of eclectic portions should operate during ideal performance, and about how such portions should therefore be analyzed. The dissertation mentions that, after a notational device for the stratificational description of probabilistic alternation has been developed, the eclectic portion may be used to help state the environments in which certain proportions among alternants are to occur. It also mentions certain problems with the eclectic portion which cannot be dealt with until the interfaces between linguistic form and human experience are better understood.

EXTRA-LINGUISTIC, NON-SEMOLOGICAL CONDITIONING OF CATEGORICAL ALTERNATION

By

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CHAPTER I. PRELIMINARIES.

A. Thesis of the dissertation.

This dissertation proposes that the stratificational model of language, which is now generally assumed to consist of a realization portion and a tactic portion, should be enlarged by adding to it a new portion, to be called the "eclectic portion". This eclectic portion of the linguistic model will be used to describe the conditions for all categorical alternations which occur within a language and which are not ultimately conditioned either by the semology or by the tactic portion of the language. Chapter II of this dissertation presents the general organization of the proposed eclectic portion, and an eclectic network which can be used to describe the conditioning of all such kinds of categorical alternation. Examples of such eclectic networks are given in Chapter III, and Chapter IV mentions some problems which will require future research, including changes to be made in the stratificational model of language so that it can also handle probabilistic alternation.

B. Phenomena to be Handled by this Linguistic Model.

Every alternation between two or more linguistic forms may be described in two ways: in terms of where the conditioning environment for the alternation is located within the model of its language, and in terms of how many alternative forms may occur under the same set of environmental conditions. According to the first distinction, a conditioning environment may be either intra-linguistic or extra-linguistic; accord-

ing to the second distinction, an alternation may be either categorical or probabilistic. Whenever an alternation occurs at a certain place in an utterance, it is a categorical alternation if only one of its alternative forms can actually occur there, the one which does occur being chosen according to the environment provided by the rest of the utterance or by its extra-linguistic context. However, an alternation occurring at a certain place in an utterance is a probabilistic alternation if any of its alternative forms can actually occur there, but if within the whole utterance (or a sample of it) all of the alternative forms must occur in equivalent environments in a certain proportion to one another. All grammars of all languages have, in one way or another, described categorical alternations with intra-linguistic conditioning, but they have generally ignored alternations which are probabilistic, or extra-linguistically-conditioned, or both. The eclectic portion presented in this dissertation provides a notation for describing categorical alternations with extra-linguistic conditioning. Probabilistic alternations, whatever their conditioning, will require another notational device.[1]

The subject matter of this dissertation may be represented diagrammatically by Figure I.1., which divides linguistic phenomena according to whether they have categorical or probabilistic alternation and according to whether those alternations are conditioned intra-linguistically or extra-linguistically. The upper left quadrant of the diagram represents the linguistic data which has ordinarily been handled by linguists in their descriptions of languages, and which they have called

[1]If some of the conditions for a probabilistic alternation are extra-linguistic, the eclectic portion of the language can be used to describe those extra-linguistic conditions.

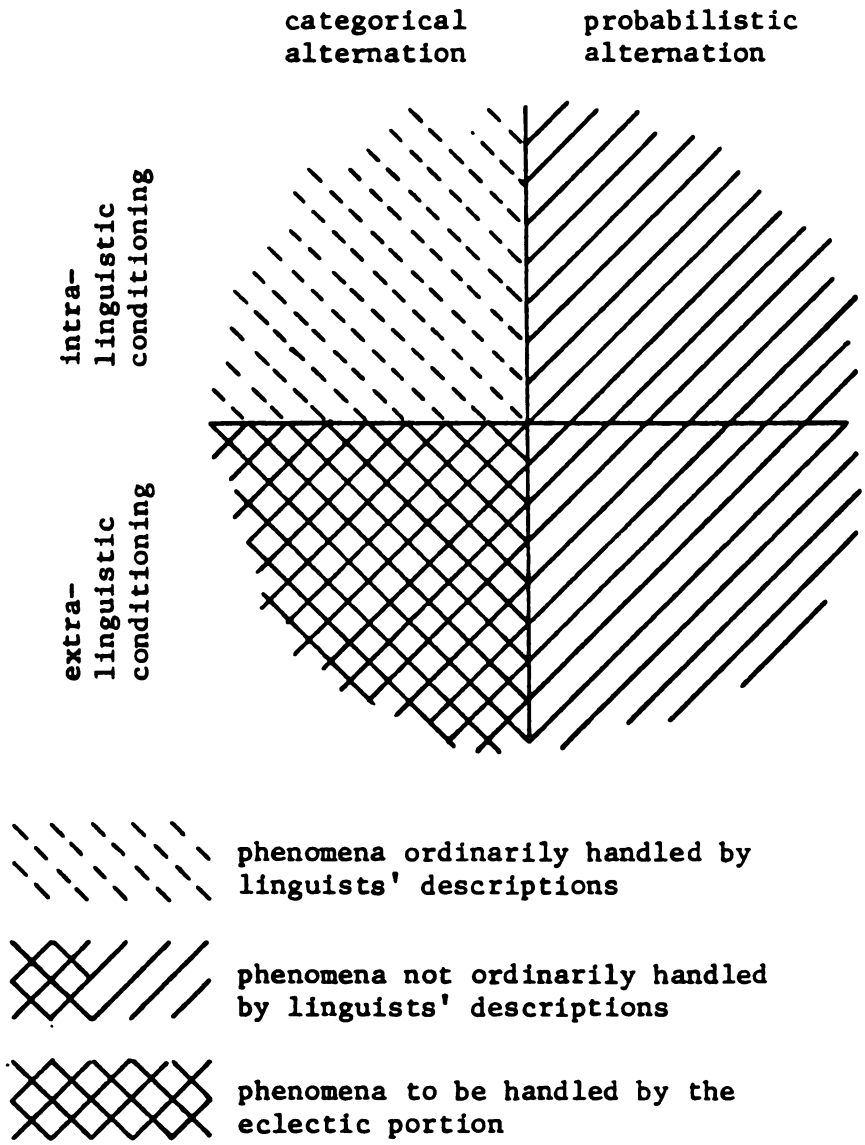


Figure I.1.

A classification of linguistic phenomena.

"langue", "internal linguistics", or "competence". The other three quadrants of the diagram represent the linguistic data which linguists have ordinarily not handled, and which they have referred to as "parole", "external linguistics", or "performance". The lower left quadrant of the diagram represents the linguistic data, which, this dissertation proposes, can be handled by the eclectic portion of a stratificational model of a language.

The alternations which can be handled by the eclectic portion of a linguistic model have not ordinarily been treated as a single linguistic phenomenon and given a single name and a single, positive definition. The eclectic alternations have usually been regarded, along with probabilistic alternations, as residual linguistic phenomena, left over after the categorical, intra-linguistically-conditioned alternations of a language have been analyzed and described. For example, these eclectic alternations are all included, along with probabilistic alternations, within the subject matter of Hymes's "ethnography of speaking", which he says deals with "what a child internalizes about speaking a language, beyond rules of grammar and a dictionary, while becoming a full-fledged member of its speech community" (Hymes 1968:101).[2] The alternations or differences which can be handled by the eclectic network of a language have been included by other linguists within many different linguistic topics, and have been discussed under various names: differences among geographical dialects, differences among caste or social class dialects, differences among age or sex dialects, differences which exist in a

[2]Hymes's definition corresponds exactly to part of the title of this dissertation, if "dictionary" is taken as a synonym for "semology" and "rules of grammar" is taken as a synonym for everything else that is "linguistic".

situation of diglossia, differences among registers, other differences which can signal a person's identification with a certain social group, differences among degrees of formality, differences which depend on tempo or speed of utterance, and differences between the spoken and written forms of a language.

In addition, the eclectic portion of a linguistic model can be used for describing many phenomena which have been referred to as differences of style, insofar as those phenomena can be linguistically described at all. However, the term "style" has been used with many different meanings. This is not the place for a complete survey of all the meanings ever given to this term, especially since such a survey would be a work of many volumes; but it must be mentioned here that some phenomena which have been called "styles" can be described by using the eclectic portion of this linguistic model, while others cannot.

Linguists who use the term "style" ordinarily refer to some kind of alternation that can be described by an eclectic network. However, the kind of alternation to which the term refers may differ with the linguist who uses it. One definition for a "style" which has been used by many linguists includes all such kinds of alternation, and regards a style as any pattern imposed on linguistic utterances from outside language--the distinction between what is inside and what is outside language being made as the linguist chooses to make it. Bloomfield (1933: 498-9) uses this definition when he refers to "the combination of non-distinctive and semantic features which we call <u>style</u>". Hockett (1958: 556) uses the same definition when he says that "two utterances in the same language which convey approximately the same information, but which are different in their linguistic structure, can be said to differ in

style". Gleason (1965:428) defines the same meaning of style as "the patterning of choices made within the options presented by the conventions of the language".

A narrower definition of a "style", which is used by many other linguists, makes it equivalent to a degree of formality. Joos (1960, 1962) uses the word "style" with this meaning. Labov and his followers have also used the word in this way, though their experimental techniques emphasize the connotation of the degree of care which the speaker takes while producing an utterance. Labov himself shows an interesting variation in his own usage. In one work (Labov 1972), he uses the term "contextual style" in the chapter and section titles (pp. 70,79), but in the body of the text he writes simply of "style", as in such passages as "The simplest style to define . . ." (p. 79). Perhaps the change is mediated by his use of the phrase "in different styles and contexts" (p. 71 et passim), and is encouraged by his use of "stylistic" as a modifier in such phrases as "stylistic variation" and "stylistic array", where the modifier "contextual-stylistic" would be impossibly clumsy. However, Wolfram & Fasold (1974:83-8) simply list style, without any qualifier, as one among several factors which operate as social variables, along with region, social status, and age; and Ervin-Tripp (1973: 323-9) also refers to degrees of formality simply as styles. The reader of any particular linguistic work must therefore be careful to determine the generality with which the author is using the term "style". What Gleason (1965:428) calls a style is what Ervin-Tripp (1973:197) would call a socio-linguistic variant, and what Ervin-Tripp (1973:323) calls a style is what Gleason (1965:357) would call a key.

There are, however, other definitions of the term "style" which

do not refer to alternations that can be described by the eclectic portion of a language. Those meanings are most often used in studies of literature and the other arts, but since language is the medium of the art of literature, they may be encountered in some discussions of language and should be mentioned here. A convenient classification of the various uses of the term "style" in literary analysis has been given by Milic (1965:67). Some of the uses which he lists can be described by an eclectic network; some cannot. Milic claims that all of the many different definitions which have been given for the term "style" can be divided into three groups, which may be associated with the names of Aristotle, Plato, and Croce. Aristotelian stylistics is "the theory of ornate form, or rhetorical dualism, . . . [which] has always implied that ideas exist wordlessly and can be dressed in a variety of outfits, depending on the need for the occasion: the grand style, the plain style, . . . and the like". Platonic stylistics is an "individualist or psychological monism, which finds its most common expression in the aphorism that the style is the man . . . It means that a writer cannot help writing the way he does, for that is the dynamic expression of his personality". Crocean stylistics, or "aesthetic monism, is an organic view which denies the possibility of any separation between content and form . . . [This view of style] is so widespread that those who practice it hardly find it necessary even to say that style is not an isolable quality" (Milic 1965:67).

The Aristotelian dichotomy of content and form, of what is said and how it is said, essentially matches the distinction which is made in this dissertation between the realization and tactic portions of a linguistic model on the one hand and the eclectic portion on the other. The two parts of the process by which, according to Aristotle, an utterance is

produced can clearly be distinguished within such a stratificational model of language. Platonic stylistics may suggest that each idiolect produces data which may be described linguistically, but such a linguistic description would not have any resemblance to the Platonic concept of how that data was produced. Crocean stylistics is linguistically undescribable (Milic 1965:68-9). However, any of these meanings of the term "style" may be used in a literary analysis, and when a linguist reads such a work and encounters that term, he should not merely ask himself how it can be converted into a linguistic analysis of the sort described in this dissertation (or into any kind of a scientific analysis of language), but should first ask himself whether it can be converted into such an analysis at all.

C. Attitudes of other Linguists toward these Phenomena.

During the present century, linguists of different theoretical persuasions have taken different attitudes toward the linguistic alternations or variations which, it is proposed here, should be described by the eclectic portion of a model of language. Some linguists have claimed that their science should avoid all mention of these linguistic variations; other linguists have devoted themselves entirely to the study of such variations; still others have admitted, with different degrees of enthusiasm, that their science should study such variation along with other aspects of language, and have tried, with more or less success, to say how such variations should be studied.

Saussure makes a sharp distinction between the phenomena of langue, which are studied by "internal linguistics", and the phenomena of parole, which are studied by "external linguistics" (Saussure 1959:20-1). For

him, internal linguistics studies the linguistic phenomena which, he says, have their own inherent structures, and must organize the facts about them according to those structures. External linguistics, on the other hand, studies those linguistic phenomena which have no such inherent structures, and can merely accumulate facts about those phenomena, organizing them, if it does so at all, only for convenience. The study of geographical dialects, historical changes in languages, relations between languages and cultures, and the development of standard, written forms of languages are all assigned by Saussure to external linguistics, which evidently is to include all the kinds of linguistic variation describable by an eclectic network. Saussure says that both kinds of linguistics are worth studying, although "the more rigidly they are kept apart the better it will be" (p.22). However, he describes only a "linguistics of langue", or internal linguistics, and he does not describe a "linguistics of parole", which would have required him to discuss external linguistics.[3]

In both the glossematic and tagmemic schools of linguistics, the leading theoretician of the school has declared that, as a general principle, linguistics should describe all varieties of language. However, in each school, the published expositions of his theory have given only rather cursory suggestions about how to analyze linguistic varieties, and have concentrated on detailed discussions of how to analyze a homogeneous état de langue. Thus, Hjelmslev the glossematicist, in a

[3] This may seem strange, because Saussure says that langue is a "social fact". However, the social fact of a certain language is precisely that which is known by all its speakers, and which therefore may be extracted from the linguistic knowledge of any one of them. This is one side of the "Saussurean Paradox" discussed by Labov (1972:267). Saussure had intended to discuss a "linguistics of parole", but died before he could do so (Saussure 1959:xv).

popularized introduction to linguistics, says that for him "the analysis of the individual état de langue is a prerequisite", but that "the chief problem of linguistics will always be, not the individual état de langue, but the relationship between different stages of a single language and between different languages, their similarities and their differences" (Hjelmslev 1970:9). In his more theoretical and programmatic Prolegomena, he says that "linguistic theory begins by circumscribing the scope of its object. The circumscription is necessary, but it is only a temporary measure and involves no reduction of the field of vision" (Hjelmslev 1961:19). "We choose to take our start from the premisses of previous linguistic investigation and to consider so-called 'natural' language . . . as point of departure for a linguistic theory . . . We shall then have to do with further widenings of perspective, through which those sides of the global totality of human speech which were excluded from first consideration are again introduced and resume their place in a new whole" (p.20). Having said this, Hjelmslev spends the rest of the first twenty chapters of his book (101 pages in all) discussing how to analyze a "natural language", which is essentially equivalent to an état de langue. Only in the last three chapters of his book (which occupy 27 pages) does he discuss how the analytic methods he has developed for an état de langue might be extended to the rest of "the global totality of human speech", which includes the variations which this dissertation would describe by an eclectic network.

For tagmemic theory, Pike (1967) claims that language, like every other kind of human behavior, should be studied in all its aspects, including its variations of the kind which this dissertation will describe by an eclectic network. Pike develops a general terminology for

referring to the varieties of a language in which there are corresponding emic systems which have inventories of the same size and the same general organization: such systems are said to be congruent, and the differences between them are said to be systemically conditioned. Referring to such congruent systems within the phonology, Pike says that "one systemically-conditioned variant of a phoneme is equatable with another systemically-conditioned variant of that same phoneme in a different congruent system by [virtue of] its relation to all the other similarly-distorted variants of the other phonemes of that system" (Pike 1967:311). "Two such systemically-conditioned variants are physically different but topologically the same, in that the two total patterns [of the congruent systems] are identifiable point-by-point, with certain point-characteristics relatively unchanged, but with distortion in respect to the absolute relations one to another" (p.312). "Two or more congruent systems make up a single hypercongruent one" (p.132), and "two topologically-related phonemes of two congruent systems are . . . considered to constitute the same phoneme of . . . the hypercongruent system [although they are] systemically conditioned as to their physical manifestations" (p.323). Pike acknowledges, however, that at the time he is writing "the structure of hyper[congruent]systems of all kinds is obscure and needs further study" (p.584).

Since then, a very recent tagmemic work (Pike & Pike 1977b, ch. 12) has extended the analysis of language into a new hierarchy, and has provided a notation which can be used to show the relationships among the congruent systems of a hypercongruent system. This work defines a "referential hierarchy", which has four levels: discourse (the most inclusive level), vector, episode, and props-and-participants. On each level,

the tagmemes for this hierarchy (like those for the grammatical hierarchy) are four-celled arrays, and the cells of each tagmeme represent the four properties of its emic unit: slot, filler, role, and cohesion. The content of each cohesion cell specifies the relationship of its emic unit to the other emic units within the discourse and within the same level of the hierarchy--it may state whether the emic unit is "true or false to the system, or appropriate to its conceptual or social relations, or related or governed otherwise" (Pike & Pike 1977a:348). When an utterance belongs to a hypercongruent system, the cohesion cell of each emic unit's tagmeme can be used to specify the congruent system of that hypercongruent system to which the emic unit belongs. All of the emic units on all of the levels of the referential hierarchy do not have to belong to the same congruent system of a given hypercongruent system, and the differences among the systems to which they belong will presumably show interesting facts about the structure of the discourse in which they appear.

Systemic or scale-and-category grammar, as it is described by Halliday (1961) and by Halliday, McIntosh, & Strevens (1964), incorporates all kinds of linguistic variation directly into its linguistic descriptions. In this respect, it clearly shows its development from the work of Firth, who claimed that linguistic descriptions are naturally "polysystemic", and from the work of Malinowski, who was the first to insist that the description of an utterance should always include a statement of its "context of situation". Halliday (1961) distinguishes "formal meaning" from "contextual meaning", and cites earlier work by Firth as the origin of that distinction--which is about the same as the distinction to be made here between what is described in the semology of a language and

what is described in its eclectic portion. "Formal meaning is the 'information' of information theory, although . . . it can be stated without being quantified . . . The formal meaning of an item is its operation in the network of formal relations . . . The contextual meaning of an item is its relation to extratextual features" (Halliday 1961: 244-5). "The context [of a linguistic unit] is the relation of the form to the non-linguistic features of the situations in which the language operates, and to linguistic features other than those of the item under attention: these being together 'extratextual' features" (p.243-4). The varieties of language, which arise from the contexts in which it occurs, are of two kinds: dialects, which are "varieties according to users . . . in the sense that each speaker uses one variety and uses it all the time", and registers, which are "varieties according to use . . . in the sense that each speaker has a range of varieties and chooses between them at different times" (Halliday, McIntosh, & Strevens (1964: 77). Every bit of linguistic activity in a language belongs to one or another register of that language (p.89), and the registers of a language are arbitrarily defined according to their formal properties, since "it is not the event or state of affairs being talked about that determines the choice, but the convention that a certain kind of language is appropriate to a certain use" (p.87).

Bloomfield, in his Language (1933), shows his belief that all the data of a language can be divided into two parts: one part which, he says, has its own internal structure that linguists can and should describe, and another part--which includes all the geographical, historical, and social variations of the language--which has no such structure. He distinguishes distinctive and non-distinctive features of speech, and

claims that only the former are "concerned with meanings and essential to communication" (Bloomfield 1933:77), while the latter, although they "are habitual, . . . do not form part of the signaling-system" of the language (p.498). He does admit that the non-distinctive features of speech "play a very important part in the history of languages: the linguist is forced to consider them very carefully, even though in some of his work he is forced provisionally to ignore them" (p.45). But then, for almost all the rest of his book, Bloomfield proceeds to ignore those non-distinctive features. Since he is writing a textbook of general linguistics, he has to discuss dialect geography and the various kinds of historical changes which languages may undergo. But although he discusses those topics brilliantly, he does not connect them to the phonological and morphological systems which he described in the rest of his book.[4]

The tradition which Bloomfield founded for the writing of American textbooks on general linguistics was followed into the 1950s, when three such books appeared which divided their subject matter into a core of descriptive linguistic material, in which scientists could expect to find structure, and a periphery of historical and dialectal material, in which there was no such structure to be found. Gleason (1955)[5] chose his title (An Introduction to Descriptive Linguistics) to show that he would

[4]Bloomfield presents dialect geography and historical linguistics so clearly and succinctly that the chapters of his 1933 book which deal with them were reprinted over thirty years later (Hoijer 1965) as being the best available summary treatment of them. However, those reprinted chapters were perfectly intelligible when separated from Bloomfield's explication of his descriptive, synchronic linguistic theories.

[5]Although Gleason published a revised edition of this work in 1961, Chapter 20 of the 1955 edition was incorporated without alteration (except for its numbering) into the 1961 work, where it appeared as Chapter 24.

not discuss historical linguistics at all and, out of the 24 chapters of his book, only one (Chapter 20) contains any discussion of dialects or other such kinds of linguistic variation. He says that a "quite valid . . . approach would be to sort out . . . all those sets of utterances which are alike in content. This will eliminate one of the variables with which the descriptive linguist is concerned. Within each set, these utterances can then be compared and the variation studied . . . by seeking correlations with non-linguistic factors, commonly the speaker and the circumstances" (p.285). "Experience has shown that there are certain categories of such facts [about correlations] which are particularly useful in the study of speech: the social context of the specific utterance, the social position, . . . the geographical origin, . . . and the age of the speaker. Each of these provides a useful body of generalizations . . . Specific scientific study has, however, not been generally profitable" (p.393). He then mentions the kinds of change that can occur in a language, and goes on to a discussion of geographical dialects. Hockett (1958) discusses both synchronic and diachronic linguistics, but he, also, lacks any theory of how to deal with the variations which this dissertation would describe by an eclectic network. He gives one example of a choice which clearly depends on speed of utterance, but his theoretical assumption is that all differences must be accounted for in terms of either phonemes or morphemes. He therefore says that "the pair of utterances <u>John is going</u> and <u>John's going</u> stand in contrast with each other: there must be not a morphophonemic but a grammatical difference between them. One of them, at least, must include some morpheme not present in the other. No one knows exactly how to interpret pairs of this sort . . . One suggestion is that the

difference be attributed to a "style morpheme" with the meaning "deliberate and careful speech" (p.279). His other contribution to this matter is a passage which contains the most-quoted definition for one meaning of style: "the term 'style' is not easy to define precisely. Roughly speaking, two utterances in the same language which convey approximately the same information, but which are different in their linguistic structure, can be said to differ in style: He came too soon and He arrived prematurely, or Sir, I have the honor to inform you and Jeez, Boss, get a load of dis. Stylistic variations within a single language are universal, and in many cases there are special styles which are felt to be peculiarly appropriate to certain circumstances" (p.556). Hill (1958) shows, by his subtitle (From Sound to Sentence in English), what he believes a linguistics textbook can, or should, discuss. All but one chapter of his book is devoted to analyzing the part of language "which begins with phonemes and ends with sentences" (Hill 1958:405); his last chapter, entitled "Beyond the Sentence", discusses everything else, including stylistics and semantics. He views linguistics and stylistics as two separate fields of study. Linguistics is to study the part of language contained within sentences, while "the function of stylistics is to reduce the area of linguistic arbitrariness by explaining as much as possible of linguistic variation" (p.408). He suggests that a corpus may be widened to admit environments longer than one sentence, but he provides no means of discussing the variations which this dissertation is intended to describe.

Because the method of phonemic analysis developed by this school of linguistics had no way to describe patterns of language variation, those who used it had to limit their data severely, so that no such variation

would occur. Instead of describing languages as used by entire speech communities, they described dialects, and their search for describable homogeneity finally led them to work with nothing larger than severely limited idiolects. This technique was formalized by Bloch, who claimed that "the totality of the possible utterances of one speaker at one time using a language to interact with one other speaker is an idiolect . . . The phrase 'with one other speaker' is intended to exclude the possibility that an idiolect might embrace more than one style of speaking . . . An idiolect is peculiar to one speaker . . . [and] he may have two or more idiolects at the same time . . . Speakers who agree in all respects but some some small detail of pronunciation will speak idiolects belonging to different dialects" (Bloch 1948:7-8). But when Bloch (1950) used his own principles to describe the phonology of standard colloquial spoken Japanese, he had to divide that language into a multiplicity of dialects because of a relatively few loanwords, recently taken from English, which were pronounced by different speakers of that language with different systems of phonemes. Grimes (1955) and Hamp (1957) discovered that a certain phonological alternation in Huichol could not be described in terms of phonemes which fit a definition of the sort given by Bloch. Huichol has some sounds which may be paired, so that one member of the pair realizes morphemes when they occur in diminutives, baby talk, or other words of endearment, and the other member of the pair realizes the same morphemes in most other environments. (Grimes mentions that there are other sets of sounds used for other special purposes in Huichol, but he does not give many details, and they did not enter into Hamp's discussion.) Grimes (1955:34) says that this alternation is best described "as a contrast between congruent coexistent

phonemic systems"; Hamp (1957:141) says that it must be an alternation which is conditioned by "some other system that runs alongside the linguistic [system] and impinges on it in a peculiarly intimate way".

Since its beginning in the late 1950s, transformational-generative grammar has undergone significant diversification, as many of Chomsky's erstwhile followers have challenged several of his premises about language, and have replaced them by others. Among Chomsky's premises which have been challenged is an attitude very much like that expressed by Bloch,[6] although Chomsky states his position in terms of a speaker's competence:[7] "Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance" (Chomsky 1965:3). Another of these premises is Chomsky's quite original attitude that linguistics should be primarily "concerned with the syntactic component of a generative grammar, that is, with the rules that specify the well-formed strings of minimal syntactically functioning units" (p.3).[8] Changes in these

[6]Chomsky had been a student of Z. S. Harris, who worked in the same linguistic tradition as Bloch did.

[7]Chomsky's distinction between "competence" and "performance" is often said to be much like Saussure's distinction between "langue" and "parole". The similarity between these two distinctions seems to arise from the fact that categorical, intra-linguistically-conditioned alternations are included in both "competence" and "langue"; while alternations which are probabilistic or extra-linguistically-conditioned or both are relegated to "performance" and to "parole". Also, "competence" and "langue" are alike in that Chomsky and Saussure discuss how linguistics should treat them, while neglecting the treatment of "performance" and "parole" respectively.

[8]Although these quotations are from Chomsky's 1965 work, they accurately represent his attitude before and since then.

two premises have been directly relevant to the study of linguistic alternations of the kind which can be handled by eclectic networks such as are described in this dissertation.

One of these changes in Chomsky's premises has been made by those who do not want to restrict their analyses to the language of a "completely homogeneous speech-community". Klima (1964) was apparently the first to investigate the form which generative rules might take if they were written to apply to more than one dialect. He considers certain grammatical aspects of four dialects of English (which are, in this case, levels of formality or "correctness") and compares their respective sets of rules in two ways--once by finding the differences between the most economical sets of rules for each dialect, and once by stating the rules which need to be added to those for one dialect in order to produce those for another dialect. J. W. Harris (1969) follows a slightly different method of integrating the rules for several dialects. He defines two tempos or speeds of utterance with which Spanish can be pronounced,[9] and he then uses those tempos--Andante and Allegretto--as conditioning environments for the application of certain rewrite rules. For example, he writes

$$\begin{bmatrix} \alpha\text{voc} \\ \alpha\text{cons} \\ -\text{lat} \end{bmatrix} \longrightarrow \begin{bmatrix} -\alpha\text{obstr} \\ \alpha\text{tense} \end{bmatrix} \; / \; V \_\_ \; \begin{Bmatrix} (\#)[\alpha\text{cons}] \\ \| \end{Bmatrix} \; \begin{matrix} \text{ANDANTE} \\ \\ \text{ANDANTE: obligatory} \\ \text{ALLEGRETTO: optional} \end{matrix}$$

(Harris 1969:57, rule 69j; $\|$ represents silence), which indicates that if the environment is

[9]Harris (1969:7) actually defines four "'styles' of pronunciation in Spanish", which he names Largo, Andante, Allegretto, and Presto. However, he mentions only Andante and Allegretto in the rules which he gives.

$$V \_\_ (\#)[\alpha cons]$$

the rule is always applied in Andante tempo and never in Allegretto tempo, and that if the environment is

$$V \_\_ \|$$

the rule is always applied in Andante tempo and may optionally be applied in Allegretto tempo. Labov and his followers have discussed similar patterns of variation; but since they have used a different approach to them, their work will be discussed separately below.

Another change in Chomsky's premises about language has been made by those who feel that the "rules that specify well-formed strings" should generate semantic structures rather than syntactic structures. Chomsky himself has always insisted that the syntax of a generative grammar is its central, productive component,[10] and that the semantics and phonology of a language simply interpret what is produced by the syntax.[11] He therefore maintains that the grammaticality (or well-formedness) and the sensicality (or meaningfulness) of a sentence are two quite separate things. For him, a sentence may be self-contradictory in the meanings of its words, inconsistent with known reality, contrary to what it accompanies; and will still be grammatical if it has

[10]Some transformational-generative linguists have conceded that the phonological structures which a language allows may exert some control over the form of utterances in it. This control has usually been seen, however, as a part of phonological interpretation, rather than as a separate generative power in the phonology. See, for example, the comments on "morpheme-structure rules" by Bach (1964:134-6).

[11]For this reason, he and those who agree with him are called "interpretive semanticists". The necessary interpretive phonology has been well developed, but the present "absence of even a fairly well-developed theory of [semantic] interpretation . . . [means that] there is no rationalistic criterion for what is linguistic and what is not, what belongs in the grammar and what is extragrammatical" (Katz & Bever 1976: 29).

a correct syntactic structure.[12] Those who believe that the semantics of a language should be its generative part (and who are therefore known as "generative semanticists") insist that a sentence cannot be grammatical unless it is also sensical. To assure that the semology generates only sensical sentences, they claim that, while generating a sentence, "it is essential to take extralinguistic contextual features into account: respective status of speaker and addressee, the type of social situation in which they find themselves, the real-world knowledge or beliefs a speaker brings to a discourse, his lack of desire to commit himself on a position, etc." (Lakoff 1972:926). "There are areas of linguistic competence that cannot be described in any theory that does not allow an integration of information about the context in which the discourse takes place . . . and the purely linguistically relevant information the sentence seeks to convey" (p.909).

Within the last quarter century, two groups of linguists have made special efforts to integrate linguistic variation into the theoretical frameworks which have been used for analyzing and describing linguistic structure. One of these groups originated with the work of Weinreich, who observed that structural linguists were using, as the basic elements of their linguistic analyses, phonemes which (whatever their exact definition might be) were abstractions from phonetic detail; while at the same time, dialectologists were working only with the phonetic detail itself, and seldom if ever mentioned phonemes in their studies of dialects. Weinreich felt that this was an unnecessary inconsistency in

[12]"Chomsky . . . characterizes the notion of well-formedness so that strings in a language can be divided into the well-formed and the ill-formed just on the basis of their syntactic structure, without reference to the way things are in the world, what speakers, hearers, or anyone else believe, etc." (Katz & Bever 1976:31).

linguistic theory, and he tried to find a way to integrate the phonemes of structural linguistics into dialectology. In his paper "Is a Structural Dialectology Possible?" (Weinreich 1954), he presented a notation which he used to compare the phonemic systems of geographical dialects of a language, and he gave examples of dialect maps on which the differences in the structures of phonemic systems were separated by isoglosses. His methods were followed and modified by several other linguists, especially by Cochrane (1959), who claimed that separate comparisons should be made for phonemes and for their allophones. Moulton (1960) objected to Weinreich's purely synchronic comparisons on the grounds that they either concealed or overstated the differences between closely related dialects; he presented another notation which combined synchronic descriptions of phonemic systems with diachronic statements of the origins of the phonemes. Summarizing the similarities and differences of these approaches to a structural dialectology, Pulgram (1964:80) says that "Moulton compares dialects in order to determine their relationship and their place in a larger system, and he does so in proper Saussurian descriptive fashion; Weinreich starts from the knowledge thus provided, and the structural comparison [which] his diasystem yields is, I believe, something [which can be] read out of it conveniently because of an adroit and meaningful arrangement of the information. In other words, the results of Moulton's dialectology and comparison are grist for the mill of Weinreich's. Both are valid, useful, and certainly obey the requirements of structuralism".

Labov and his followers constitute the other school of linguistics which has especially tried to integrate patterns of variation or alternation into linguistic theory. Labov had studied under Weinreich, but

Labov's work has shown that linguistics can deal systematically with social-class dialects and with patterns of probabilistic variation: two kinds of data which were once dismissed, even by Weinreich, as unsusceptible to formal linguistic analysis. His study of the speech of Martha's Vineyard (Labov 1963) showed that definable groups of speakers within a monolingual speech-community may use the same alternative linguistic forms with significantly different patterns of probability; his study of the speech of the Lower East Side of New York City (Labov 1966a) showed that such groups of speakers may correspond to socio-economic classes, and that social-class dialects can be defined as readily as geographical dialects, so long as they are defined in terms of patterns of probability. Since then, Labov and his followers have produced numerous studies[13] based on "the notion of the inherent variability of linguistic features related to social classes" (Fasold 1970: 551). In each study, they have identified certain "linguistic variables", which are features of pronunciation used with different frequencies in the speech of different social classes or other extra-linguistically definable groups within a monolingual speech-community. They have then divided the population of the speech-community into those groups, and have recorded the actual percentage of use of each variable by each such group. They have typically used relatively large numbers of informants selected by statistical sampling techniques; they have typically related differences among present-day dialects to diachronic linguistic changes; and they have typically used the notation of transformational-generative grammar, or a derivative of it, for stating their

[13]For a bibliography which includes all these works, along with others, see Wolfram & Fasold 1976:218-27.

results,[14] although the probabilistic rules which they describe are not as highly formalized as most transformational-generative rules.

It must be mentioned that another, somewhat similar method of comparing social dialects has been developed by DeCamp (1971) and others. Like Labov, DeCamp identifies linguistic variables; but instead of recording the actual percentages of their use, he reduces his observations to categorical statements, and records simply whether each variable is or is not used by each social class. DeCamp has found that certain variables of a language are used by persons of a certain social class and of all higher classes, but not by persons of any lower classes, and are therefore diagnostic of that certain social class. DeCamp therefore arranges the variables of a language into a "scalogram" or implicational pattern, according to the relative status of the social classes for which they are diagnostic. A speaker's use of a diagnostic variable for a certain social class therefore means that he belongs to that class or to some higher class, and his use of it implies that he will also use all of the variables which are diagnostic for all higher social classes. If the linguistic variables for a language are arranged in the order they have in DeCamp's implicational pattern, but are given Labov's percentages of use, the figures will ordinarily increase progressively in two directions across the pattern. The methods of Labov and DeCamp have been compared by Fasold (1970) and by Wolfram & Fasold (1976:111-5), who have shown how the results of the two methods may be

[14] This last characteristic of their method may be largely a matter of convenience. Labov (1966b) once described his linguistic variable as a structural unit; and Wolfram (1969:4) says that, although he is a stratificationalist at heart, he has no difficulty working with Labov's method of sorting and presenting social-dialect data.

interconvertible, and who have discussed the relative merits of the two methods.

Of the linguistic theories which have just been discussed, four are fully or partially compatible with a stratificational model of language that includes an eclectic portion. The model of language used by systemic or scale-and-category grammar appears to be fully compatible with such a stratificational model. A formalized statement of what Halliday calls the "contextual meaning" of an utterance should be readily convertible into the notation used here for stratificational eclectic networks. The work of Weinreich and other structural dialectologists involves data that can be described by an adaptation of an eclectic network; the data from such a structural description of Sicilian dialects is handled by such a network in Chapter III, Part C, of this dissertation. The scalograms, or implicational patterns, used by DeCamp can be described by a similar adaptation of an eclectic network. One part of Labov's model of linguistic variation can easily be represented by an eclectic network, but another part cannot. The extra-linguistic factors which Labov uses to define the social classes or other groups of speakers within a speech-community[15] are exactly the sort of facts which the eclectic portion of this stratificational model is intended to describe. But since Labov defines social-class dialects in terms of patterns of probability, a stratificational model of language cannot handle Labov's material until it has developed a notational device for probabilistic alternations.

The glossematic and tagmemic schools of linguistics have both claimed that a linguistic theory should deal with all kinds of linguistic

[15] Traugott 1975:94 gives a convenient index to the various kinds of extra-linguistic conditions mentioned in Labov 1972.

variation. Both of them should therefore be compatible with a stratificational model that includes an eclectic portion. Hjelmslev himself never developed a full theory of how linguists should handle variations in language. But since the theoretical basis of stratificational linguistics rests largely on Hjelmslev's work, the present dissertation may represent in some sense a Hjelmslevian technique for handling at least the categorical part of linguistic variation. The very recent tagmemic work by Pike and Pike (1977a and 1977b) promises to develop a tagmemic model for categorical variation which may very well be readily convertible into, or at least compatible with, the stratificational eclectic portion which is described here.

Saussure, who in the work which we have from him claimed to be interested only in the "linguistics of langue", would presumably have seen no need for a model of a language to have an eclectic portion, because it would handle phenomena which should be of no concern to the science of linguistics. Bloomfield and those who worked in the Bloomfieldian tradition would presumably have felt the same way, although an eclectic portion such as is described in this dissertation could easily handle, for example, the alternation in Huichol about which Grimes and Hamp could not agree. Chomsky, and those of his followers who claim that alternations with extra-linguistic conditioning are of no concern to the science of linguistics, would also see no reason why a model of language should have an eclectic portion. However, the patterns of linguistic variation discussed by Klima and by J. W. Harris can easily be handled by the kind of network that is found within an eclectic portion. And among the things which the generative semanticists want to incorporate

into the semantics of language, all the observable and socially-defined facts about interlocutors and their situation can be handled in a stratificational grammar by an eclectic network. The other things which the generative semanticists want to incorporate into semantics, including the way things are in the world and all of the speaker's attitudes, presuppositions, and other beliefs, will be handled, if they are handled at all within a stratificational grammar, by its semology.[16] The difficulty of incorporating this knowledge about the world into a linguistic description is the reason for the present uncertainty in stratificational linguistics about the proper form and nature of the gnostemic stratal system (cf. Lockwood 1972:165-6).

[16]The term "semology" when applied to a stratificational model of language is intended to include the sememic stratal system and all higher parts of the language, which have been variously referred to as the gnostemics or the hypersememics.

CHAPTER II. THEORY.

A. The present stratificational model.

The model of language which is now generally used by stratificational linguists is that presented by Lockwood (1972). This dissertation assumes that its readers are familiar with that model; only enough of it will be presented here to show how the eclectic portion of a language, which is about to be described, fits into the description of an entire language.

The linguistic model presented by Lockwood (1972) makes the following general assumptions about the nature of language and languages, and is generally described in the following terminology.

1. A language is a complex system of formal relationships by means of which people communicate. An adequate model of a language must be a model of both competence, i.e. what people must know in order to communicate, and ideal performance, i.e. how people use what they know while they are communicating.

2. A language consists only of the abstract, formal relationships among its parts. It does not include the human experiences about which people communicate, or the mental representation of such experiences; neither does it include the spoken sounds and written marks by means of which people communicate, or the mental representations of such sounds and marks.

3. The formal relationships of which a language consists are ordinarily modeled by a network composed of line segments and of nodes which serve to join the ends of those line segments. The line segments and the nodes

of the model merely represent the actual relationships within the language. Neither the line segments nor the nodes of this model have any properties other than their connectedness; they have no names, and they are not items of linguistic structure which can be arranged or processed.

4. Although these experiences, sounds, and marks, or some parts of them, may have their own internal structures, a language regards each of them, or the mental representation of each of them, as an amorphous continuum or "purport", onto which it projects its own "form" across an "interface", thereby forming in each of them a "substance" which is outside the language but which has a structure provided by the language.[1]

5. The semantic interface, which is the interface between a language and the substance which it describes upon the human experiences about which people communicate, is said to lie on one side of this model of language. The phonic interface, which is between the language and the substance which it describes upon the spoken sounds by which people communicate, and the graphic interface, which (if the language has one) is the interface between it and the substance which it describes upon the written marks used for communicating, are said to lie on the other side of this model.

6. The linguistic network which models the formal relationships of a language is itself the model for the competence of a person who knows that language. It is assumed that this model of competence is converted into a model of ideal performance[2] by simply activating this network, although

[1]The terms "purport", "form", and "substance" are from Lockwood (1972) and originally from Hjelmslev (1961). The term "interface" is from Hockett (1966:181).

[2]"Ideal performance", in which the activation of the network always functions perfectly, is to be distinguished from "actual performance", in which the activation shows the deleterious effects of human frailties and extra-linguistic limitations (Lockwood 1972:9-10).

the best notation for modeling such activation has not yet been agreed on.

7. The network of relationships within this model of language can be divided into two major parts: a realization portion and a tactic portion. The realization portion includes the part of the network which connects the semantic interface to the phonic interface (and to the graphic interface if there is one), which are said to lie on opposite sides of the model. The tactic part of the model consists of several separate networks, each of which is joined to the realization portion of the network at a certain relative distance from the interfaces of the model. The tactic networks have the function of specifying what any utterance in the language must and must not include at their respective distances from the linguistic interfaces.

8. When an utterance is to be transduced across such a model of a language, the realization portion of the network is initially activated at one interface, and all of the separate networks in the tactic portion of the model are also activated. The activation then runs from the initial interface, through the realization portion of the network, until it reaches the interface (or one of the interfaces) on the other side of the model. As this activation proceeds through the network, it successively arrives at groups of nodes where the several tactic networks are joined to the realization network. At each such group of nodes, the activation in the realization portion interacts with the activation in that network of the tactic portion, and activation can proceed onward through the realization portion only if the two activations properly coincide.

9. When an utterance is being produced, the activation in the realization portion of the network runs toward the phonic and graphic interfaces, or either of them, and the activation in the tactic portion runs toward the

realization portion. Such activation of the realization and tactic portions is called the "downward transduction" of an utterance. When an utterance is being understood, the activation in the realization portion runs toward the semantic interface, and the activation in the tactic portion runs away from the realization portion. Such activation of the realization and tactic portions is called the "upward transduction" of an utterance.[3]

10. Many stratificational analyses have appeared to assume that the same network of formal relationships should serve to model transduction in both directions through a language. However, those analyses have simply followed the general principle that any scientific analysis should be as economical as possible. Some linguistic data, including that presented in this dissertation, appears to require that, for some parts of a language at least, different networks must be used for modeling upward and downward transduction.

A representative part of the linguistic model presented by Lockwood (1972) may be schematically diagrammed by the intersecting slabs shown in Figure II.1. The vertical slab[4] represents the realization portion

[3]The fact that activation can run through the network in two directions also imposes an orientation on the line segments and nodes within the network. Within the realization portion, the side of a node or the end of a line segment which lies nearer to the semantic interface is called its "upward" side or end, while the side of a node or the end of a line segment which lies nearer to the phonic (or graphic) interface is called its "downward" side or end. Within the tactic portion, the side of a node or the end of a line segment which lies further from the realization portion is called its "upward" side or end, while the side of a node or the end of a line segment which lies nearer to the realization portion is called its "downward" side or end.

[4]This model must be drawn with slabs, rather than with planes as such models have often been drawn, because the intersections which are now postulated between the realization and tactic portions (Lockwood 1972: 225-234) cannot be correctly modeled by straight lines, such as are formed by the intersection of planes.

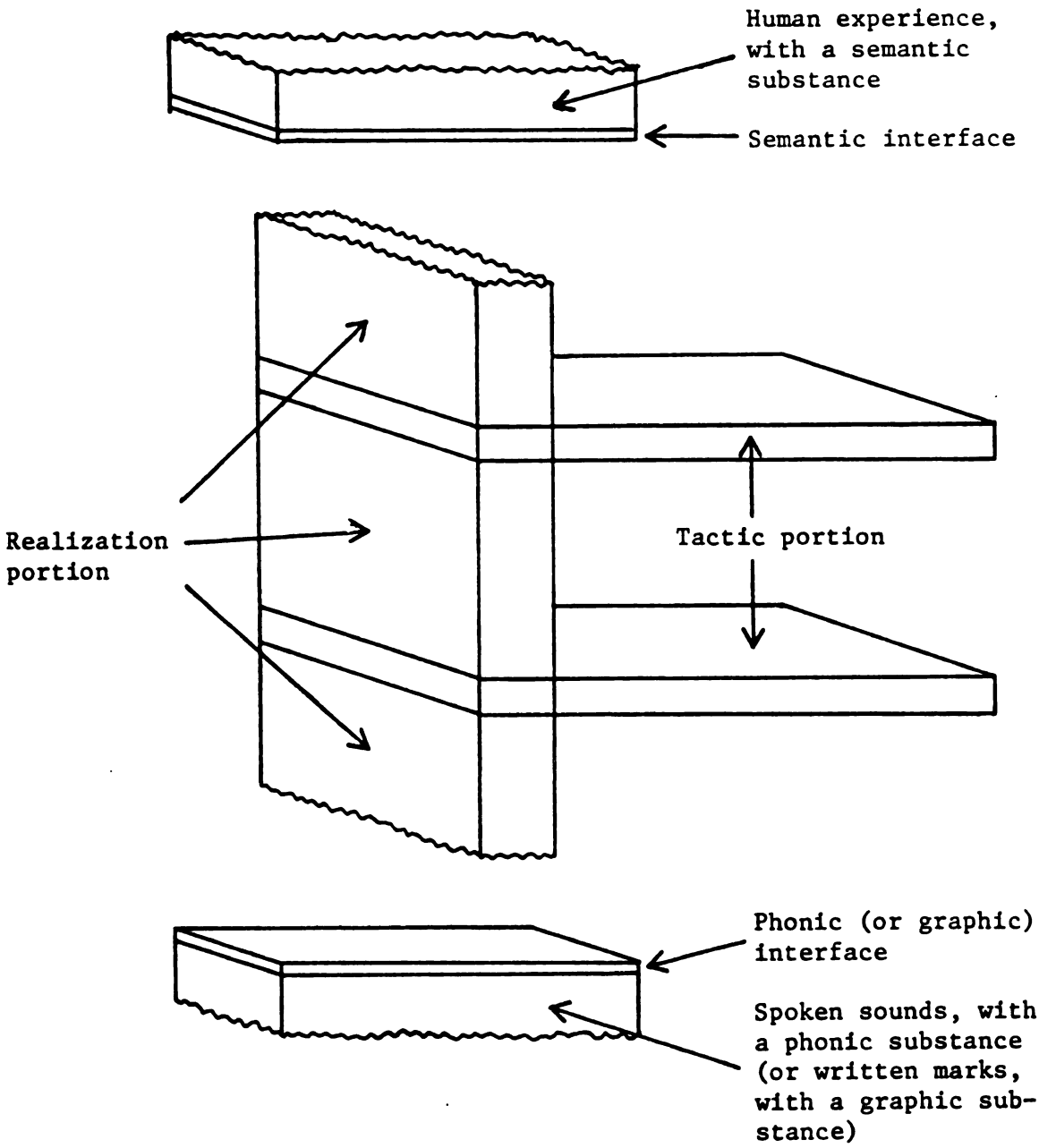


Figure II.1.

Schematic diagram representing the linguistic model used by Lockwood (1972).

of the language, reaching from its semantic interface to its phonic interface (or to its graphic interface). The realization portion of the language has a complex internal structure and can be divided up into alternation patterns and sign patterns. The horizontal slabs in Figure II.1. represent the networks of the tactic portion of the language.

The details of the typical internal structures for these patterns and networks and the principles by which they may be grouped into stratal systems, as well as a description of the properties of the various kinds of nodes, are given by Lockwood (1972). Although the line segments and nodes of the linguistic network have no names, labels may be attached to any part of the network whenever such labels are helpful in discussing it. In practice, the network for a whole language is so large and so complicated that systematic methods have been developed for naming the various patterns and stratal systems of a language and for creating labels to be attached to its various line segments and nodes. These systems are also described by Lockwood (1972).

B. An earlier proposal for a "stylistic" subsystem.

Previous stratificational work on meaning has investigated the linguistic relationships which are found within the lower parts of the semology, and has tried to determine how much of a person's knowledge of the world should be described as part of his language. However, almost all of this work has assumed that the semology of a language is simply composed of several stratal systems of the usual kind, and that it has a single interface with the world of human experience.

So far as the present author knows, the only stratificational linguist other than himself who has taken exception to this assumption is Bennett

(1968), who suggested that the meanings of some lexemes can be broken down into at least five simultaneous constituents: cognitive,[5] connotative, reflected, semotactic, and stylistic. Four of Bennett's constituents of meaning involve the sememic or hypersememic stratal systems as they are commonly understood. The cognitive meaning of a certain occurrence of a lexeme consists of the distinctive meaning-features (expressed in terms of hypersememes) of the sememes which the lexeme realizes. The connotative meaning of a certain occurrence of a lexeme consists of the non-distinctive meaning-features of the sememes which it realizes. The reflected meaning of a certain occurrence of a lexeme consists of the sememes which are not its realizates but which could be the realizates of other occurrences of the same lexeme; only polysemous lexemes can have reflected meaning. The semotactic meaning of a certain occurrence of a lexeme is the semotactic function of the sememe which it realizes; because the same sememe may be realized by different lexemes when it has different semotactic functions, the lexeme which realizes it indicates something about the semotactic structure of the utterance.

However, Bennett proposes that one of his kinds of meaning should not be handled within the usual sememic or hypersememic stratal systems. He says that

> stylistic questions--more specifically questions of 'register' . . . --such as the fact that a given lexeme may be restricted to colloquial, literary, scientific, etc., varieties of the language, are probably best handled by setting up a separate subsystem of the grammar to account for choices of register. This would be connected to the main network at a number of points, in such a way that the choice between two items represented in the main network as being in free variation could be shown to be determined by the choice of register. (1968:166-7)

[5]Bennett uses the term "cognitive meaning" for what has more usually been called "denotative meaning".

Bennett has not developed his suggestion in his subsequent work, and has not discussed just how such a subsystem might be organized or how it might operate.

C. The proposed eclectic portion.

1. General organization.

The schematic diagram in Figure II.2. shows the general relationship between an eclectic portion and the rest of its language. At its outer end, the eclectic portion adjoins the world of human experience at an eclectic interface, across which it projects its own form to produce the eclectic substance of the language. At its inner end, the eclectic portion meets the rest of the language and connects with it through a system of eclectic disjunction clusters.

Figures II.3., II.4., and II.5. show an arbitrary example of the line segments and nodes of a hypothetical but typical eclectic portion. Figure II.3. shows the portion as it would be represented in a description of competence, while Figures II.4. and II.5. show how the same portion would be represented for descriptions of performance during downward and upward transduction, respectively. (For the eclectic portion, as for the tactic portion, activation runs toward the realization portion during downward transduction and runs away from the realization

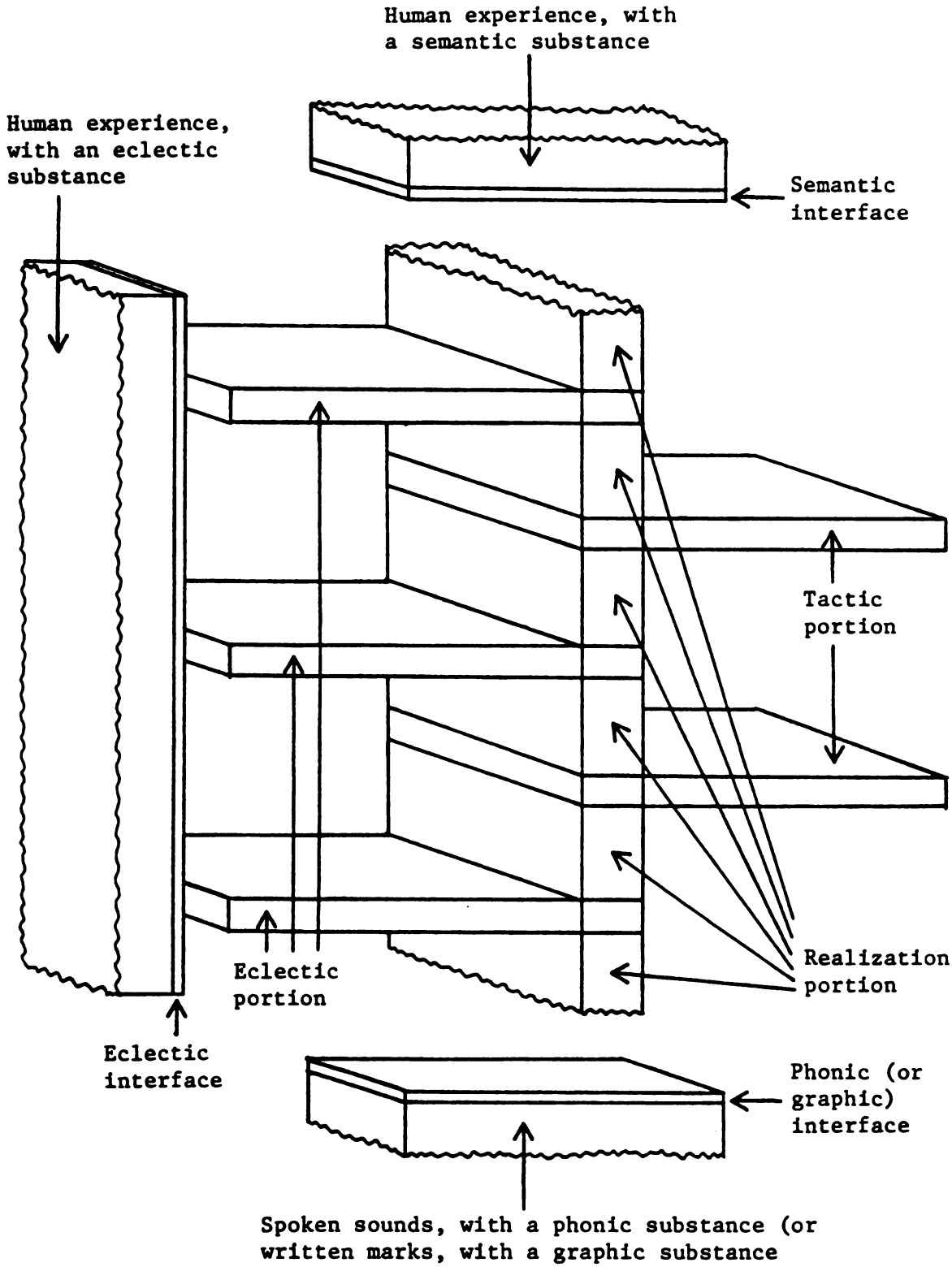


Figure II.2.

Schematic diagram representing the enlarged linguistic model proposed by this dissertation.

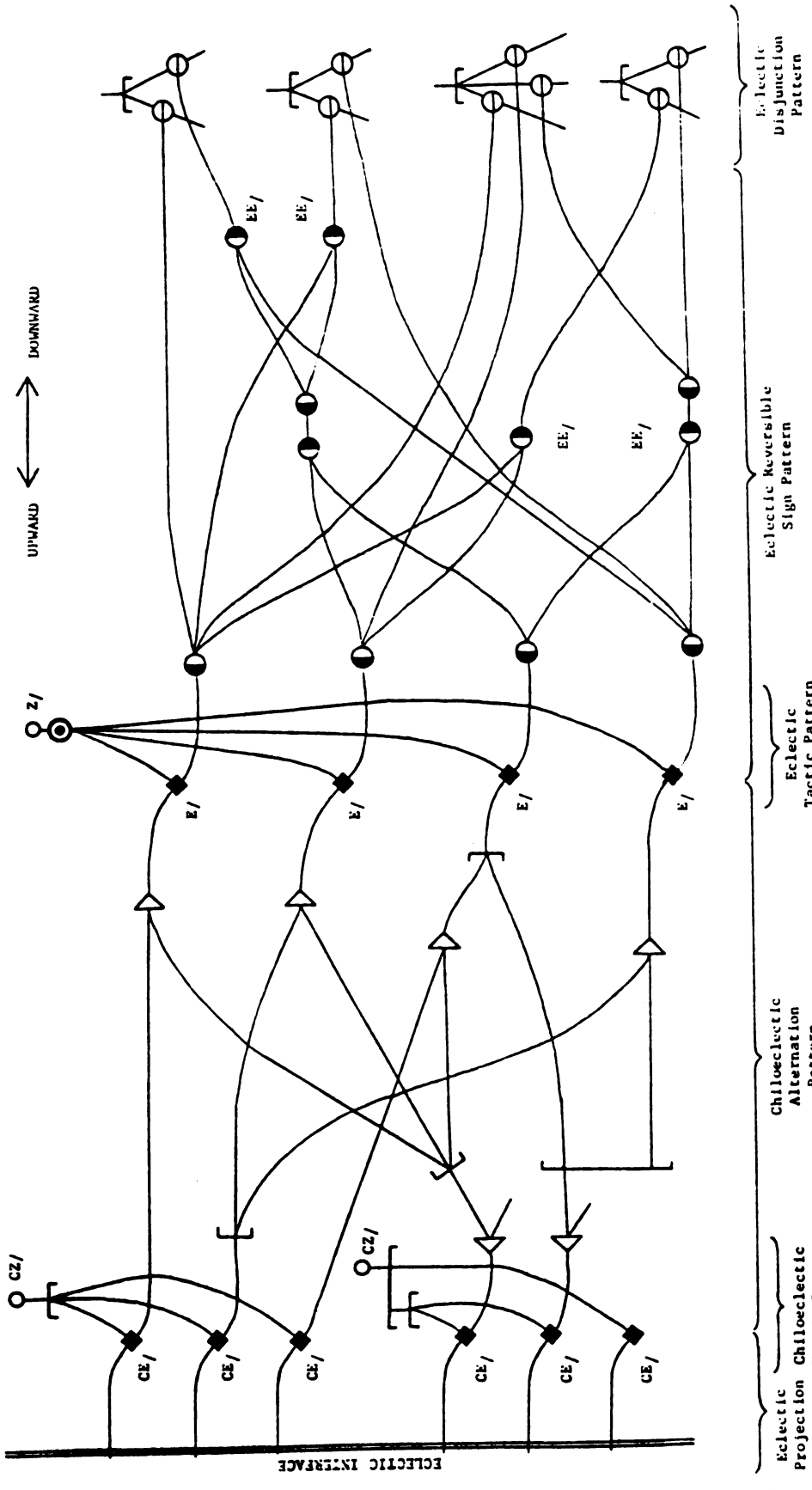


Figure II.3.

Description of competence for a hypothetical but typical eclectic portion.

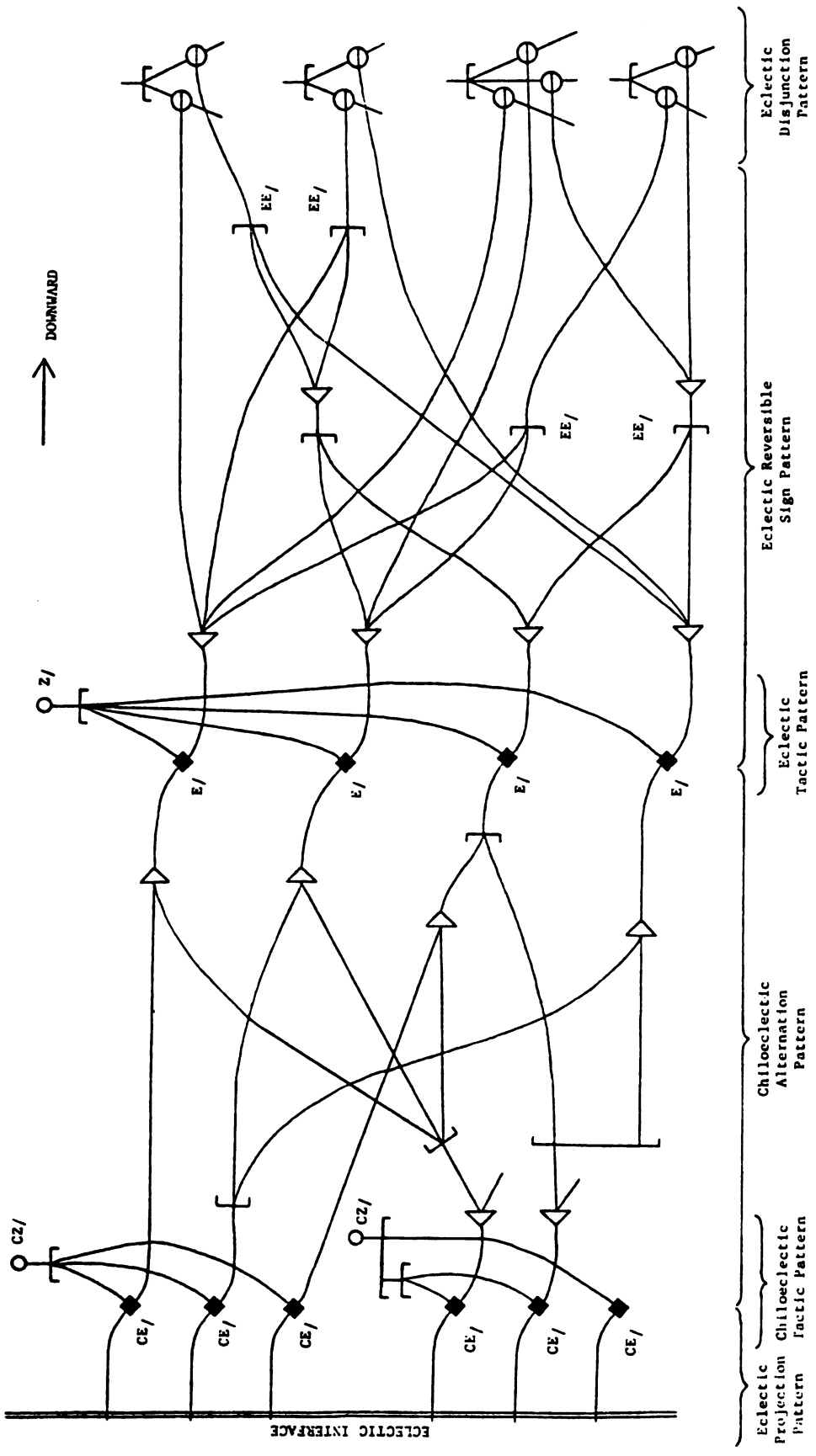


Figure II.4.

Description of the same hypothetical but typical eclectic portion for performance during downward transduction.

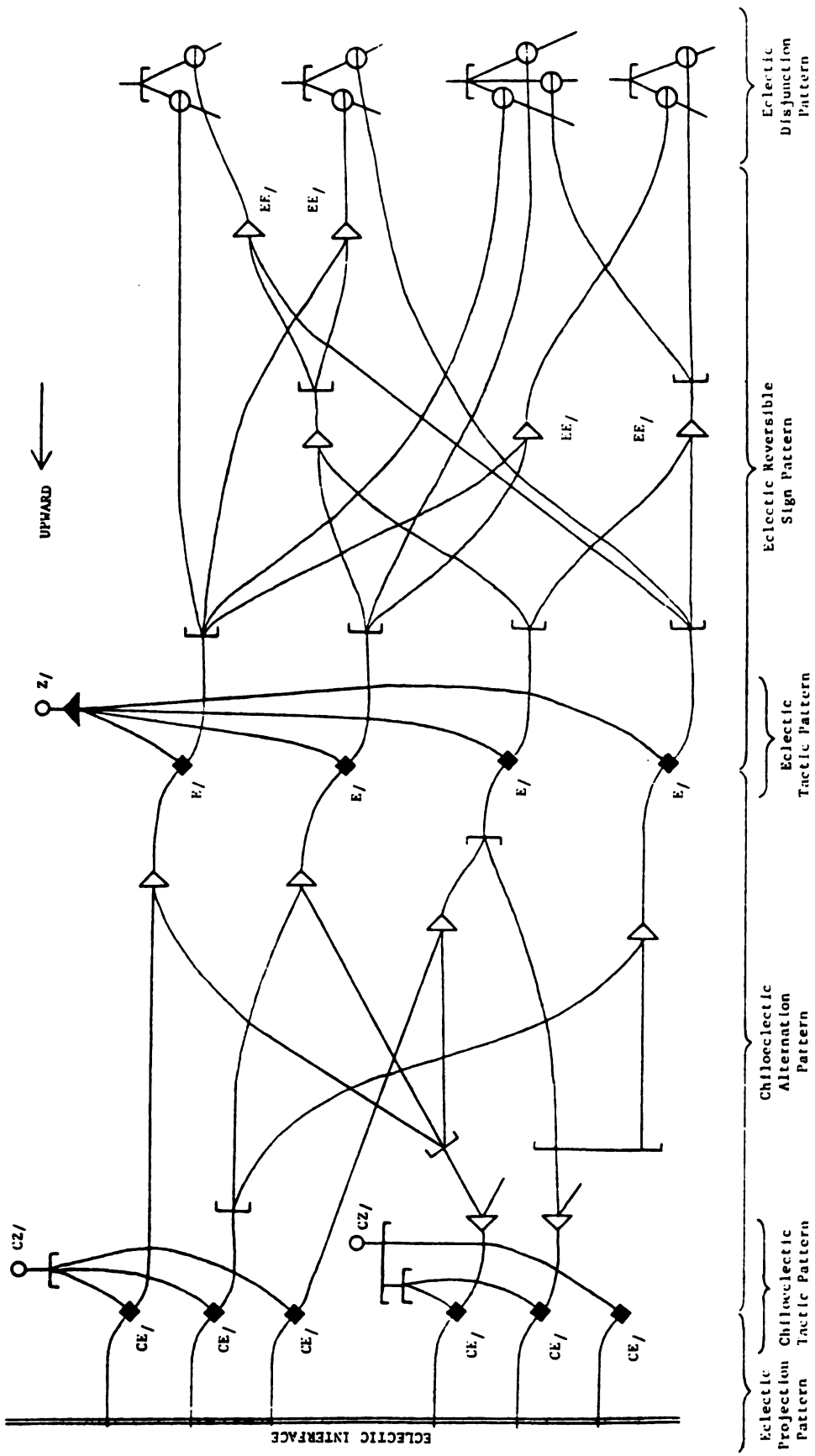


Figure II.5.

Description of the same hypothetical but typical eclectic portion for performance during upward transduction.

portion during upward transduction.) The labels which are used for points in the eclectic network are listed in Table II.1.[6]

The eclectic portion of this enlarged linguistic model is characterized by several nodes which do not occur in the other portions of the model, and by the fact that some of its nodes perform differently during upward and during downward transduction. The nodes which occur in descriptions of the eclectic network but which are not mentioned by Lockwood (1972) are shown in Table II.2. For some of these nodes, the same symbol is used in both competence diagrams and performance diagrams. For other nodes, different symbols are used in diagrams representing upward transduction and in diagrams representing downward transduction, while a third symbol is used in competence diagrams to represent the place where alternation occurs between the two performance diagram symbols. A TACTIC CHAMELEON node always has an upward singular side and a multiple downward side; during downward transduction it performs as an ordinary UNORDERED OR node, and the usual symbol for that node is therefore used; but during upward transduction it performs as a CONSISTENCY COUNTER, in a way which is described below. A DOWNWARD CHAMELEON node always has a multiple downward side and a singular upward side, while an UPWARD CHAMELEON node always has a multiple upward side and a singular downward side; both of these nodes perform as ordinary UNORDERED AND nodes or as ordinary

[6]The labels used for the eclectic portion are based on the following Greek forms:

cheilos	'lip', hence 'rim (of a bowl)', hence 'edge (of anything)'
eklektos	'selected, picked out'
endon	'within'
zugon	'yoke'
-ad	'(adjectival suffix)'

The prefix chilo- has been especially chosen for the pattern occuring next to the eclectic interface; it may be useful for naming and labeling the patterns which occur next to the other interfaces of language.

Table II.1.

Labels used in the eclectic portion.

$^{CE}/$ = chiloeclectad

$^{E}/$ = eclectad

$^{EE}/$ = endoeclectad

$^{CZ}/$ = chilozygad

$^{Z}/$ = zygad

Table II.2.

Nodes used only in the eclectic portion.

	Competence	Performance (downward transduction)	Performance (upward transduction)
TACTIC CHAMELEON node			 *
DOWNWARD CHAMELEON node			
UPWARD CHAMELEON node			
ECLECTIC DIAMOND node		same	same
GATE node		same	same

* this symbol may be called a CONSISTENCY COUNTER

UNORDERED OR nodes, depending on the direction of transduction. An ECLECTIC DIAMOND node is a three-way node which serves to connect the eclectic and chiloeclectic tactic patterns to the other patterns of the eclectic sector; its performance is described below. A GATE node serves to connect the network of the eclectic portion to the rest of the linguistic model; it performs differently during upward and during downward transduction, in ways that are described below. A GATE node has an upper side, a lower side, and a left side, each of which must be joined to a single line segment; the line segment joined to the left side of a GATE node always belongs to the eclectic portion.

2. Description of competence.

A typical eclectic portion consists of six patterns:

1. the Chiloeclectic Tactic Pattern,
2. the Eclectic Tactic Pattern,
3. the Eclectic Projection Pattern,
4. the Chiloeclectic Alternation Pattern,
5. the Eclectic Disjunction Pattern,
6. the Eclectic Reversible Sign Pattern.

The Chiloeclectic Tactic Pattern specifies the distinctions which the language requires its speakers to make at the eclectic interface of the language with human experience. The network for this pattern contains some zero elements, labeled as chilozygads, each of which is joined through a downward UNORDERED OR node to two or more ECLECTIC DIAMOND nodes, labeled as chiloeclectads. Each chilozygad represents one selection which can be made by observing the world of human experience, and the chiloeclectads dominated by that chilozygad represent the options,

i.e. the mutually-exclusive observable facts about the world of human experience, among which that selection must be made.

For example, before a man speaks an utterance in Yana, he must observe whether he is speaking to another man or to a woman, since that fact will determine the dialect of Yana in which he will speak. The description of Yana presented in Chapter III therefore has a chilozygad ^{CZ}/sex of hearer/ which names the kind of selection which must be made. That chilozygad dominates the two chiloeclectads ^{CE}/male/ and ^{CE}/female/, which name two mutually-exclusive facts, exactly one of which the speaker must observe to exist. A chilozygad and the chiloeclectads which it dominates may be called a "span" of the Chiloeclectic Tactic Pattern.

The Eclectic Tactic Pattern specifies the selections which may be made among the linguistic varieties of the language. The network for this pattern contains some zero elements, labeled as zygads, each of which is joined downward through a TACTIC CHAMELEON node[7] to two or more ECLECTIC DIAMOND nodes, each labeled as an eclectad. Each zygad represents one selection which can be made among the mutually-exclusive varieties of the language, and the eclectads which it dominates represent those varieties.

For example, Serbo-Croatian may be written in either the Roman or the Cyrillic script. The description of Serbo-Croatian presented in Chapter III therefore has a zygad ^{Z}/script/ which names the kind of selection which must be made; and that zygad dominates the two eclectads ^{E}/Roman/ and ^{E}/Cyrillic/, which name the two mutually-exclusive scripts, exactly

[7]The diagram in Figure II.3. is especially simplified in that it has only one span of this tactic pattern and therefore has only one TACTIC CHAMELEON node. An eclectic portion which has more than one span (and more than one TACTIC CHAMELEON node) may require some additional network which will allow downward portmanteau activation from eclectads of different spans.

one of which must be used to write any given utterance in the language. A zygad and the eclectads which it dominates may be called a "span" of the Eclectic Tactic Pattern.

The Eclectic Projection Pattern consists solely of simple line segments which run to the eclectic interface from the ECLECTIC DIAMOND nodes labeled as chiloeclectads. This pattern represents the projection, by the mutually-exclusive chiloeclectads dominated by each chilozygad, of the distinctions among themselves across the eclectic interface onto human experience, thereby forming the eclectic substance.

For example, in the description of Serbo-Croatian in Chapter III, the chiloeclectic tactic pattern has two spans: one in which ^{CZ}/ethnicity of writer/ dominates ^{CE}/Serb/ and ^{CE}/Croat/, the other in which ^{CZ}/needs of prospective readers/ dominates ^{CE}/need to read in Cyrillic Script/, ^{CE}/need to read in Roman script/, and ^{CE}/no need to read in a particular script/. The first of these spans projects the distinction between "Serb" and "Croat" onto the whole population of those who can write the Serbo-Croatian language, and thereby claims to partition those people into two groups: Serbs and Croats. The second of these spans projects a three-way distinction upon the whole population of those who can read the Serbo-Croatian language, and thereby claims to partition those people into three groups: those who, for some reason, can or will only read in Cyrillic script; those who, for some reason, can or will only read in Roman script; and those who are able and willing to read in either script.

The Chiloeclectic Alternation Pattern, located between the eclectads and the chiloeclectads, is a rather normally-shaped alternation pattern. It contains both upward and downward UNORDERED AND, ORDERED OR, and UN-ORDERED OR nodes, but probably contains no ORDERED AND nodes. This

pattern shows how the observable facts of human experience, represented by chiloeclectads, combine in various ways to prescribe the use of certain varieties of a language, represented by eclectads; and, conversely, it shows how the use of certain varieties of language indicate that certain facts of human experience exist and may be observed.

The Eclectic Disjunction Pattern consists entirely of eclectic disjunction clusters, each of which consists of a downward UNORDERED OR node and two or more GATE nodes, with line segments joining the multiple (lower) side of its OR node to the upper sides of its GATE nodes. Each eclectic disjunction cluster represents one point in the realization or tactic portion of the network at which downward transduction diverges in one direction or another according to selections made through the eclectic portion. For example, the grapheme of the Serbo-Croatian orthography $^{G}/\Phi/_{o}$, which corresponds to the Serbo-Croatian phoneme $^{P}/f/$, is always realized by the grapheme $^{G}/\Phi/_{s}$ of the Cyrillic script (which is itself realized by the character-shapes Ф, ф, and ф) or by the grapheme $^{G}/F/_{s}$ of the Roman script (which is itself realized by the character-shapes F, f, and f), according to the script which the writer is using. The description of Serbo-Croatian therefore includes an eclectic disjunction cluster which has an upward line segment in the realization portion labeled by $^{G}/\Phi/_{o}$, two downward line segments in the realization portion labeled by $^{G}/\Phi/_{s}$ and $^{G}/F/_{s}$, and two line segments toward the left in the eclectic portion labeled ^{E}/Cyrillic/ and ^{E}/Roman/, respectively.

The Eclectic Reversible Sign Pattern is located between the ECLECTIC DIAMOND nodes labeled as eclectads and the GATE nodes. It is so named because research has shown that the same eclectic network can serve as a performance model during either upward or downward transduction, provided

that the direction of this sign pattern is reversed. During downward transduction, activation typically runs across this pattern from each eclectad to a certain group of GATE nodes, and activation typically runs to each GATE node from several eclectads. During upward transduction, activation typically runs across this pattern from each GATE node to a certain group of eclectads, and activation typically runs to each eclectad from several GATE nodes.

For example, during each downward transduction through the eclectic portion of the model of Sicilian, only one eclectad, representing one dialect, is activated. Activation runs downward from that one ECLECTIC DIAMOND node; when it reaches the sign pattern, it runs through one downward UNORDERED AND node and becomes several activations which reach several upward UNORDERED OR nodes on the other side of the sign pattern; from there it runs to the left sides of as many GATE nodes as there are choices which characterize these dialects of Sicilian. But during upward transduction through the same eclectic portion, activation will pass through many GATE nodes. One eclectic activation runs upward from each such GATE node; when it reaches the sign pattern, it runs through one upward UNORDERED AND node and becomes several activations which reach several downward UNORDERED OR nodes on the other side of the sign pattern; from there it runs to as many ECLECTIC DIAMOND nodes as there are dialects of Sicilian characterized by the upward transduction which activated the GATE node.

In the eclectic reversible sign pattern, therefore, the line segments and the locations of nodes are the same for the performance model in either direction. However, in order to reverse the direction of the sign pattern, the nodes shown in the competence model as DOWNWARD CHAMELEON

nodes must perform during downward transduction as downward UNORDERED AND nodes and during upward transduction as downward UNORDERED OR nodes, while the nodes shown in the competence model as UPWARD CHAMELEON nodes must perform during downward transduction as upward UNORDERED OR nodes and during upward transduction as upward UNORDERED AND nodes.

Network fragments which describe the alternation pattern, the projection pattern, and the two tactic patterns of the eclectic portion can all be adequately labeled by eclectads and chiloeclectads (for labeling all the ECLECTIC DIAMOND nodes) and by zygads and chilozygads (for labeling all the zero elements above the tactic patterns). However, the adequate labeling of the eclectic reversible sign pattern will require an additional kind of label, because realization formulas which include eclectic disjunction clusters must have some way of showing how the line segments from the left sides of their GATE nodes are connected to the eclectic sector of the language. This causes no difficulty if the line segment belongs to a single-level eclectic sign pattern, or if it runs directly across a multi-level pattern. Such a line segment will run directly from a GATE node to a DOWNWARD CHAMELEON node connected directly to an ECLECTIC DIAMOND node, and the eclectad label for that ECLECTIC DIAMOND node can equally well represent that DOWNWARD CHAMELEON node. However, eclectic reversible sign patterns may sometimes be factored into multi-level sign patterns in the same way as other sign patterns. When an eclectic reversible sign pattern is a multi-level sign pattern, some GATE nodes will have their left sides connected to nodes which cannot be labeled as eclectads. To show how such GATE nodes are connected to a multi-level reversible sign pattern, every UPWARD CHAMELEON node to which any GATE

node connects directly (or through only one DOWNWARD CHAMELEON node) can be labeled as an endoeclectad.

3. Description of performance during downward transduction.

When the realization portion of a language is activated for the downward transduction of an utterance, the eclectic portion is also activated in order to choose certain varieties of the language and to make the utterance conform to the varieties chosen. The necessary activation of the eclectic portion begins at the eclectic interface and at the zero elements labeled as chilozygads and zygads, and it proceeds, through the network shown in Figure II.4., to the GATE nodes of the eclectic disjunction clusters.

The initial activation of the eclectic network, which depends on what exists in the eclectic substance, begins at the eclectic interface in certain line segments of the eclectic projection pattern[8] and proceeds downward through those line segments to the chiloeclectads joined to them. Additional, tactic activations begin at all the chilozygads within the chiloeclectic tactic pattern, and each of these tactic activations proceeds, through the network of its span, to the one ECLECTIC DIAMOND node of the span which is activated through the projection pattern.

Activation proceeds downward from the chiloeclectads which have been activated through both the projection pattern and the chiloeclectic tactic pattern; it runs through the chiloeclectic alternation pattern until it reaches certain eclectads. Additional, tactic activations begin at all the zygads within the eclectic tactic pattern, and each of these tactic

[8]Appropriate operations across the interfaces of a language are assumed, but are not described here.

activations proceeds, through its TACTIC CHAMELEON node acting as a downward UNORDERED OR node, to the one ECLECTIC DIAMOND node of its span which is activated through the alternation pattern. Activation proceeds downward from the eclectads which have been activated through both the alternation pattern and the eclectic tactic pattern. This activation runs through the eclectic reversible sign pattern (with the DOWNWARD CHAMELEON and UPWARD CHAMELEON nodes acting as downward UNORDERED AND and upward UNORDERED OR nodes, respectively) until it reaches the left side of one GATE node within each eclectic disjunction cluster. The GATE nodes which are reached by this eclectic activation are then opened, and all the other GATE nodes are closed. When any downward transduction activates the line segment joined to the upper side of a GATE node, that transduction passes downward across that GATE node and activates the line segment joined to its lower side whenever the node is open. Any activation for downward transduction which reaches the upper side of a closed GATE node is blocked.

For example, let it be assumed that a person who is about to write a text in Serbo-Croatian knows that he is a Serb, and also knows that his intended readers know both orthographies of that language and have no strong opinions about which orthography should be used to write it. The characters which such a person will use for writing Serbo-Croatian will be defined by the network for the eclectic portion of Serbo-Croatian, which is shown in Figure III.1. In that network, the two line segments which cross the eclectic interface and which are joined to ^{CE}/Serb/ and ^{CE}/no need to read in a particular script/ are activated by some interfacial processes that are not defined here, and the two ECLECTIC DIAMOND nodes attached to those line segments are also activated. Within the chiloeclectic tactic pattern, one activation runs from each chilozygad

to the ECLECTIC DIAMOND node which has been activated in the span which it dominates. These activations within the chiloeclectic tactic pattern make sure that the eclectic substance has been well formed by the projection of the linguistic form of Serbo-Croatian onto human experience, and that exactly one chiloeclectad within each span has been activated.

Because ^{CE}/no need to read in a particular script/ is a two-way ECLECTIC DIAMOND node, no activation runs downward from it. However, activation runs downward from ^{CE}/Serb/ to a downward ORDERED OR node in the chiloeclectic alternation pattern. Because neither ^{CE}/need to read in Roman script/ nor ^{CE}/need to read in Cyrillic script/ is activated, the activation from that ORDERED OR node runs along the non-priority line segment joined to its multiple side, and reaches the ECLECTIC DIAMOND node labeled ^{E}/Cyrillic/. Within the eclectic tactic pattern, one activation runs from the zygad to the ECLECTIC DIAMOND node which is activated, thereby making sure that only one eclectad within the span has been selected. The activation then runs downward from the node labeled ^{E}/Cyrillic/ to the DOWNWARD CHAMELEON node acting as a downward UNORDERED AND node. There it divides into as many activations as there are line segments joined to the multiple side of the DOWNWARD CHAMELEON node. These activations run along those line segments to all the GATE nodes characteristic of the Cyrillic script, and open those nodes for downward transduction.

4. Description of performance during upward transduction.

When the realization portion of a language is activated for the upward transduction of an utterance, the eclectic portion is also activated in order to determine what exists in the eclectic substance of the language, identify which varieties of the language are being used, and observe

whether the same varieties are used throughout the entire utterance. The necessary activation of the eclectic sector begins at the GATE nodes in the eclectic disjunction clusters, and it proceeds, through the network shown in Figure II.5., to the eclectic interface and to the zero elements labeled as zygads and chilozygads.

The eclectic portion becomes activated whenever any upward transduction activates the line segment joined to the lower side of a GATE node. Such a transduction always passes across the GATE node and activates the line segment joined to its upper side. However, as the transduction passes across the GATE node, it produces a second, eclectic activation which proceeds from the left side of the GATE node into the network of the eclectic portion. Each such eclectic activation runs upward through the eclectic reversible sign pattern (with the DOWNWARD CHAMELEON and UPWARD CHAMELEON nodes acting as downward UNORDERED OR and upward UNORDERED AND nodes, respectively) until it reaches one eclectad or simultaneously reaches two or more eclectads, which may or may not be in the same span of the eclectic tactic pattern.

Before activation can proceed upward beyond the eclectads, the eclectic tactic pattern must operate in a special way to determine whether the utterance remains eclectically self-consistent. Special, probatory activation tries to proceed along the line segment between the activated eclectad and the TACTIC CHAMELEON node acting as a CONSISTENCY COUNTER (or tries to proceed simultaneously along all the line segments between several simultaneously-activated eclectads and the TACTIC CHAMELEON node acting in that way). The CONSISTENCY COUNTER may accept or reject the probatory activation along each line. At the beginning of the transduction of an utterance, the CONSISTENCY COUNTER is set to accept

probatory activation along the line segments from all the eclectads of its span; but whenever it accepts probatory activation along one such line segment, or accepts it along two or more such line segments simultaneously, it is reset to reject probatory activation along all other such line segments. The CONSISTENCY COUNTER can therefore accept only a probatory activation which is not inconsistent with all the other probatory activations that it has already accepted for the same utterance. If the CONSISTENCY COUNTER accepts the probatory activation from a single eclectad, or if it accepts at least one of several simultaneous probatory activations from several eclectads, the utterance is known to be eclectically self-consistent. (The first probatory activation for an utterance must of course be accepted.) But if the CONSISTENCY COUNTER rejects the probatory activation from a single eclectad, or if it rejects all of several simultaneous activations from several eclectads, the utterance is thereby known to be eclectically inconsistent with itself.

Once the utterance is known to be eclectically self-consistent, an additional, tactic activation of the usual sort proceeds from the zygad of each span within which consistency was checked. This tactic activation runs back through the TACTIC CHAMELEON node of the span to each eclectad of the span which was activated through the sign pattern. Activation then proceeds upward from the eclectads which have been activated through both the sign pattern and the eclectic tactic pattern; it runs through the chiloeclectic alternation pattern until it reaches certain chiloeclectads. Additional, tactic activation begins at all the chilozygads within the chiloeclectic tactic pattern, and each of these tactic activations proceeds through the network of its span to exactly one ECLECTIC DIAMOND node. If an ECLECTIC DIAMOND node of a span has been activated through

the alternation pattern, the tactic activation from the chilozygad of that span activates it also; if no ECLECTIC DIAMOND node of a span has been activated through the alternation pattern, the network of the span will have some way of specifying which ECLECTIC DIAMOND node will receive the tactic activation. When one chiloeclectad has been activated for each span of the chiloeclectic tactic pattern, activation proceeds upward from those ECLECTIC DIAMOND nodes through the chiloeclectic projection pattern to the eclectic interface, thereby indicating what the utterance assumed to exist in the eclectic substance.

For example, let it be assumed that a character of the shape F occurs in a written Serbo-Croatian text. (Figure III.1. shows the essential part of the eclectic portion of Serbo-Croatian.) In that language, such a character is always a realization of $^{G}/\Phi/_{O}$, and it can only occur in a text which has been written in the Roman script. Therefore, whenever an upward transduction for that character passes through the appropriate GATE node in the eclectic disjunction cluster below $^{G}/\Phi/_{O}$, the eclectic activation from that GATE node runs along the line segment to the ECLECTIC DIAMOND node labeled ^{E}/Roman/.

A probatory activation then tries to proceed along the line segment from that ECLECTIC DIAMOND node to the TACTIC CHAMELEON node labeled ^{Z}/script/, which is acting as a CONSISTENCY COUNTER. If earlier parts of the same written text have contained characters that are characteristic of the Cyrillic script, the CONSISTENCY COUNTER will be set up to accept probatory activations only along the line segment from ^{E}/Cyrillic/, and this attempted probatory activation from ^{E}/Roman/ will be rejected. But if all the characters in the earlier parts of the written text have been at least compatible with the Roman script, the CONSISTENCY COUNTER will be set to

accept probatory activations from ^{E}/Roman/ and this attempted probatory activation will be accepted, thereby showing that the text is still eclectically self-consistent.

Once this probatory activation is accepted, an ordinary activation runs downward from the TACTIC CHAMELEON node to the ECLECTIC DIAMOND node labeled ^{E}/Roman/. Activation then runs upward from ^{E}/Roman/ to an upward UNORDERED OR node in the chiloeclectic alternation pattern, from which it may run upward either to ^{CE}/Croat/ or to an upward UNORDERED AND node. If the activation runs to the latter node, it will then run upward both to ^{CE}/need to read in Roman script/ and to either ^{CE}/Croat/ or ^{CE}/Serb/.

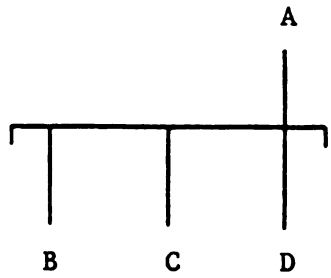
Within the chiloeclectic tactic pattern, one activation runs from each chilozygad to the ECLECTIC DIAMOND node which has been activated in the span which it dominates; if none of the chiloeclectads dominated by ^{CZ}/needs of prospective readers/ is activated through the chiloeclectic alternation pattern, the eclectic activation from that zero element runs to ^{CE}/no need to read in a particular script/, as indicated by the ORDERED OR node in that span. These possible upward activations from the eclectic diamond node labeled ^{E}/Roman/ may therefore lead to a coöccurrence of ^{CE}/Croat/ and ^{CE}/no need to read in a particular script/, or to a coöccurrence of ^{CE}/Serb/ and ^{CE}/need to read in Roman script/, or to a coöccurrence of ^{CE}/Croat/ and ^{CE}/need to read in Roman script/. The linguistic variety symbolized by ^{E}/Roman/ is therefore ambiguous (as is ^{E}/Cyrillic/, mutatis mutandis). The fact that a Serbo-Croatian text is written in the Roman script may show that its writer was a Croat who had no reason to write in the Cyrillic script (i.e. one who knew that his prospective readers either wanted him to write in the Roman script or did not care which script he used), or else it may show that its writer was a

Serb who knew that his intended readers could or would read only in the Roman script.

D. Other modifications to be made in the stratificational model.

Along with the addition of an eclectic portion to the stratificational model of language, this dissertation will make a few small changes in the notation described by Lockwood (1972) for stratificational networks. Each downward ORDERED OR node will be drawn in the form

(1)



(A, ... , D arbitrary labels)

(or a mirror image of that form), so that the line on its singular side is opposite the line at one end of its multiple side. The position of the line from the singular side shows the priority ordering of the lines from the multiple side, the line from the multiple side opposite the line from the singular side having lowest priority. Thus, during downward transduction through the node in (1), A will be realized (if possible) by B, or (if B is not possible) by C, or (if neither B nor C is possible) by D.

Upward ORDERED OR nodes will also be used here, although they have not been commonly used in stratificational networks and are not described by Lockwood (1972). They will be drawn according to the convention just described for downward ORDERED OR nodes, and their performance during transduction is the same, except in the upward direction. Upward ORDERED OR nodes will be necessary for sign patterns in which some properties

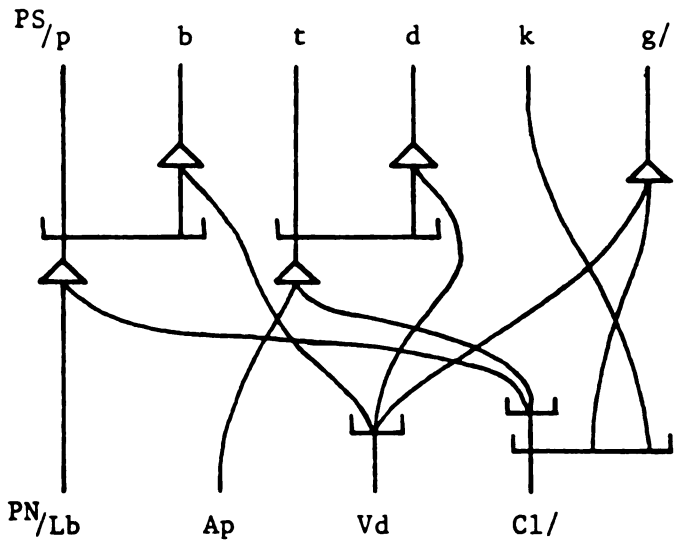
of the -emic signs are unmarked by -ons. For example, the componential analysis of phonemic signs by phonons

(2)

PS/	p	b	t	d	k	g	/
PN/	Cl Lb	Cl Lb Vd	Cl Ap	Cl Ap Vd	Cl	Cl Vd	/

(cf. Lockwood 1972:209) can be drawn as

(3)



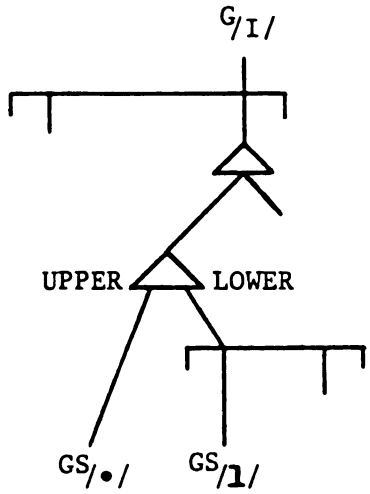
using upward ORDERED OR nodes.

In the description of the orthography of Serbo-Croatian, which is given below, the letter graphemes ^{G}/I/ and ^{G}/J/ may, in certain environments, be embodied by

(4) i and j

respectively, each of these embodiments consisting of two marks. In order to show the relative locations of the marks in such an embodiment, the ORDERED AND node through which the grapheme is realized will be labeled; thus, $^{G}/I/$ will be realized by the formula

(5)



in which the graphemic signs represent the shapes of the two marks and the labels on the node state which shape is located in which relative location.

CHAPTER III. EXAMPLES.

A. ALTERNATIVE ORTHOGRAPHIES: SERBO-CROATIAN.

1. The Language.

a. Identification of the language. Serbo-Croatian is a South Slavic language spoken by more than 15 million people, who live chiefly in the Socialist Federal Republic of Yugoslavia. It is one of the three official languages of the Yugoslav federal government, and within Yugoslavia it is also the official language of the Republics of Bosnia and Hercegovina, Croatia, Montenegro, and Serbia (McDonald et al. 1973:4,89).

The name "Serbo-Croatian", which was created for this language by foreign scholars during the nineteenth century and was officially adopted in Yugoslavia only in 1918 (McDonald, et al. 1973:89), points out the fact that its speakers have not traditionally formed a unified ethnic group. When the ancestors of those who now speak Serbo-Croatian invaded the Roman Empire, they settled in a region which extended on both sides of the boundary between the Eastern and Western halves of the Empire; and ever since, their descendants have been subject to cultural influences from both eastern and western Europe. Further influences which have appeared over the years have now divided them into four ethnic groups: Serbs, Croats, Montenegrins, and Muslim Slavs. The Serbs (officially estimated in 1970 to number 8,412,000) are Eastern Orthodox in their religion; the Croats (4,628,000) are Roman Catholics; the Montenegrins (622,000) are also Eastern Orthodox but, because of the forbidding topography of the mountainous

region where they live, were never fully subjugated by the Ottoman Empire, as the Serbs were subjugated for over three centuries; the Muslim Slavs (1,048,000) are the descendants of those who converted to Islam during Ottoman rule. "Within the Serbo-Croatian speech area . . . the basic index of nationality has been religion. A Roman Catholic speaker of Serbo-Croatian is a Croat. An Eastern Orthodox speaker of the same language is a Serb." However, there are other cultural differences which accompany this difference of religion, since "Communist Party members, who officially have no religion, identify as Serbs or Croats on the basis of cultural factors other than religion" (Bidwell 1962:218,217n).

Each of these four ethnic groups tends to live in a fairly definite region, and the boundaries of the several republics within Yugoslavia have been drawn largely on an ethnic basis. Thus, 73% of all the Serbs in Yugoslavia live in Serbia proper (i.e. the Republic of Serbia less the Autonomous Provinces of Vojvodina and Kosovo), where they form 92.5% of the total population; 78% of the Croats live in the Republic of Croatia, where they form 80.3% of the population; 75% of the Montenegrins live in the Republic of Montenegro, where they form 81.4% of the population. However, the Republic of Bosnia and Hercegovina, which is bounded by those three republics, and which includes the ethnically most variegated region of Yugoslavia, has been left with its traditional boundaries. Within it, 42.9% of the population are Serbs, 21.7% are Croats, and 25.7% are Muslim Slavs (who constitute 87% of that ethnic group within Yugoslavia).[1]

The spoken Serbo-Croatian language has three dialects, which do not correspond to these ethnic groups. The dialects are known as Čakavian,

[1]The population figures in this paragraph are from McDonald, et al. 1973: 76,77.

Kajkavian, and Štokavian because, among their other differences, they have ča, kaj, and što as their respective words for 'what?'. Štokavian is by far the most widely spoken dialect, while Čakavian and Kajkavian are now spoken only in the northern and far western parts of the Serbo-Croatian region. Within the Štokavian dialect, there are three sub-dialects, which are easily mutually intelligible. They are distinguished by the pronunciations which they have developed for the proto-Slavic vowel *ě, and which are known as Ikavian, Ekavian, and Ijekavian, according as their reflexes of that vowel are ^{P}/i/, ^{P}/e/, or ^{P}/ije/.[2]

Several vernacular literary languages have been developed over the centuries in various parts of the Serbo-Croatian region. Some, such as that developed during the twelfth and thirteenth centuries in the Serbian realm of the Nemanjić dynasty and that developed during the Renaissance in the city-state of Ragusa (modern Dubrovnik), have produced notable literatures. However, in the first half of the nineteenth century, there were new efforts in several parts of the Serbo-Croatian region to develop modern, standard literary languages. Some of the most prominent Serb and Croat writers met in Vienna in 1850, and drafted a "Literary Agreement" in which they declared that there should be one unified Serbo-Croatian literary language, based on the southern Serbian dialect.[3] Despite subsequent efforts to create separate Serbian or

[2]The reflex of proto-Slavic *ě in Ijekavian is most commonly ^{P}/ije/, but may also be ^{P}/je/, ^{P}/e/, or ^{P}/i/, depending on certain phonological and morphological conditions, for which see Partridge (1972:112,113). This paragraph has been summarized and paraphrased from Dedijer, et al. (1974: 103n,177), Partridge (1972:13-4), and De Bray:318-9).

[3]For accounts of this meeting see Dedijer, et al. (1974:305-06) and Wilson (1970:312-13). One Slovene also signed the agreement, but he was unable to persuade the other Slovene literati to follow his lead, and a separate Slovenian standard literary language was developed.

Croatian languages, there has since that time been general agreement among those professionally or officially concerned with the language that Serbo-Croatian is and should be one language with one literature.

The standard Serbo-Croatian language, however, admits of several kinds of alternatives. Pronunciation and spelling may be based on either the Ekavian or Ijekavian sub-dialect of the Štokavian dialect. Vocabulary and grammar may be based either on the usage of Belgrade, the capital of both Yugoslavia and Serbia, or on the usage of Zagreb, the capital of Croatia.[4] Most Serbo-Croats who use the Belgrade variety of vocabulary and grammar also use the Ekavian sub-dialect for their pronunciation and spelling, while most of those who use the Zagreb variety also use the Ijekavian sub-dialect (Partridge 1972:112).

b. The situation to be handled in the eclectic portion. In addition to its other kinds of alternations, the standard Serbo-Croatian language has more than one orthography in which it can be written. Two are now regularly used for it, one of which belongs to the Cyrillic script, the other to the Roman script. A third orthography belonging to an Arabic script was formerly in regular use by Muslims who spoke Serbo-Croatian, but it is now used only by older people for private purposes, and no books have been printed in it for several decades.[5]

The Cyrillic orthography now used for Serbo-Croatian was devised by Vuk Stefanović Karadžić (1787-1864), who was a collector and editor of Serbian folk-songs and folk-tales, a sometime official of the Serbian

[4]Examples of such differences between Belgrade (eastern) and Zagreb (western) usage are given by Partridge (1972:113-6).

[5]Personal communication from Hans Wellisch, transmitting a personal communication from Eva Verona.

government, and a Serbian patriot who believed that the Serbian literary language should be that of the common people. When Karadžić was a youth, the literary language of the Serbs was the "Slavonic-Serbian" language, which had been developed by a group of Russian teachers sent in 1727 by the Russian Orthodox Church to Karlovci, the Serbian religious and cultural center within the Hapsburg empire. Slavonic-Serbian was "a mixture of Russian Church Slavonic and Serbian. . . . It was not a codified language, and was understood by a minority of the population. Its form varied from writer to writer depending on his dialect, his knowledge of Russian Church Slavonic and his personal whim as to which Russian Church Slavonic forms he favoured." (Herrity 1973:269). In his efforts to change the standard of the Serbian literary language, Karadžić was encouraged by Jernej Kopitar, an official of the Austrian government who had produced a modern grammar and orthography for the Slovenian language (he was himself a Slovene), and who wanted to promote the cultural unity of the South Slav peoples. Karadžić also had the example of Sava Mrkalj and Dositej Obradović, who had previously tried to revise the vocabulary, grammar, and orthography of literary Serbian to make it agree better with popular usage of the language (Dedijer, et al. 1974:295-96). In addition to several volumes of folklore, a translation of the Bible, and some polemics relating to Serbian politics and the proper form of the Serbian literary language, Karadžić published a Grammar of the Serbian Language, as it is spoken by the common people in 1814, and two editions of a Dictionary of the Serbian language, the first in 1818 and the second, much enlarged, in 1852. Despite a great deal of opposition from those who wanted to keep a Serbian language and orthography that looked as much as possible like Church Slavonic and Russian, he finally succeeded, by the time of his

death, in gaining general acceptance for the standard Serbian language as he had codified it.[6]

Karadžić was not a trained phonetician, but he designed his standard for the Serbian language according to two principles which he had gotten from Kopitar: "write as you speak" and "one sound, one letter". The orthography which he produced for Serbo-Croatian represents, within limits, a reasonable structuralist phonemic analysis of the language; it is shown in Table III.1., with its letters arranged as their corresponding phonemes would be arranged in a phonemic chart. The orthography fails to represent vowel length and the stress-pitch system of the language, both of which are phonemic. The letter Р is shown only once, among the consonants; it may also be syllabic, but the 1850 Literary Agreement specified that syllabic and non-syllabic occurrences of /r/ should be written in the same way. Karadžić first based his work on the Ijekavian dialect of eastern Montenegro, which he regarded as the most authentic voice of the Serbian people[7] because he found there the best versions of their folk-ballads. However, as he developed his orthography, he adjusted it so that it could be applied equally well to other Serbo-Croatian dialects. Thus, in the 1818 edition of his Dictionary he admitted Х and Ф only provisionally to the alphabet, since he believed that they could not be found in native words; but in the 1852 edition he treated them as ordinary letters because he had found them in native words in other dialects (Wilson 1970:387).[8]

[6]For the details of this conflict, which is in fact the life story of Karadžić, see Wilson (1970).

[7]Like many other speakers of Serbo-Croatian, Karadžić perceived no essential cultural distinction between Montenegrins and Serbs.

[8]The 1850 Literary Agreement specified that Х should be regularly written, even though it might not be pronounced in some dialects.

Table III.1.

The letters of the Cyrillic orthography of Serbo-Croatian, arranged as a phonemic analysis.*

Consonants	labial	labio-dental	dental/ alveolar	post-alveolar	palatal	velar
Stops:						
Voiceless	П		Т			К
Voiced	Б		Д			Г
Fricatives:						
Voiceless		Ф	С		Ш	Х
Voiced		В	З		Ж	
Affricates:						
Voiceless			Ц	Ћ	Ч	
Voiced				Ђ	Џ	
Nasals	М		Н		Њ	
Laterals			Л		Љ	
Vibrant			Р			
Semivowel					Ј	

Vowels	front unrounded	central unrounded	back rounded
High	И		У
Mid	Е		О
Low		А	

*The dental/alveolar affricate is articulated with the tip of the tongue raised toward the teeth or front of the teeth ridge; the palatal affricates are articulated with the blade of the tongue raised toward the front palate; the post-alveolar affricates are articulated with the part of the tongue between the tip and front blade raised toward the back of the teeth ridge (Partridge 1972:16).

The Roman orthography now used for Serbo-Croatian was devised by Ljudevit Gaj (1809-1872), who was one of the leaders of the "Illyrian" movement for Serbo-Croatian linguistic unity. Since the Renaissance, the Croats had had a tradition of writing in the vernacular, which had originated in the coastal lands along the Adriatic Sea and which had spread in succeeding centuries to the Croats in other parts of the Hapsburg empire (Partridge 1972:196). By the early decades of the nineteenth century, the Croats were using more than one literary dialect, and were writing their language in seven different orthographies (Dedijer, et al. 1974:300). During those same decades, a movement developed in favor of Croatian literary unification within a unified Serbo-Croatian language. This movement, which took its name from the ancient Roman province of Illyria, had the example of the years of Napoleonic rule, during which an attempt had been made to introduce a single Croatian literary language throughout the Illyrian Provinces of the French Empire, and newspapers had been published in that language (Dedijer, et al. 1974:272-73). It received a great impetus when Karadžić began to publish his books of Serbian folk-songs and the Croats realized that the language of those songs was essentially the same as their own. (The Croatian vernacular had no such similarity to the Slavonic-Serbian language.) The political position of Croatia within the Hapsburg empire gave the Croats a further reason for seeking cultural unification with the Serbs. Because Croatia was constitutionally subordinated to Hungary,[9] the increasing demands by the Hungarians for autonomy within the Empire threatened the Croats with a policy of Magyarization,

[9]Since 1102, when a member of the Hungarian royal family was crowned King of Croatia, the two kingdoms had been in dynastic union. Although Croatia had kept its own local political institutions, the parliament of the Kingdom of Hungary had some right to legislate for Croatia.

and the Illyrianists believed that the Croats could successfully resist that threat only by becoming a part of a unified South Slav people.

Although one Croat writer had suggested that his compatriots should simply adopt the Karadžić standard language and orthography,[10] Gaj apparently believed that the Roman Catholic Croats living in the Hapsburg empire would not willingly use a Cyrillic orthography, which they would associate with Russia and the Eastern Orthodox Church. Therefore, since he believed that the literary language which Karadžić was codifying for the Serbs should also be the literary language of the Croats, he set out to devise an orthography belonging to the Roman script which would coincide with the Cyrillic orthography used by Karadžić. To do so, he borrowed certain letters with diacritic marks from the orthography of Czech, (Partridge 1972:15), and in 1830 he published his Short basis for Croatian-Slavonian orthography. By the time of the 1850 Literary Agreement, the orthography which he had proposed was the one generally used by those Croats who wanted a literary language identical with that of the Serbs.

The Serbo-Croatian language thus came to have two equivalent and interchangeable orthographies. The 1850 Literary Agreement simply assumed that these orthographies would both be used for the unified literary language which it described. The documents which founded the Yugoslav state after the First World War guaranteed its peoples the right to use their own alphabets, as well as to use their own languages and to practice their religions (McDonald, et al. 1973:42). After the Second World War, an agreement reached at Novi Sad in 1954 again confirmed the equality of the Roman and Cyrillic orthographies and the Ekavian and Ijekavian spellings

[10] Ignjat Brlić in his Grammar of the Illyrian language, published in 1833 (Wilson 1970:300n).

(Partridge 1972:196); and the Yugoslav federal constitutions of 1963 and 1974, and several laws enacted to implement them, have all guaranteed the equality of all Yugoslav "languages and alphabets" (McDonald, et al. 1973:96,97; Constitution . . . 1976: Art. 170,171).

The use of these two orthographies for Serbo-Croatian does not necessarily coincide with the use of the Belgrade and Zagreb standard varieties of the language, or with the use of Ekavian and Ijekavian pronunciations. The Cyrillic orthography is now used most often for writing with Ekavian spelling and Belgrade usage, while the Roman orthography is used most often with Ijekavian spelling and Zagreb usage. However, either orthography may be used with either standard variety of vocabulary and grammar, and can represent the pronunciation of either dialect. The use of one orthography or the other now ordinarily depends on the writer's ethnic self-identification, which in turn depends on his religion. Speakers of Serbo-Croatian who are Eastern Orthodox in religion regard themselves as Serbs (or Montenegrins) and ordinarily use the Cyrillic orthography; speakers of the language who are Roman Catholic in religion regard themselves as Croats and ordinarily use the Roman orthography. However, ever since the establishment of the Yugoslav state, its governments have insisted that all Serbo-Croatian school children must learn both orthographies for their language.[11] Any modern, literate Serbo-Croat can therefore read and write his language in either script if he has reason to do so.

[11]Personal communication from Ljubica Bujas.

2. The Data.

The Serbian orthography of the Cyrillic script, the Croatian orthography of the Roman script, and the correspondences between them are shown in Table III.2. The Serbian orthography has 30 letters, while the Croatian orthography has 23 letters and two diacritic marks, which may be combined in various ways. In three cases--LJ, NJ, and DŽ--the Croatian orthography uses pairs of its letters to correspond to single Serbian letters. (The Zagreb Academy recognizes single Croatian letters for these three Serbian letters, but they are not used except in its own publications.) Another pair of letter--DJ--replaces Ђ when Serbo-Croatian words are borrowed into foreign languages that use the Roman script; however the use of DJ in Serbo-Croatian itself is now considered old-fashioned (De Bray 1969: 317). In all four letter-sequences--LJ, NJ, DŽ, and DJ--the two letters act separately with respect to capitalization; thus the name which is written entirely in capitals as 'ЊЕГОШ' and 'NJEGOŠ' will appear as 'Његош' and 'Njegoš' if only its first letter is to be capitalized. Both lists in Table III.2. are arranged in the Serbian alphabetical order; the Croatian alphabet has its own order.

Although these two orthographies belong to different scripts, they are not wholly dissimilar. Many of the marks which appear in printed Serbo-Croatian can serve equally well to realize graphemes of either its Cyrillic or its Roman orthography. There are three reasons for this similarity between the two scripts; one reason affects certain correlations between phonemes of Serbo-Croatian and characters of its orthographies; the second affects the emic internal structure of both orthographies; the third affects some etic facts about the shapes of some characters.

Table III.2.

Correspondences between the Serbian and Croatian orthographies.

Serbian (Cyrillic)	Croatian (Roman)	Serbian (Cyrillic)	Croatian (Roman)
А	A	Н	N
Б	B	Њ	NJ
В	V	О	O
Г	G	П	P
Д	D	Р	R
Ђ	Đ	С	S
Е	E	Т	T
Ж	Ž	Ћ	Ć
З	Z	У	U
И	I	Ф	F
Ј	J	Х	H
К	K	Ц	C
Л	L	Ч	Č
Љ	LJ	Џ	DŽ
М	M	Ш	Š

(In Academy usage, ǉ replaces LJ, ń replaces NJ, and ǵ replaces DŽ.)

The first reason for this similarity is that both scripts are historically derived, at a distance of about three millenia, from the same original script. The early Greek alphabets which were developed during the tenth and ninth centuries B.C. were all similar to one another, but can be divided into two main kinds, eastern and western, according to the shapes of some characters and the correspondences of some characters to phonemes (Ullman 1969:25-6,31,32). The present-day Roman script has evolved from the formal alphabet used for the Latin language in the days of the Roman republic and empire; that alphabet was borrowed and adapted from the Etruscan alphabet, which was itself borrowed and adapted from an early Greek script of the western kind. The present-day Cyrillic script has evolved from the Cyrillic alphabet devised in the ninth or tenth century A.D. for use in missionary work among the Slavs;[12] that alphabet was borrowed and adapted from the then-current Greek uncial alphabet, which had evolved from the Ionic Greek alphabet of Hellenistic and Classical times, which had itself evolved from an earlier Greek alphabet of the eastern type.

The present-day Roman and Cyrillic scripts still share a few character shapes and a few correspondences with pronunciation which they have both retained from the early Greek alphabets. Thus, in both the Croatian orthography of the Roman script and the Serbian orthography of the Cyrillic script, E and O represent, respectively, the unrounded mid-front and rounded mid-back vowel phonemes; M represents the bilabial

[12]The name "Cyrillic" commemorates Saint Cyril (d. 869; Cyril was his monastic name, his original name was Constantine) who, with his brother Saint Methodius (d. 885), did the first Christian missionary work among the Slavs. It is probable, however, that if Cyril and Methodius themselves devised any alphabet, it was the Glagolitic alphabet, and that the original Cyrillic alphabet was devised later by their disciples. The historical details have become obscured by legend.

nasal continuant and T the voiceless dental stop phonemes; and B represents a voiced labial phoneme, although it is the bilabial stop for the Roman script and labio-dental fricative for the Cyrillic.

The second reason for the similarity between the Cyrillic and Roman scripts is their membership in a European graphic Sprachbund which also includes the Irish, Fraktur, Armenian, and present-day Greek scripts. All of these scripts make a distinction between two sets of characters, one of which may be called the "majuscule", "capital", or "upper-case" characters, and the other of which may be called the "minuscule", "small", or "lower-case" characters. The majuscule characters are typically relatively large and all of the same height; they are typically used for all the letters in words which need special prominence, or for the first letters of certain kinds of words or of words in certain positions. The minuscule characters are typically relatively small and more various in size; they are typically used for letters in all other words or in all other positions within words.

Some scripts of this Sprachbund also make a second distinction between one set of characters used for words that are emphasized, borrowed, or otherwise marked as unusual, and another set of characters used for other words. For both the Roman and Cyrillic scripts, the difference between these two sets of characters is ordinarily found in the direction of the non-horizontal axes of the characters; those of the set used for ordinary words are upright, with their non-horizontal axes intersecting the horizontal at a right angle, while the characters of the set used for unusual words are sloped, with their axes intersecting the horizontal at less than a right angle. For the Roman script, the sloped characters used for unusual words are called "italics".

All of the scripts in this Sprachbund are compound scripts, as that term was defined by Herrick (1975); each of them is composed of several "coscripts", i.e. groups of character shapes, each of which has enough shapes to embody all the letter graphemes of the script, and each of which is used under specific circumstances to provide the character shapes for writing texts in that script. The Roman and the Cyrillic scripts each have five coscripts. A linguistic analysis of either script may formally characterize the distinction between majuscule and minuscule characters by postulating the presence or absence of a suprasegmental grapheme $^{G}/\equiv/$, and may characterize the other distinction by postulating the presence or absence of another suprasegmental grapheme $^{G}/—/$. Four coscripts may then be defined by the possible combinations of these two distinctions, and each script has in addition a small-capital coscript which may be characterized by postulating the presence of a suprasegmental grapheme $^{G}/=/$.[13] Names for these coscripts, and the graphemes which characterize them, will then be

upright capital coscript	$^{G}/\equiv/$
sloped capital coscript	$^{G}/\equiv/$ and $^{G}/—/$
small-capital coscript	$^{G}/=/$
upright lower-case coscript	Ø
sloped lower-case coscript	$^{G}/—/$.

The third reason for the similarity between the Cyrillic and Roman scripts is the decision by the Russian Tsar Peter I (1672-1725) to alter the characters used for printing the Russian language, so as to make them resemble, in their details, the characters of the Roman script used for

[13] On the small-capital coscript of the Cyrillic script, see Trager (1972: 261).

printing the languages of Western Europe. Until the beginning of the eighteenth century, Russian had been printed in the "poluustav" script, which was a close imitation of the book-hand used by medieval Russian scribes. Since it was also used for printing religious texts in the Church Slavonic language, the poluustav script had connotations of the old, conservative Russia from which Peter wanted his people to break away, and Peter believed that the books which would introduce Russia to the arts and sciences of Western Europe should look as much as possible like Western European books. For him, as for the humanistic scholars of Western Europe over two centuries before (Carter 1969:31,117), the use of a certain style of printer's type was to be a public statement of an intellectual attitude. He therefore ordered the preparation of a new script for the Russian alphabet, which he called the "graždanskij šrift" or "civil type". The characters of this new script, like those of the Roman script, were to consist of straight lines or the fewest possible curves, relatively thick lines running vertically or along the upper-left to lower-right diagonal, relatively thin lines running in other directions, and serifs on the ends of most lines. Some Russian letters had already been printed in such a style, but either as engraved letters or as the letters in a few displayed words. Peter decided to have a full set of printer's types made, with complete fonts in several sizes, so that entire books could be printed in the new script. At the end of 1706, he ordered sketches to be made for the new printer's types; the first book using those types was printed early in 1708; several variants of them were then designed, cast, and printed; and in January 1710, Peter personally chose certain characters as the ones which should thereafter be

used for printing all "historical and manufacturing" books in Russian.[14]

Peter's graždanskij šrift has since come to be used for all Cyrillic printing in Russian and in other languages, except for deliberate archaisms and certain ornamental uses, and it is the script referred to here as the Cyrillic script. Many of the type faces which have been designed for the Roman script have also been adapted to the Cyrillic script, so that characters from such a type face which have the same character-shape are identical in appearance, even though they may represent different scripts. For such a type face, the same printer's type can be used to print certain characters in both scripts; and a literate Serbo-Croat who sees such a printed character will be unable to say whether it realizes a Serbian, Cyrillic grapheme or a Croatian, Roman grapheme if it lacks an identifying context.

The symbol to be used here for each letter grapheme of either script will be its upright capital character, bracketed by slant lines with superscript G and subscript S;[15] e.g. the Roman letter grapheme D will be symbolized by $^{G}/D/_{S}$. If this convention would cause symbols for both scripts to be the same, each symbol involved will include a superscript small C or R according to the script which it represents; e.g. the Cyrillic letter grapheme H will be symbolized by $^{G}/H^{C}/_{S}$. Serbo-Croatian also uses, for each script, the three suprasegmental graphemes which characterise the coscripts described above. The symbols for these suprasegmental graphemes will use the same superscripts and subscripts; e.g.

[14]This account has been summarized and paraphrased from Kaldor (1969-70).

[15]The reason for the subscript S will appear below, where these graphemes are redefined as script-graphemes and are distinguished from orthography-graphemes.

the Roman capital grapheme will be symbolized by $^{G}/\equiv\!\!=^{r}/_{s}$.

Within each script, each letter grapheme, together with the supra-segmental graphemes (if any) which occur simultaneously with it, is ordinarily embodied by one mark and realized by one graphemic sign describing the shape of that mark. Each graphemic sign is symbolized by an illustrative character, bracketed by slant lines with superscript GS; e.g. the shape of the mark embodying lower-case E in either script is symbolized by $^{GS}/e/$. If a letter grapheme is embodied by more than one mark, it is realized by one graphemic sign of shape for each mark. Each of the diacritic graphemes of the Roman script is realized by a single graphemic sign and is embodied by a single mark: $^{G}/\check{}/_{s}$ by $^{GS}/\check{}/$ and a háček, $^{G}/\acute{}/_{s}$ by $^{GS}/\acute{}/$ and an acute accent. A diacritic grapheme always occurs simultaneously with a letter grapheme, and the mark which embodies it occurs above the mark which embodies that letter grapheme.

In both the Cyrillic script and the Roman script, each mark belonging to the sloped capital coscript is typically identical with the mark for the same letter belonging to the upright capital coscript, except that it is sloped, and each mark belonging to the small-capital coscript is identical with the mark for the same letter belonging to the upright capital coscript, except that it is shorter. In both scripts, only the upright capital coscript, upright lower-case coscript, and sloped lower-case coscript ordinarily have distinctive sets of typical character shapes. A listing of the marks of either script therefore needs to show only the marks which belong to these three coscripts.

The letter graphemes which are necessary for Serbo-Croatian, the three distinctive coscripts, and examples of marks which embody each of these letters and belong to each of these coscripts are shown for the

Cyrillic script in Table III.3. and for the Roman script in Table III.4. For each combination of a coscript and a letter grapheme, these tables show one mark which typically embodies that combination, the graphemic sign which describes the shape of that mark, and perhaps some other marks which can also embody that combination. Footnotes to the tables explain the status of these other marks. Some seem to be shaped differently from the typical mark, but can presumably be covered by the formal definition of its graphemic sign of shape; some presumably will be covered by the formal definition of the graphemic sign of shape for a mark given as typical of the same letter grapheme but belonging to some other coscript, some presumably must be described by graphemic signs of shape other than those given in the table.

The typical marks given in Tables III.3. and III.4. are described by 71 graphemic signs of shape. Those which realize only a single letter grapheme are listed in Table III.5.; those which realize more than one letter grapheme are listed in Table III.6., together with the letter graphemes which they realize.

3. The necessary eclectic portion.

a. Outline of the presentation. The linguistic model of the competence of a literate Serbo-Croat must specify the circumstances under which he will choose to write his language in the Cyrillic or in the Roman script, and it must also describe the effects which this choice has on the realization of his written utterances in the language. To arrive at such a model, separate descriptions will first be made for the eclectic portion and for relevant parts of the realization portion, in which the whole of the one script will be treated as an alternative to the whole of the

Table III.3.

The Serbian segmental and suprasegmental graphemes, and marks which realize simultaneous combinations of them in three coscripts.

supra-segmental graphemes → / letter graphemes ↓	$^{G}/\equiv^{c}/_{s}$ upright capital coscript				$^{G}/\ ^{c}/_{s}$ upright lower-case coscript				$^{G}/—^{c}/_{s}$ sloped lower-case coscript			
	selected typical mark	graphemic sign for its shape	other possible marks		selected typical mark	graphemic sign for its shape	other possible marks		selected typical mark	graphemic sign for its shape	other possible marks	
$^{G}/\mathrm{A}^{c}/_{s}$	А	GS/А/	А	(2)	а	GS/а/	а	(2)	*а*	GS/а/	*а*	(2)
							ɑ	(3)			*а*	(3)
$^{G}/\mathrm{Б}/_{s}$	Б	GS/Б/	Б	(2)	б	GS/б/	б	(2)	*б*	GS/б/	*б*	(4)
$^{G}/\mathrm{B}^{c}/_{s}$	В	GS/В/	В	(2)	в	GS/в/	в	(2)	*в*	GS/в/	*в в*	(3)
$^{G}/\Gamma/_{s}$	Г	GS/Г/	Г	(2)	г	GS/г/	г	(2)	*г*	GS/г/	*ɩ*	(2)
							ɾ	(3)			*г г*	(3)
											ī	(4)
$^{G}/\mathrm{Д}/_{s}$	Д	GS/Д/	Д Д	(2)	д	GS/д/		(1)	*д*	GS/д/	*д*	(2)
			Δ Δ	(4)			∂	(3)			*д*	(3)
							ɡ	(4)			*ɡ*	(4)

Table III.3. (Contd.)

G/Ћ/s	Ћ	GS/Ћ/	Ћ Ћ (2) ћ (3) Ћ (4)	ћ	GS/ћ/	ћ ћ (2)	ћ	GS/ћ/	ћ ћ (2)
G/Eᶜ/s	Е	GS/Е/	Е (2)	е	GS/е/	е (2)	е	GS/е/	
G/Ж/s	Ж	GS/Ж/	Ж Ж (2) Ж (2)	ж	GS/Ж/	(1)	ж	GS/Ж/	(1) ж (2)
G/З/s	З	GS/З/	З З (2)	з	GS/З/	(1)	з	GS/З/	(1)
G/И/s	И	GS/И/	И И (2)	и	GS/И/	(1) ц (3)	ц	GS/ц/	ц ш (2) и (3)
G/Jᶜ/s	J	GS/J/	J J (2) J (4)	j	GS/•/ and /J/	j (2)	j	GS/•/ and /J/	j (2)
G/Kᶜ/s	К	GS/К/	К К (2)	к	GS/К/	(1)	к	GS/К/	(1)
G/Л/s	Л	GS/Л/	Л (2) Λ Λ (4)	л	GS/Л/	(1)	л	GS/Л/	(1) л л (4)

Table III.3. (Contd.)

G/Љ/s	Љ	GS/Љ/	Љ (2) Љ Љ (4)	Љ	GS/Љ/	(1)		Љ	GS/Љ/	(1) Љ	(4)
G/Мc/s	М	GS/М/	М М (2) М (4)	М	GS/М/	(1)		М	GS/М/	(1) М М	(4)
G/Нc/s	Н	GS/Н/	Н (2)	Н	GS/Н/	(1)		Н	GS/Н/	Н Н	(2)
G/Њ/s	Њ	GS/Њ/	Њ (2)	Њ	GS/Њ/	(1)		Њ	GS/Њ/	Њ Њ	(2)
G/Оc/s	О	GS/О/		О	GS/О/			О	GS/О/		
G/П/s	П	GS/П/	П (2)	п	GS/П/	П (2)		п	GS/П/	п	(2)
						п (3)				П П	(3)
										ū	(4)
G/Рc/s	Р	GS/Р/	Р (2)	р	GS/Р/	р (2)		р	GS/Р/	р р	(2)
G/Сc/s	С	GS/С/	С (2)	с	GS/С/	с (2)		с	GS/С/	с	(2)

Table III.3. (Contd.)

G/тс/s	т	GS/т/	т	(2)	т	GS/т/	т	(2)	т	GS/т/	т	(2)	т	GS/т/	т	(2)
							т	(3)					т т	(3)
													т т	(4)
G/ћ/s	ћ	GS/ћ/	ћ	(2)	ћ	GS/ћ/	ћ	(2)	ћ	GS/ћ/	ћ	(2)	ћ	GS/ћ/	ћ	(2)
			ћ	(3)												
			ћ	(4)												
G/у/s	у	GS/у/	у у	(2)	у	GS/у/	у у	(2)	у	GS/у/	у	(2)	у	GS/у/	у	(2)
			у	(3)			у	(3)					у у	(3)
G/ф/s	ф	GS/ф/	ф ф	(2)	ф	GS/ф/	ф ф	(2)	ф	GS/ф/	ф	(3)	ф ф	GS/ф/	ф ф	(3)
G/х/s	х	GS/х/	х	(2)	х	GS/х/		(1)	х	GS/х/	х	(2)	х х	GS/х/	х х	(2)
G/ц/s	ц	GS/ц/	ц ц	(2)	ц	GS/ц/		(1)	ц	GS/ц/	ц	(2)	ц	GS/ц/	ц	(2)
													ц	(3)		
G/ч/s	ч	GS/ч/	ч	(2)	ч	GS/ч/		(1)	ч	GS/ч/	ч	(2)	ч ч	GS/ч/	ч ч	(2)

Table III.3. (Contd.)

$^{G}/\psi/_{s}$		$^{GS}/\psi/$		(2)		$^{GS}/\psi/$	(1)		$^{GS}/\psi/$		(2)
											(3)
$^{G}/\omega/_{s}$		$^{GS}/\omega/$		(2)		$^{GS}/\omega/$	(1)		$^{GS}/\omega/$		(2)
											(3)
											(4)

(1) Same kinds of marks as those shown for the upright capital coscript, modified for height or slope as necessary.

(2) Variant shapes of marks which can probably be described by the graphemic sign of shape shown.

(3) Variant shapes of marks which can be described by the graphemic sign of shape which is characteristic of another coscript.

(4) Variant shapes of marks which must probably be described by a different graphemic sign of shape than that shown.

Table III.4.

The Croatian segmental and suprasegmental graphemes, and marks which realize simultaneous combinations of them in three coscripts.

supra-segmental graphemes → / letter graphemes ↓	$^{G}/\equiv^{r}/_{s}$ upright capital coscript				$^{G}/$ — $^{r}/_{s}$ upright lower-case coscript				$^{G}/$ — $^{r}/_{s}$ sloped lower-case coscript			
	selected typical mark	graphemic sign for its shape	other possible marks		selected typical mark	graphemic sign for its shape	other possible marks		selected typical mark	graphemic sign for its shape	other possible marks	
$^{G}/A^{r}/_{s}$	A	$^{GS}/A/$	A Ꭿ	(2)	a	$^{GS}/a/$	a ɑ	(2)	*a*	$^{GS}/ɑ/$	*a* *a*	(2)
$^{G}/B^{r}/_{s}$	B	$^{GS}/B/$	B	(2)	b	$^{GS}/b/$	b	(2)	*b*	$^{GS}/b/$	*b b*	(2)
$^{G}/C^{r}/_{s}$	C	$^{GS}/C/$	C	(2)	c	$^{GS}/C/$	c	(2)	*c*	$^{GS}/C/$	*c*	(2)
$^{G}/D^{r}/_{s}$	D	$^{GS}/D/$	D	(2)	d	$^{GS}/d/$	d	(2)	*d*	$^{GS}/d/$	*d*	(2)
$^{G}/Đ/_{s}$	Đ	$^{GS}/Đ/$	Đ	(2)	đ	$^{GS}/đ/$	đ	(2)	*đ*	$^{GS}/đ/$	*đ*	(2)
$^{G}/E^{r}/_{s}$	E	$^{GS}/E/$	E	(2)	e	$^{GS}/e/$	e	(2)	*e*	$^{GS}/e/$		(2)

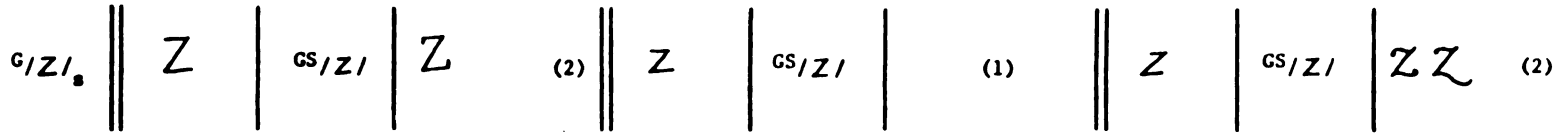
Table III.4. (Contd.)

G/F/s	F	GS/F/	F	(2)	f	GS/f/	f	(2)	*f*	GS/f/	*f* (2) *f* (3)
G/G/s	G	GS/G/	G G (2) G G (2)		g	GS/g/	g g (2) g (3)		*g*	GS/g/	*g* (2) *g* (3)
G/Hr/s	H	GS/H/	H	(2)	h	GS/h/	h	(2)	*h*	GS/h/	*h h* (2)
G/I/s	I	GS/I/	I	(4)	i	GS/·/ and GS/l/	i i	(4)	*i*	GS/·/ and GS/l/	*i* (3) *i i* (4)
G/Jr/s	J	GS/J/	J J J	(2) (3)	j	GS/·/ and GS/J/	j	(2)	*j*	GS/·/ and GS/J/	*j* (2)
G/Kr/s	K	GS/K/	K K	(2)	k	GS/k/	k	(2)	*k*	GS/k/	*k* (2) *k* (4)
G/L/s	L	GS/L/	L	(2)	l	GS/l/	l l	(4)	*l*	GS/l/	*l* (3) *l l* (4)
G/Mr/s	M	GS/M/	M M M	(2) (4)	m	GS/m/	m	(2)	*m*	GS/m/	*m m* (2)

Table III.4. (Contd.)

G/N/s	N	GS/N/	N N	(2)	n	GS/n/	n	(2)	*n*	GS/n/	*n n*	(2)
G/Or/s	O	GS/O/			o	GS/O/			*o*	GS/O/		
G/Pr/s	P	GS/P/	P	(2)	p	GS/P/	p	(2)	*p*	GS/P/	*p p*	(2)
G/R/s	R	GS/R/	R R	(2)	r	GS/r/	r	(2)	*r*	GS/r/	*r r*	(2)
G/S/s	S	GS/S/	S	(2)	s	GS/S/		(1)	*s*	GS/S/		(1)
											s	(2)
G/Tr/s	T	GS/T/	T	(2)	t	GS/t/	t	(2)	*t*	GS/t/	*t*	(2)
							†	(4)			*t*	(4)
G/U/s	U	GS/U/	U	(2)	u	GS/u/	u	(2)	*u*	GS/u/	*u*	(2)
			U	(3)			U	(3)			*U*	(3)
G/V/s	V	GS/V/	V	(2)	v	GS/v/		(1)	*v*	GS/v/		(1)
											v	(4)

Table III.4. (Contd.)



(1) Same kinds of marks as those shown for the upright capital coscript, modified for height or slope as necessary.

(2) Variant shapes of marks which can probably be described by the graphemic sign of shape shown.

(3) Variant shapes of marks which can be described by the graphemic sign of shape which is characteristic of another coscript.

(4) Variant shapes of marks which must probably be described by a different graphemic sign of shape than that shown.

Table III.5.

Graphemic signs of shape which each realize or help to realize only one Serbo-Croatian letter grapheme.

GS/Б/	GS/З/	GS/У/	GS/b/	GS/G/	GS/R/
GS/б/	GS/И/	GS/ф/	GS/D/	GS/g/	GS/r/
GS/в/	GS/Л/	GS/ɸ/	GS/d/	GS/ɡ/	GS/S/
GS/Г/	GS/Љ/	GS/Х/	GS/Đ/	GS/h/	GS/t/
GS/Д/	GS/Њ/	GS/Ц/	GS/đ/	GS/I/	GS/U/
GS/ə/	GS/П/	GS/Ч/	GS/F/	GS/k/	GS/V/
GS/Ђ/	GS/Ћ/	GS/Џ/	GS/f/	GS/L/	GS/ʊ/
GS/ђ/	GS/ћ/	GS/Ш/	GS/ʃ/	GS/N/	GS/Z/
GS/Ж/	GS/ў/				

Table III.6.

Graphemic signs of shape which each realize or help to realize more than one Serbo-Croatian letter grapheme.

Graphemic sign	Realizates
$^{GS}/A/$	$^{G}/A^{c}/_{s}$, $^{G}/A^{r}/_{s}$
$^{GS}/a/$	$^{G}/A^{c}/_{s}$, $^{G}/A^{r}/_{s}$
$^{GS}/\alpha/$	$^{G}/A^{c}/_{s}$, $^{G}/A^{r}/_{s}$
$^{GS}/B/$	$^{G}/B^{c}/_{s}$, $^{G}/B^{r}/_{s}$
$^{GS}/\imath/$	$^{G}/\Gamma/_{s}$, $^{G}/I/_{s}$, $^{G}/L/_{s}$
$^{GS}/E/$	$^{G}/E^{c}/_{s}$, $^{G}/E^{r}/_{s}$
$^{GS}/e/$	$^{G}/E^{c}/_{s}$, $^{G}/E^{r}/_{s}$
$^{GS}/u/$	$^{G}/И/_{s}$, $^{G}/U/_{s}$
$^{GS}/J/$	$^{G}/J^{c}/_{s}$, $^{G}/J^{r}/_{s}$
$^{GS}/\cdot/$	$^{G}/I/_{s}$, $^{G}/J^{c}/_{s}$, $^{G}/J^{r}/_{s}$
$^{GS}/K/$	$^{G}/K^{c}/_{s}$, $^{G}/K^{r}/_{s}$
$^{GS}/M/$	$^{G}/M^{c}/_{s}$, $^{G}/M^{r}/_{s}$
$^{GS}/H/$	$^{G}/H^{c}/_{s}$, $^{G}/H^{r}/_{s}$
$^{GS}/O/$	$^{G}/O^{c}/_{s}$, $^{G}/O^{r}/_{s}$
$^{GS}/n/$	$^{G}/\Pi/_{s}$, $^{G}/N/_{s}$
$^{GS}/P/$	$^{G}/P^{c}/_{s}$, $^{G}/P^{r}/_{s}$
$^{GS}/p/$	$^{G}/P^{c}/_{s}$, $^{G}/P^{r}/_{s}$
$^{GS}/C/$	$^{G}/C^{c}/_{s}$, $^{G}/C^{r}/_{s}$
$^{GS}/T/$	$^{G}/T^{c}/_{s}$, $^{G}/T^{r}/_{s}$
$^{GS}/m/$	$^{G}/T^{c}/_{s}$, $^{G}/M^{r}/_{s}$
$^{GS}/1/$	$^{G}/I/_{s}$, $^{G}/L/_{s}$

other, without regard for any of the similarities which exist between them. Those similarities and the simplifications in the networks which they make possible will then be discussed, and the optimally simplified networks for both the realization and eclectic portions will be described.

b. First approximation to the eclectic portion. An eclectic portion which can handle the writing systems of Serbo-Croatian is shown in Figure III.1. The single eclectic choice is shown by ^{Z}/script/, which dominates the two options ^{E}/Cyrillic/ and ^{E}/Roman/ through a TACTIC CHAMELEON node. The ECLECTIC DIAMOND node for each of these eclectads is connected, through a DOWNWARD CHAMELEON node, to one of the two GATE nodes in each eclectic disjunction cluster. This one eclectic choice is controlled, through the chiloeclectic alternation pattern, by two choices made at the eclectic interface. One of these choices is made according to the self-perceived ethnicity of the writer, the other is made according to his potential readers' needs to read one or the other script.

Self-perceived ethnicity is clearly a part of the Serbo-Croatian linguistic situation. It has been estimated (McDonald, et al. 1973:76) that only 342,000 inhabitants of Yugoslavia regard themselves as being ethnically simply "Yugoslavs"; even if they all spoke Serbo-Croatian, they would be only 2.3% of the total number of Serbo-Croats in Yugoslavia. In general, a Serb knows very well that he is a Serb, and a Croat knows very well that he is a Croat. One choice at the eclectic interface is therefore between the options ^{CE}/Serb/ and ^{CE}/Croat/, dominated by ^{CZ}/ethnicity of writer/. For the sake of simplicity, three other ethnic groups have been neglected in Figure III.1.: Montenegrins, Muslim Slavs, and those who call themselves simply Yugoslavs. Bidwell

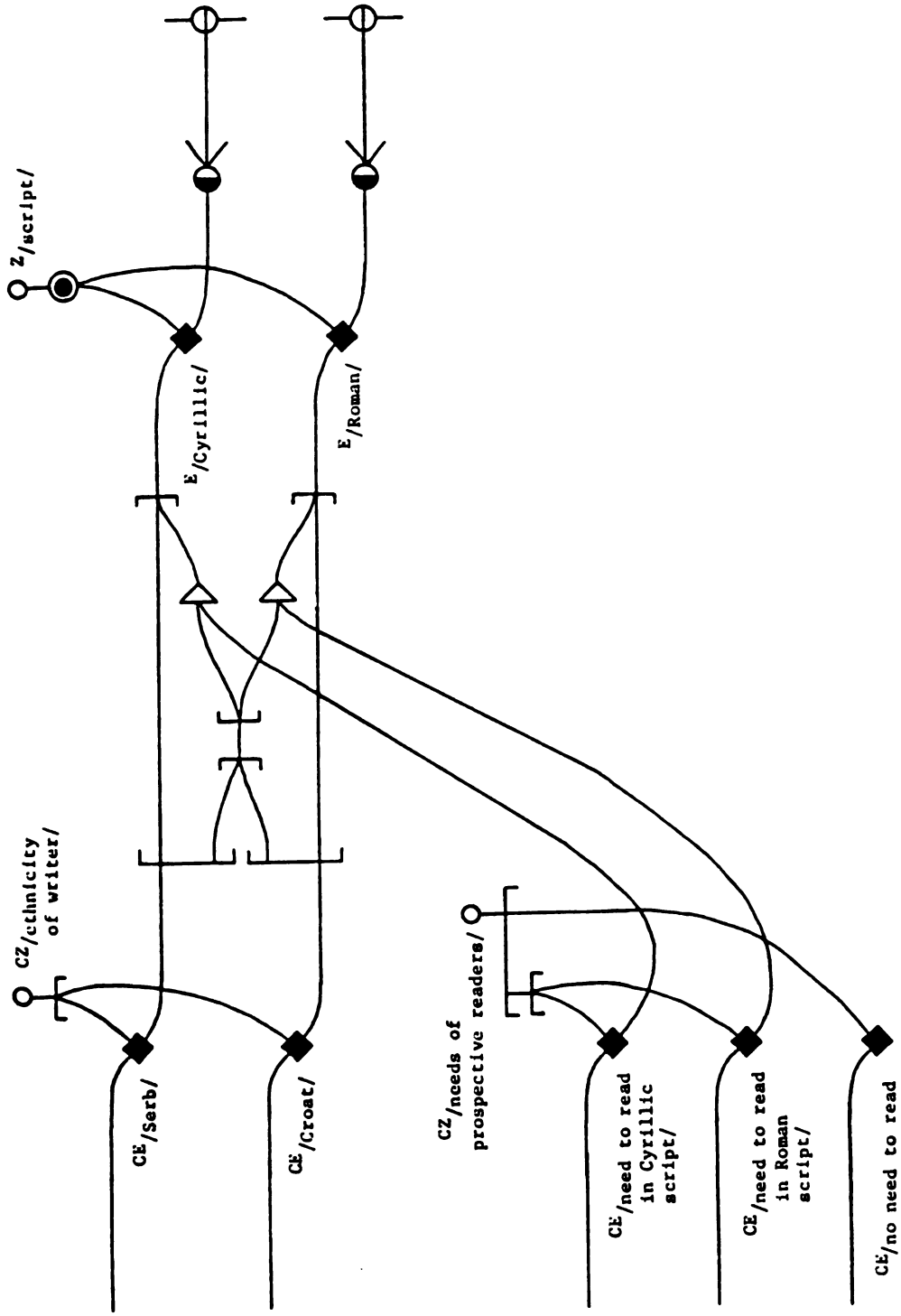
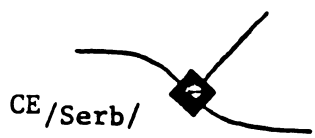


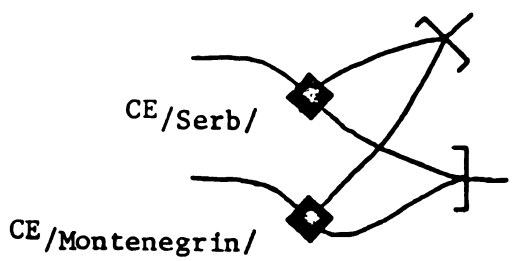
Figure III.1.

Eclectic portion for Serbo-Croatian.

(1962:218n) remarks that the Montenegrins differ from the Serbs neither in language nor in religion, and that most of the Montenegrins he has known have regarded themselves as Serbs. Any Montenegrins who insist that they are not Serbs could be accounted for in the diagram by substituting for

(1) 

the network fragment

(2) 

The Muslim Slavs and the unspecified Yugoslavs are omitted here because the literature does not show the circumstances under which they use one or the other script; those circumstances would be an interesting subject for sociolinguistic field research.

The need to be intelligible to his potential readers may also affect a Serbo-Croat's decision to write in one script or the other. A Serb who expects his writing to be read by Croats, by Slovenes (the other national people of Yugoslavia who use the Roman script for their own language), or by foreigners who know only the Roman script will use that script. Conversely, a Croat who expects his writing to be read by Serbs, by Macedonians (the other national people of Yugoslavia who use the Cyrillic script for their own language), or by foreigners who know only the Cyrillic script will use that script. But a Serb will write in the

Cyrillic script and a Croat will write in the Roman script unless either has some reason to do otherwise. The second choice at the eclectic interface is therefore among the options ^{CE}/need to read in Cyrillic script/, ^{CE}/need to read in Roman script/, and ^{CE}/no need to read in a specific script/, all dominated by ^{CZ}/needs of prospective readers/.[16]

c. First approximation to the realization portion. Because the Cyrillic and Roman orthographies of Serbo-Croatian are equivalent and interchangeable, a stratificational analysis of the language may assume that each of its morphons has a single, constant realization on some higher level in the graphonomy, which is realized on some lower level in the graphonomy by characters of either the Cyrillic or the Roman script, according to the writer's choice. Using a distinction and terminology based on that introduced by Herrick (1977), the graphemic alternation pattern of Serbo-Croatian can be divided into two parts: an upper part in which orthography-graphemes, which are peculiar to the language, are realized by script-graphemes, which belong to the two scripts; and a lower part in which those script-graphemes are realized, according to the usual formulas of their script, by graphemic signs.

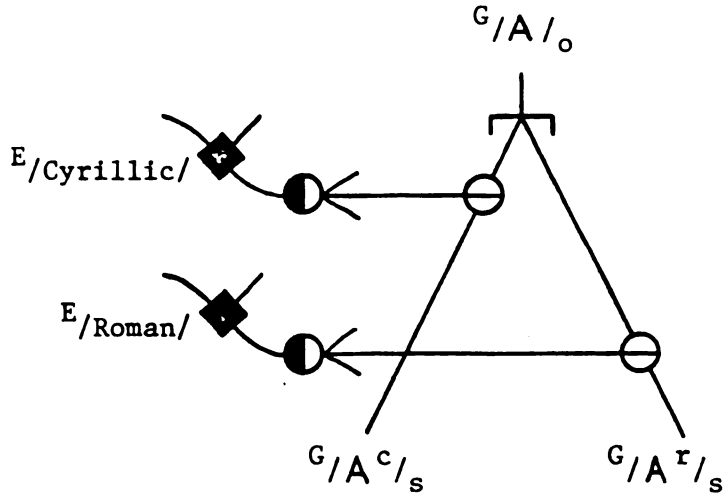
Realization formulas for the upper part of the graphemic alternation pattern are shown in Figure III.2., which has a separate formula for each

[16]Bidwell (1962:223) notes that "since the second world war there has been an increasing tendency for publications appearing in Serbian regions, particularly such as are intended for an all-Yugoslav circulation, to use Latin [i.e. Roman] rather than Cyrillic characters". The Cyrillic script is therefore apparently assuming a more highly marked status as an indicator of self-conscious Serbian ethnicity, while the Roman script is apparently becoming an ethnically more neutral way in which to write Serbo-Croatian. The evenly balanced eclectic network shown in Figure III.1. may therefore be less appropriate to present-day Yugoslavian usage than to the usage which prevailed from the formation of the Yugoslav state until the second world war.

Figure III.2.

Downward realization formulas for individual orthography-graphemes of Serbo-Croatian.

(1)



(2) Same formula as in (1), except that $^{G}/Б/_{o}$ is realized by $^{G}/Б/_{s}$ or $^{G}/B^{r}/_{s}$.

(3) Same formula as in (1), except that $^{G}/В/_{o}$ is realized by $^{G}/В^{c}/_{s}$ or $^{G}/V/_{s}$.

(4) Same formula as in (1), except that $^{G}/Г/_{o}$ is realized by $^{G}/Г/_{s}$ or $^{G}/G/_{s}$.

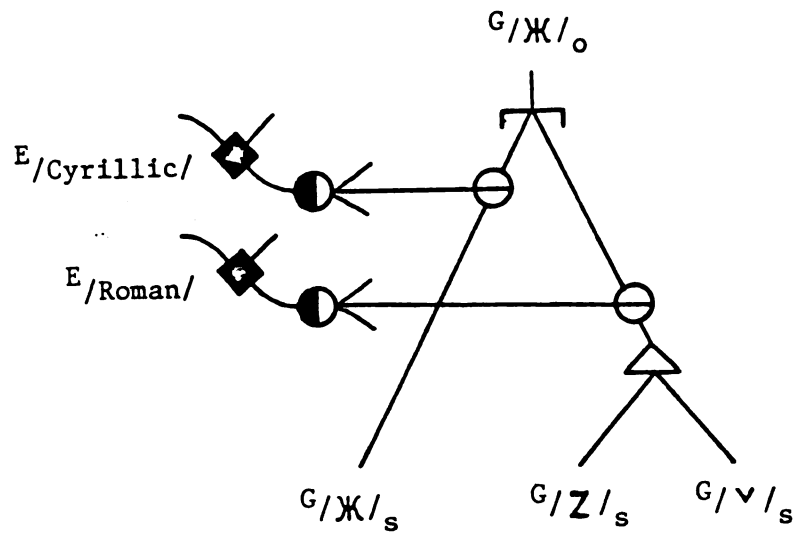
(5) Same formula as in (1), except that $^{G}/Д/_{o}$ is realized by $^{G}/Д/_{s}$ or $^{G}/D/_{s}$.

(6) Same formula as in (1), except that $^{G}/Ђ/_{o}$ is realized by $^{G}/Ђ/_{s}$ or $^{G}/Đ/_{s}$.

(7) Same formula as in (1), except that $^{G}/Е/_{o}$ is realized by $^{G}/Е^{c}/_{s}$ or $^{G}/Е^{r}/_{s}$.

Figure III.2. (Contd.)

(8)



(9) Same formula as in (1), except that $^{G}/З/_{o}$ is realized by $^{G}/З/_{s}$ or $^{G}/Z/_{s}$.

(10) Same formula as in (1), except that $^{G}/И/_{o}$ is realized by $^{G}/И/_{s}$ or $^{G}/I/_{s}$.

(11) Same formula as in (1), except that $^{G}/J/_{o}$ is realized by $^{G}/J^{c}/_{s}$ or $^{G}/J^{r}/_{s}$.

(12) Same formula as in (1), except that $^{G}/K/_{o}$ is realized by $^{G}/K^{c}/_{s}$ or $^{G}/K^{r}/_{s}$.

(13) Same formula as in (1), except that $^{G}/Л/_{o}$ is realized by $^{G}/Л/_{s}$ or $^{G}/L/_{s}$.

(14)

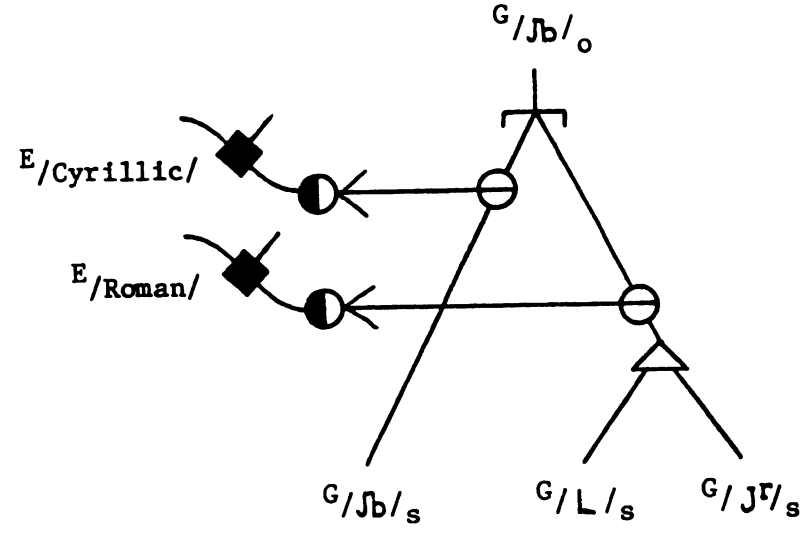


Figure III.2. (Contd.)

(15) Same formula as in (1), except that $^{G}/M/_{o}$ is realized by $^{G}/M^{c}/_{s}$ or $^{G}/M^{r}/_{s}$.

(16) Same formula as in (1), except that $^{G}/H/_{o}$ is realized by $^{G}/H^{c}/_{s}$ or $^{G}/N/_{s}$.

(17) Same formula as in (14), except that $^{G}/Ъ/_{o}$ is realized by $^{G}/Ъ/_{s}$, or $^{G}/N/_{s}$ and $^{G}/J^{r}/_{s}$.

(18) Same formula as in (1), except that $^{G}/O/_{o}$ is realized by $^{G}/O^{c}/_{s}$ or $^{G}/O^{r}/_{s}$.

(19) Same formula as in (1), except that $^{G}/П/_{o}$ is realized by $^{G}/П/_{s}$ or $^{G}/P^{r}/_{s}$.

(20) Same formula as in (1), except that $^{G}/P/_{o}$ is realized by $^{G}/P^{c}/_{s}$ or $^{G}/R/_{s}$.

(21) Same formula as in (1), except that $^{G}/C/_{o}$ is realized by $^{G}/C^{c}/_{s}$ or $^{G}/S/_{s}$.

(22) Same formula as in (1), except that $^{G}/T/_{o}$ is realized by $^{G}/T^{c}/_{s}$ or $^{G}/T^{r}/_{s}$.

(23) Same formula as in (8), except that $^{G}/Ћ/_{o}$ is realized by $^{G}/Ћ/_{s}$, or $^{G}/C^{r}/_{s}$ and $^{G}/'/_{s}$.

(24) Same formula as in (1), except that $^{G}/У/_{o}$ is realized by $^{G}/У/_{s}$ or $^{G}/U/_{s}$.

(25) Same formula as in (1), except that $^{G}/Ф/_{o}$ is realized by $^{G}/Ф/_{s}$ or $^{G}/F/_{s}$.

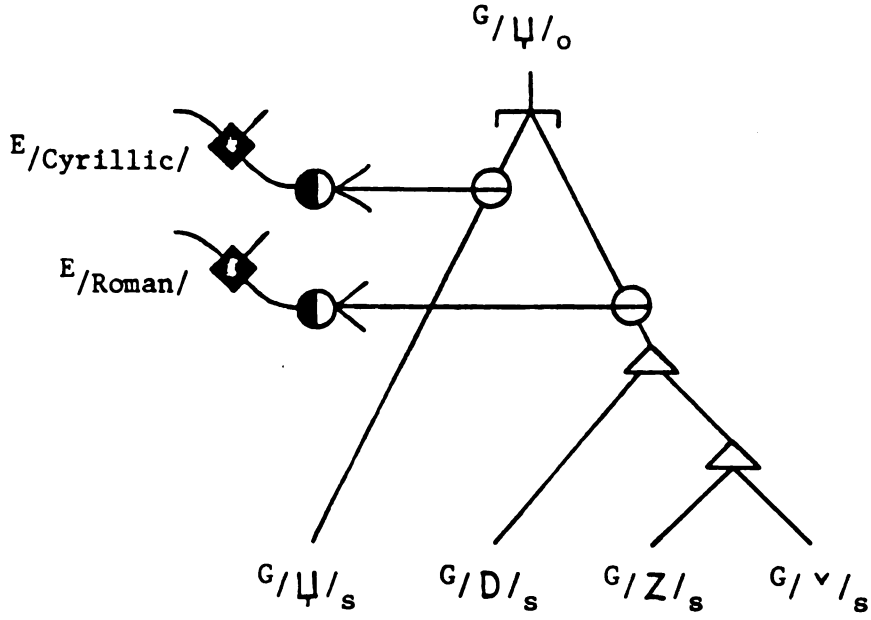
(26) Same formula as in (1), except that $^{G}/Х/_{o}$ is realized by $^{G}/Х/_{s}$ or $^{G}/H^{r}/_{s}$.

(27) Same formula as in (1), except that $^{G}/Ц/_{o}$ is realized by $^{G}/Ц/_{s}$ or $^{G}/C^{r}/_{s}$.

Figure III.2. (Contd.)

(28) Same formula as in (8), except that $^{G}/\text{Ч}/_{o}$ is realized by $^{G}/\text{Ч}/_{s}$, or $^{G}/\text{C}^{r}/_{s}$ and $^{G}/\text{ˇ}/_{s}$.

(29)



(30) Same formula as in (8), except that $^{G}/\text{Ш}/_{o}$ is realized by $^{G}/\text{Ш}/_{s}$, or $^{G}/\text{S}/_{s}$ and $^{G}/\text{ˇ}/_{s}$.

(31) Same formula as in (1), except that $^{G}/\equiv/_{o}$ is realized by $^{G}/\equiv^{c}/_{s}$ or $^{G}/\equiv^{r}/_{s}$.

(32) Same formula as in (1), except that $^{G}/—/_{o}$ is realized by $^{G}/—^{c}/_{s}$ or $^{G}/—^{r}/_{s}$.

of the 32 orthography-graphemes (including two suprasegmentals). The symbols for the letter orthography-graphemes use upright capital characters of the Cyrillic script, since that script has a single distinctive character for each of them. The symbols for the orthography-graphemes are bracketed by slant lines with superscript G and subscript O; those for the script-graphemes have the same bracketing except that they have subscript S. Each of the formulas in Figure III.2. consists of one eclectic disjunction cluster, with lines leading down to one Cyrillic script-grapheme and to one or more Roman script-graphemes. Because many of these formulas contain identical systems of lines and nodes, and differ only in the symbols which label their edge lines, only the first formula which uses a certain system of lines and nodes is drawn fully. Each subsequent formula which uses the same system has only the labels for its edge lines and a reference to the formula where the appropriate system of lines and nodes may be found.

All the formulas in Figure III.2. are arranged so that the downward transductions of the orthography-graphemes may be easily found. However, some script-graphemes of the Roman script realize more than one orthography-grapheme and appear in more than one formula; to aid in finding all the upward transductions of such script-graphemes, Table III.7. lists them and the orthography-graphemes which they realize.

Realization formulas for the lower part of the graphemic alternation pattern are shown in Figure III.3. for the Cyrillic script and in Figure III.4. for the Roman script. Each of these formulas shown the realization of one letter script-grapheme and of whatever diacritic and suprasegmental script-graphemes occur simultaneously with it. For each script, the formulas handle the three coscripts with distinctive character-shapes--

Table III.7.

Script-graphemes of the Roman script involved in the realization of more than one Serbo-Croatian orthography-grapheme.

Script-grapheme	Orthography-graphemes which it realizes or helps to realize
$^{G}/C^{r}/_{s}$	$^{G}/Ц/_{o}$, $^{G}/Ћ/_{o}$, $^{G}/Ч/_{o}$
$^{G}/D/_{s}$	$^{G}/Д/_{o}$, $^{G}/Џ/_{o}$
$^{G}/J^{r}/_{s}$	$^{G}/Ј/_{o}$, $^{G}/Љ/_{o}$, $^{G}/Њ/_{o}$
$^{G}/L/_{s}$	$^{G}/Л/_{o}$, $^{G}/Љ/_{o}$
$^{G}/N/_{s}$	$^{G}/Н/_{o}$, $^{G}/Њ/_{o}$
$^{G}/S/_{s}$	$^{G}/С/_{o}$, $^{G}/Ш/_{o}$
$^{G}/Z/_{s}$	$^{G}/Ж/_{o}$, $^{G}/Џ/_{o}$, $^{G}/З/_{o}$
$^{G}/ˇ/_{s}$	$^{G}/Џ/_{o}$, $^{G}/Ж/_{o}$, $^{G}/Ч/_{o}$, $^{G}/Ш/_{o}$

Figure III.3.

Downward realization formulas for individual groups of simultaneous script-graphemes of the Cyrillic script.

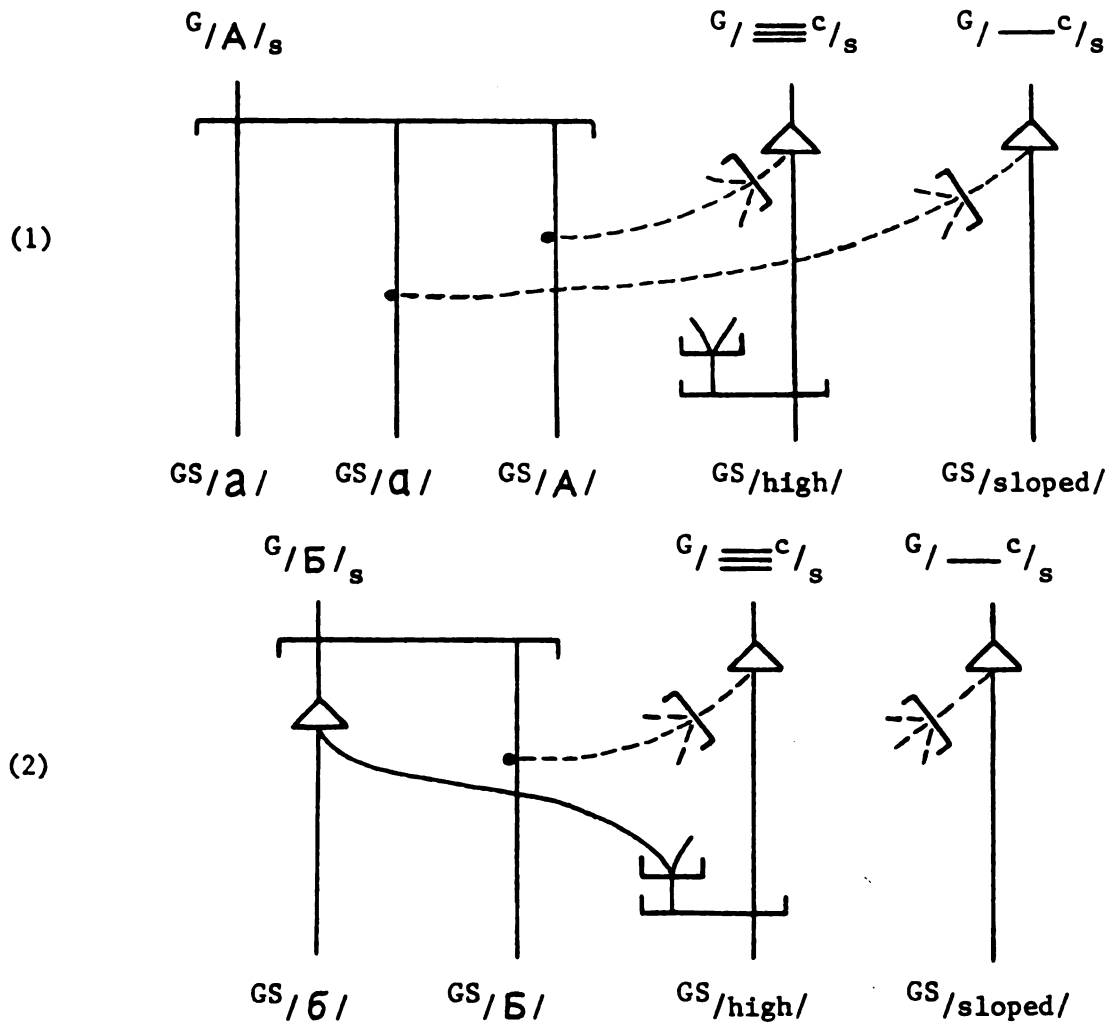
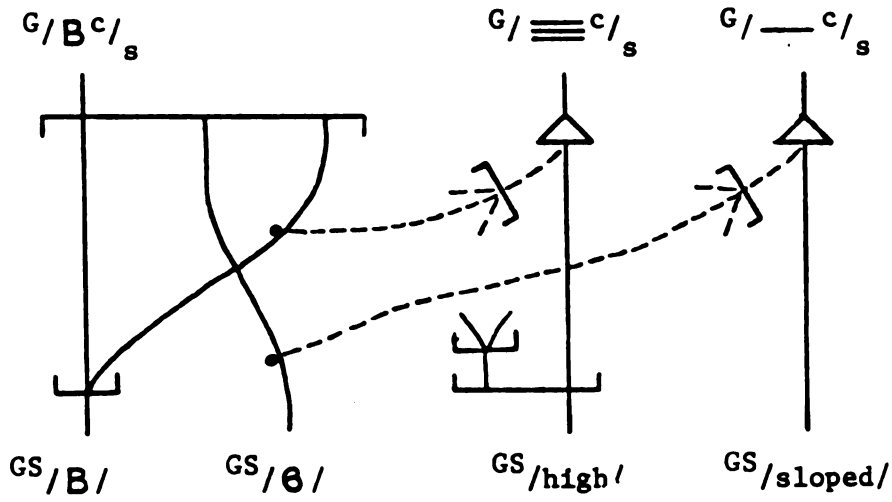


Figure III.3. (Contd.)

(3)*



*The downward ordered or node in this formula is necessary because capitalization takes priority over italicization as a condition for selecting the graphemic sign of shape. The capital italic embodiment of $^{G}/B^{c}/_{s}$ has the shape $\mathcal{B}$. If $^{G}/\equiv^{c}/_{s}$ occurs simultaneously with $^{G}/B^{c}/_{s}$, that letter script-grapheme will be realized by $^{GS}/B/$, whether or not $^{G}/—^{c}/_{s}$ also occurs. But if $^{G}/\equiv^{c}/_{s}$ does not occur simultaneously with $^{G}/B^{c}/_{s}$, that letter script-grapheme is realized by $^{GS}/B/$ only if $^{G}/—^{c}/_{s}$ does not occur.

(4) Same formula as in (3), except that $^{G}/\Gamma/_{s}$ is realized by $^{GS}/\Gamma/$ or $^{GS}/\text{ɾ}/$.

(5)

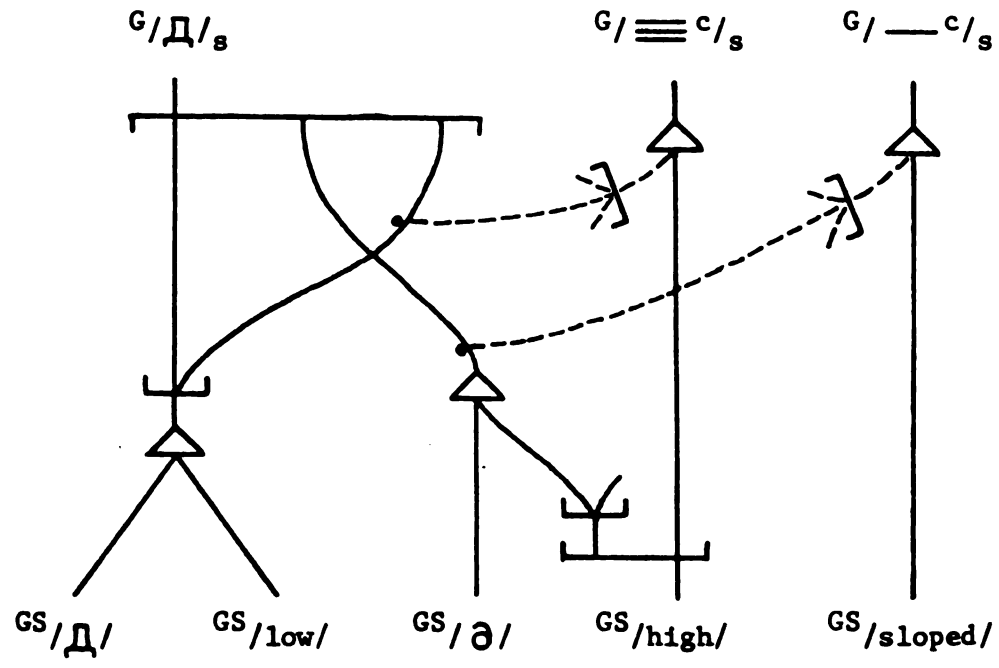
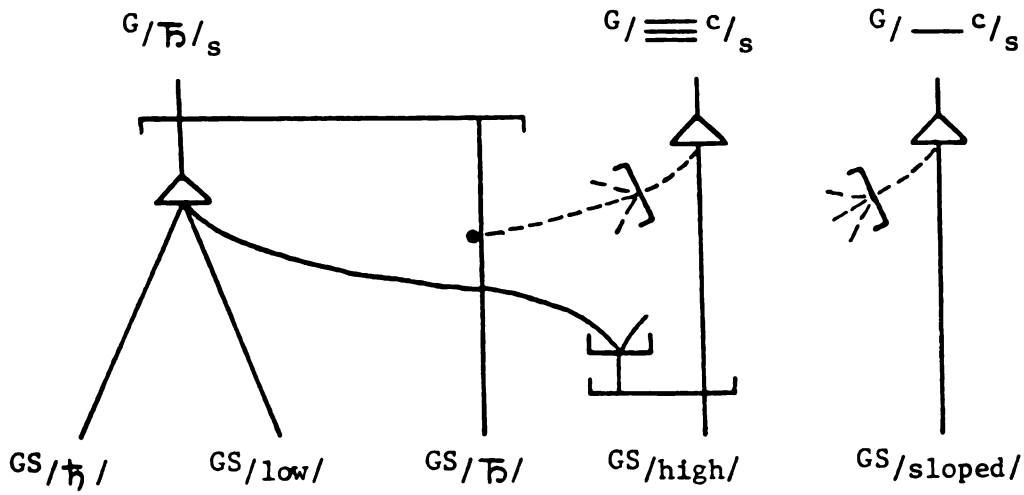
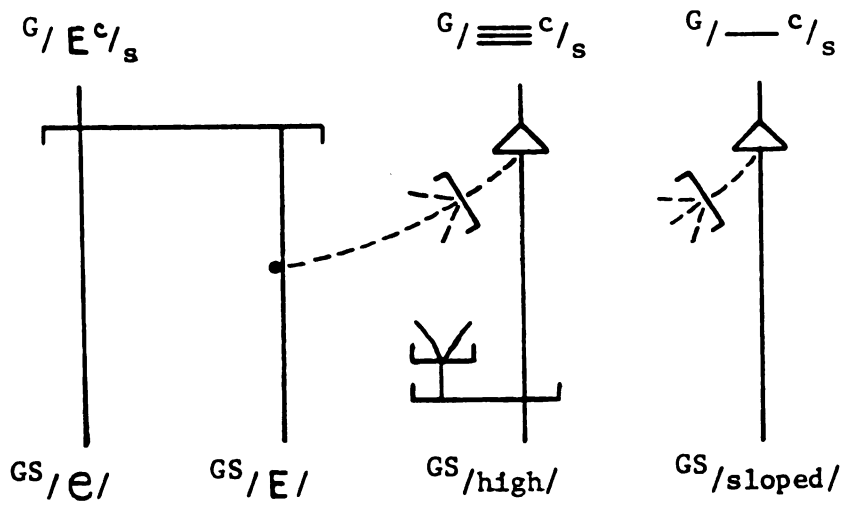


Figure III.3. (Contd.)

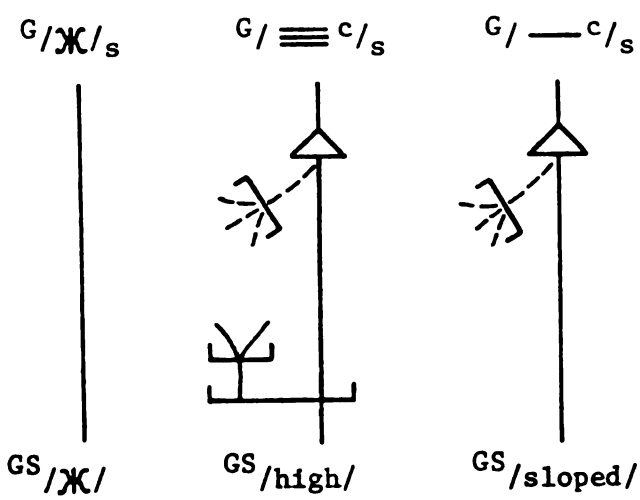
(6)



(7)



(8)

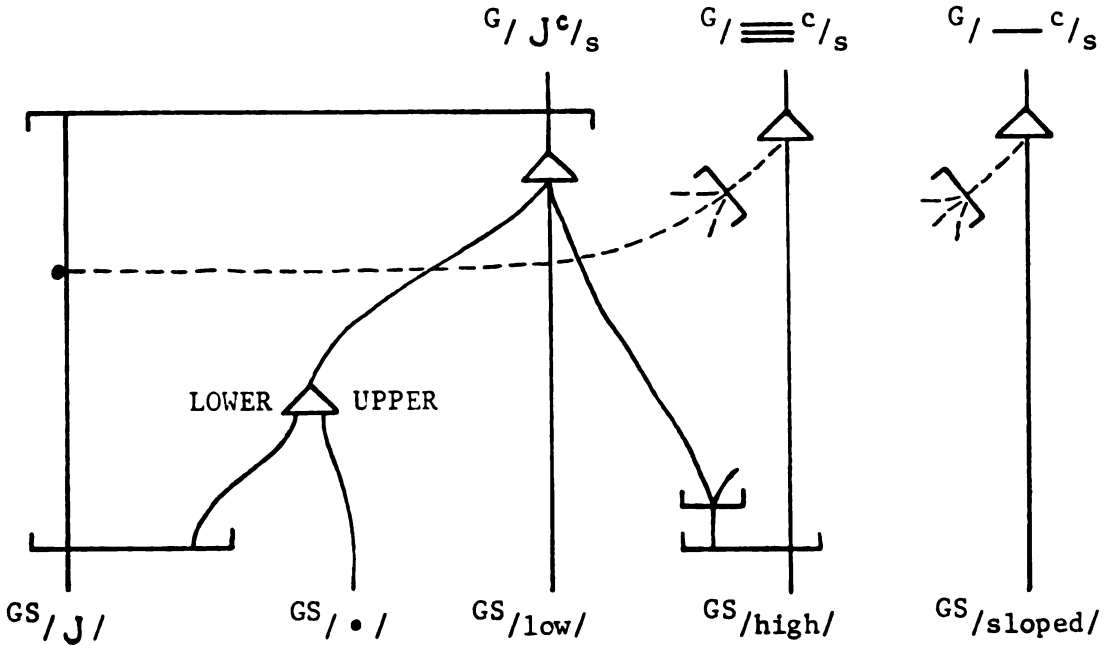


(9) Same formula as in (8), except that $^{G}/З/_{s}$ is realized by $^{GS}/З/$.

(10) Same formula as in (3), except that $^{G}/И/_{s}$ is realized by $^{GS}/И/$ or $^{GS}/Ц/$.

Figure III.3. (Contd.)

(11)



(12) Same formula as in (8), except that $^{G}/K^{c}/_{s}$ is realized by $^{GS}/K/$.

(13) Same formula as in (8), except that $^{G}/Л/_{s}$ is realized by $^{GS}/Л/$.

(14) Same formula as in (8), except that $^{G}/Jb/_{s}$ is realized by $^{GS}/Jb/$.

(15) Same formula as in (8), except that $^{G}/M^{c}/_{s}$ is realized by $^{GS}/M/$.

(16) Same formula as in (8), except that $^{G}/H^{c}/_{s}$ is realized by $^{GS}/H/$.

(17) Same formula as in (8), except that $^{G}/Hb/_{s}$ is realized by $^{GS}/Hb/$.

(18) Same formula as in (8), except that $^{G}/O^{c}/_{s}$ is realized by $^{GS}/O/$.

(19) Same formula as in (3), except that $^{G}/П/_{s}$ is realized by $^{GS}/П/$ or $^{GS}/\Pi/$.

(20)

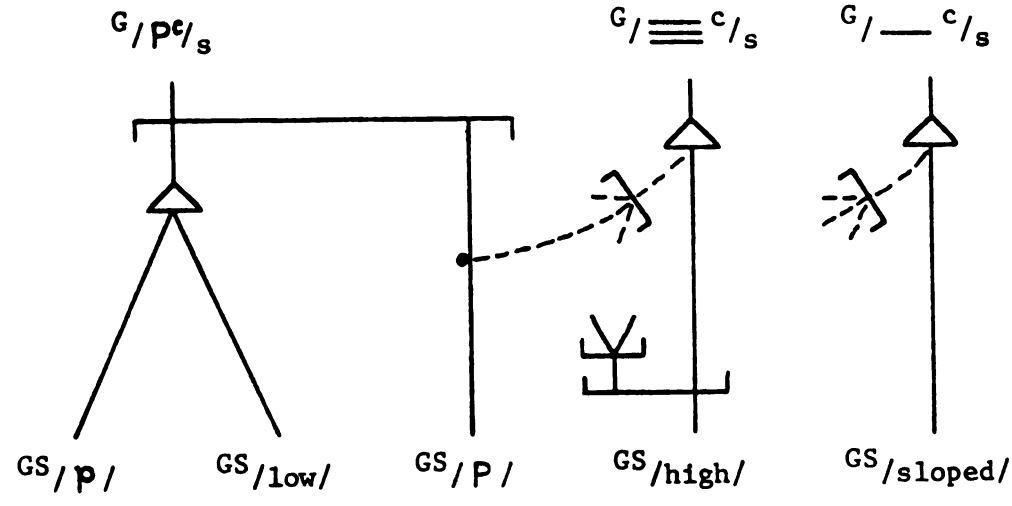


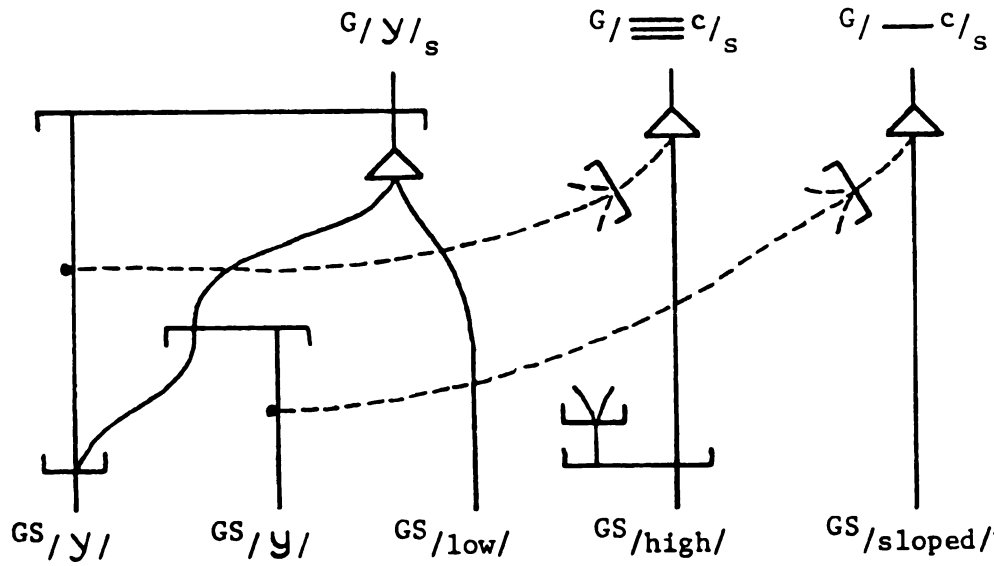
Figure III.3. (Contd.)

(21) Same formula as in (8), except that $^{G}/C^{c}/_{s}$ is realized by $^{GS}/C/$

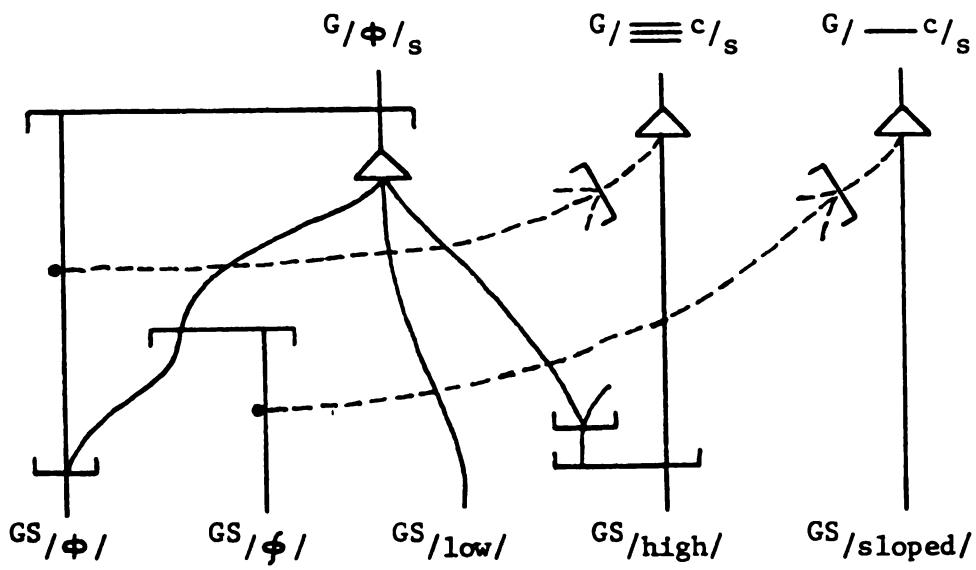
(22) Same formula as in (3), except that $^{G}/T^{c}/_{s}$ is realized by $^{GS}/T/$ or $^{GS}/m/$.

(23) Same formula as in (2), except that $^{G}/\hbar/_{s}$ is realized by $^{GS}/\hbar/$ or $^{GS}/\hbar/$.

(24)



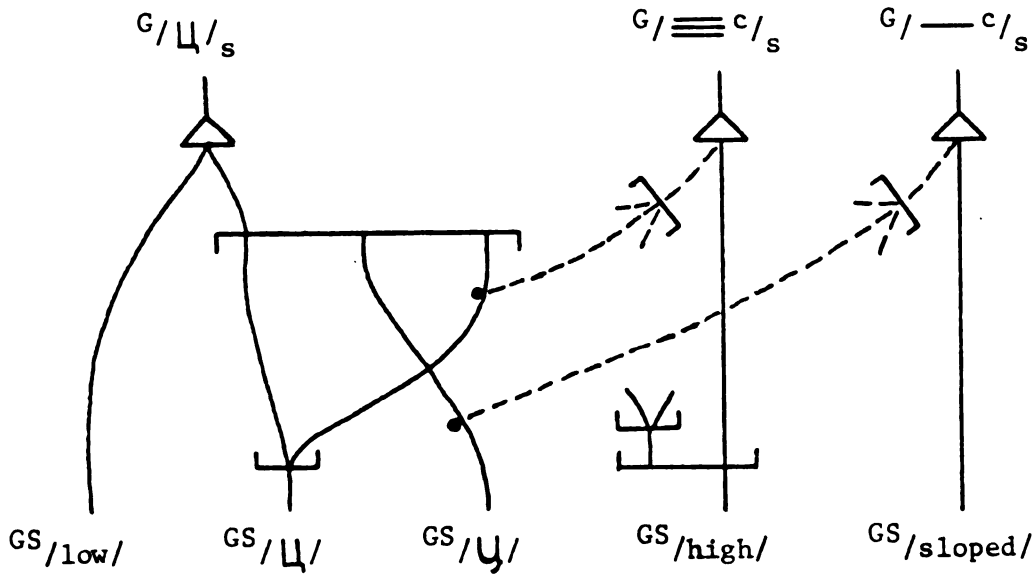
(25)



(26) Same formula as in (8), except that $^{G}/X/_{s}$ is realized by $^{GS}/X/$.

Figure III.3. (Contd.)

(27)



(28) Same formula as in (8), except that $^{G}/Ч/_{s}$ is realized by $^{GS}/Ч/$.

(29) Same formula as in (27), except that $^{G}/Ц/_{s}$ is realized by $^{GS}/Ц/$ or $^{GS}/Ҷ/$.

(30) Same formula as in (3), except that $^{G}/Ш/_{s}$ is realized by $^{GS}/Ш/$ or $^{GS}/Ш/$.

Figure III.4.

Downward realization formulas for individual groups of simultaneous script-graphemes of the Roman script.

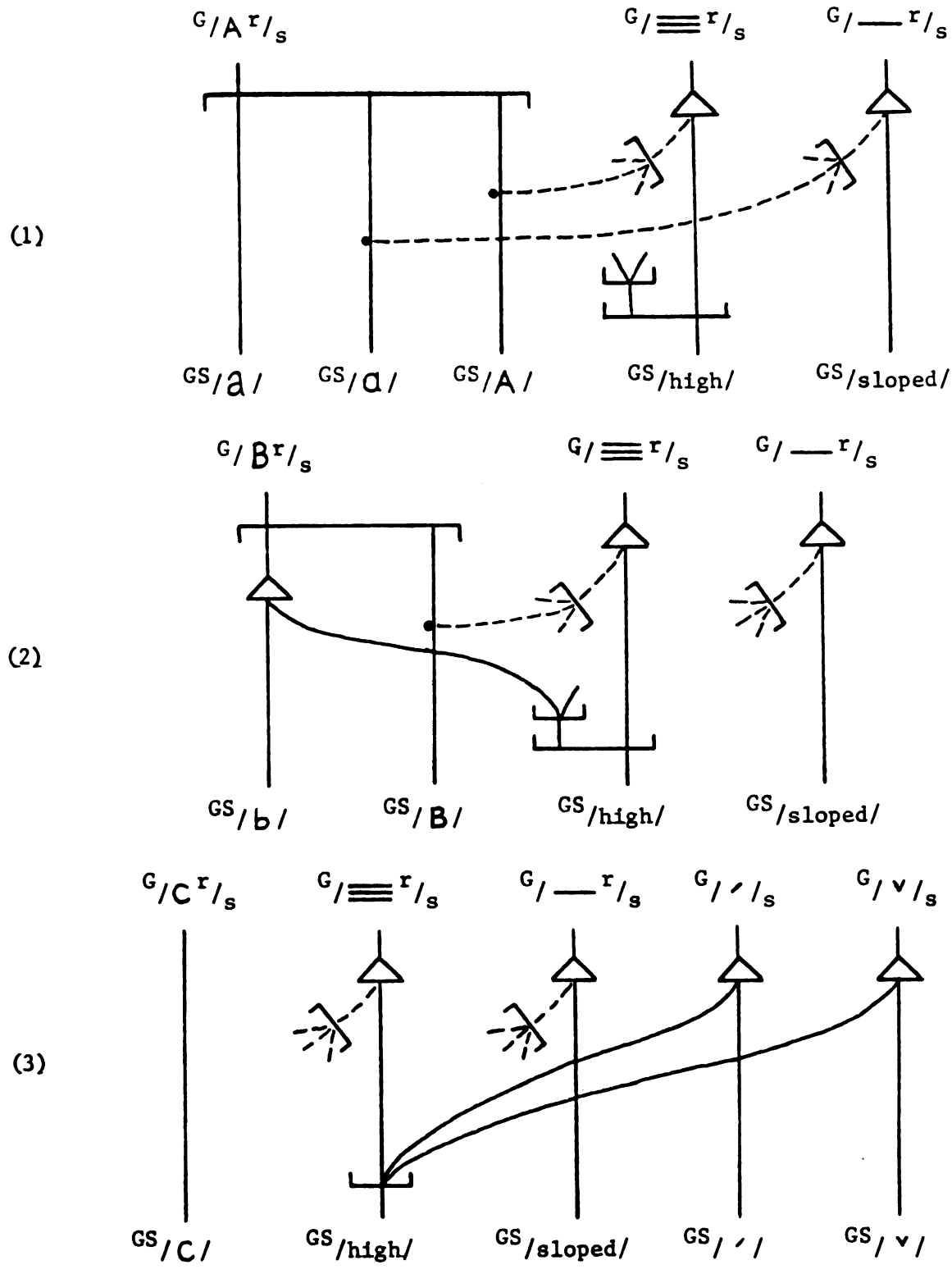
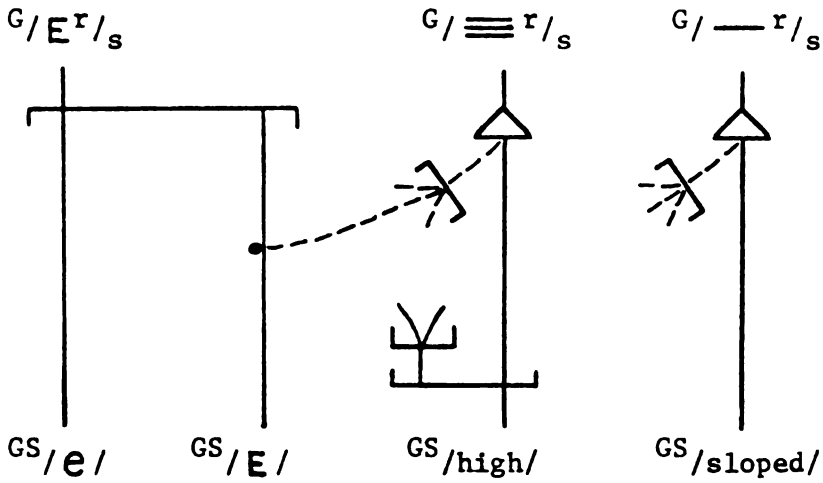


Figure III.4. (Contd.)

(4) Same formula as in (2), except that $^{G}/D/_{s}$ is realized by $^{GS}/d/$ or $^{GS}/D/$.

(5) Same formula as in (2), except that $^{G}/Đ/_{s}$ is realized by $^{GS}/đ/$ or $^{GS}/Đ/$.

(6)



(7)

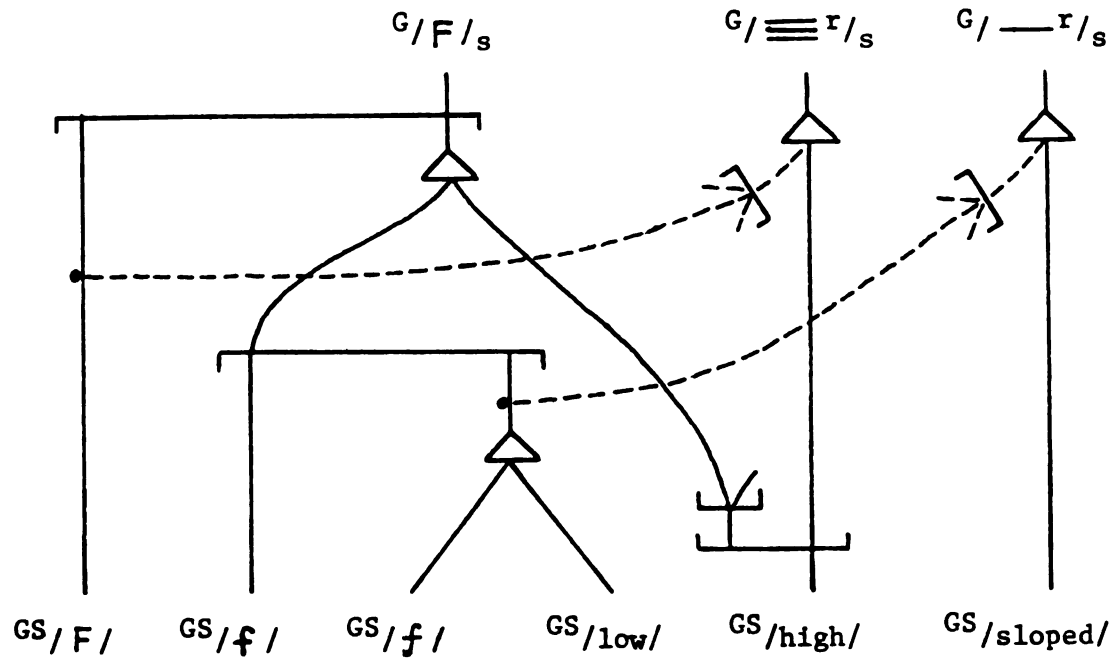
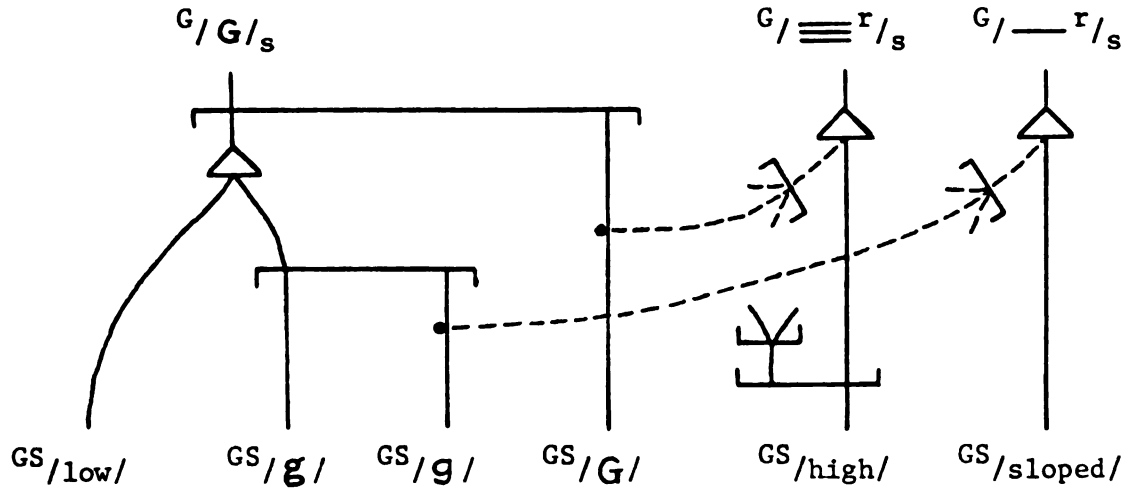


Figure III.4. (Contd.)

(8)



(9) Same formula as in (2), except that $^{G}/H^{r}/_{s}$ is realized by $^{GS}/h/$ or $^{GS}/H/$.

(10)

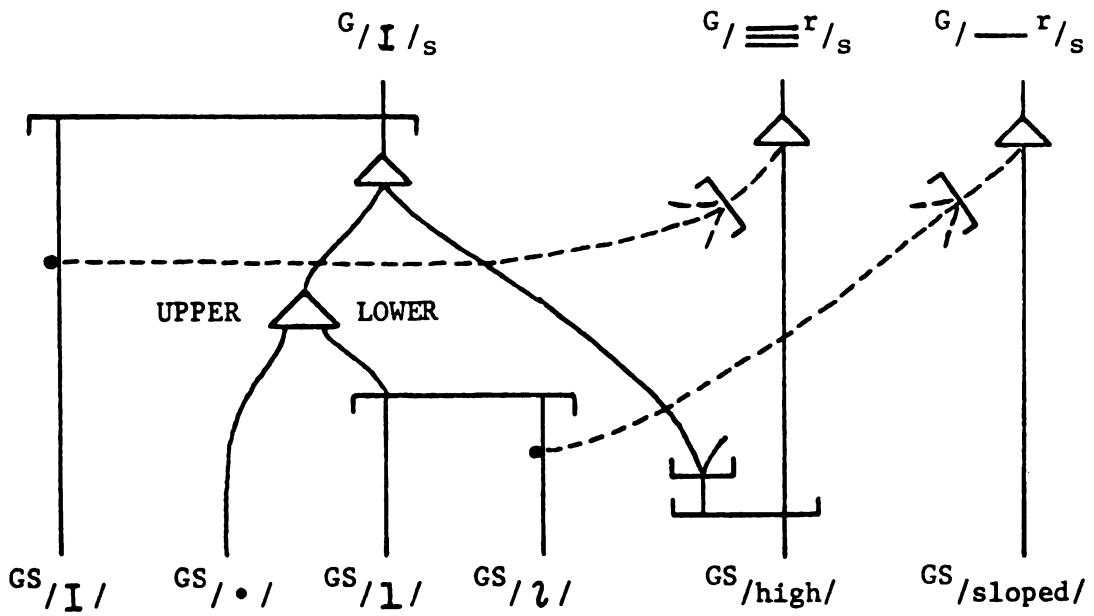
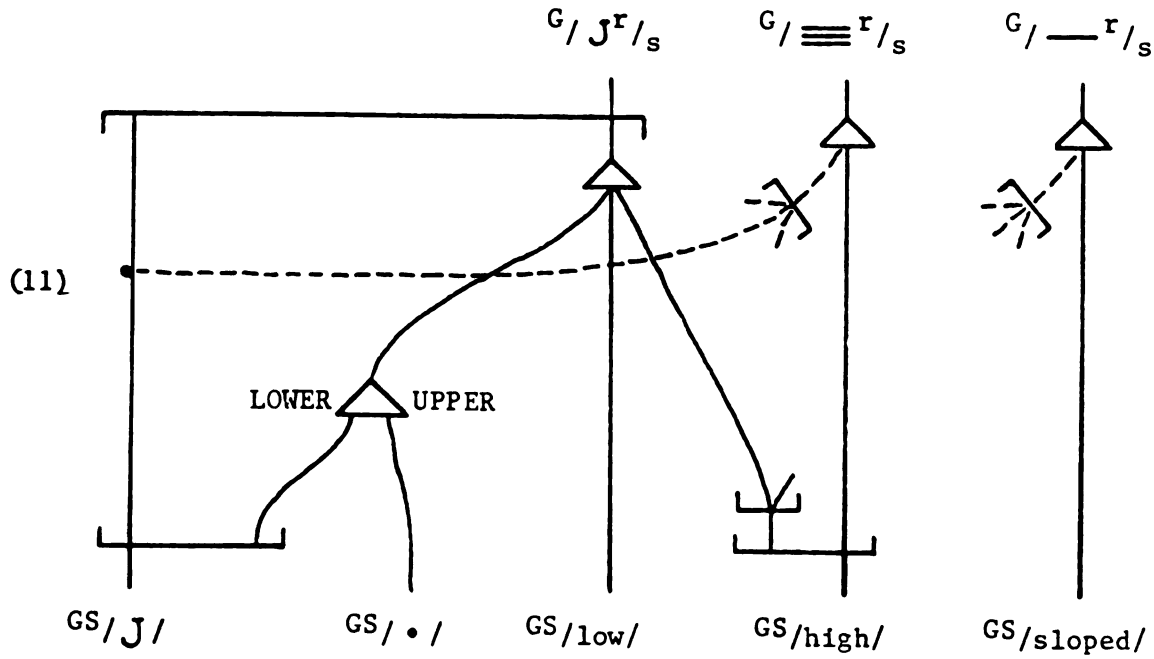
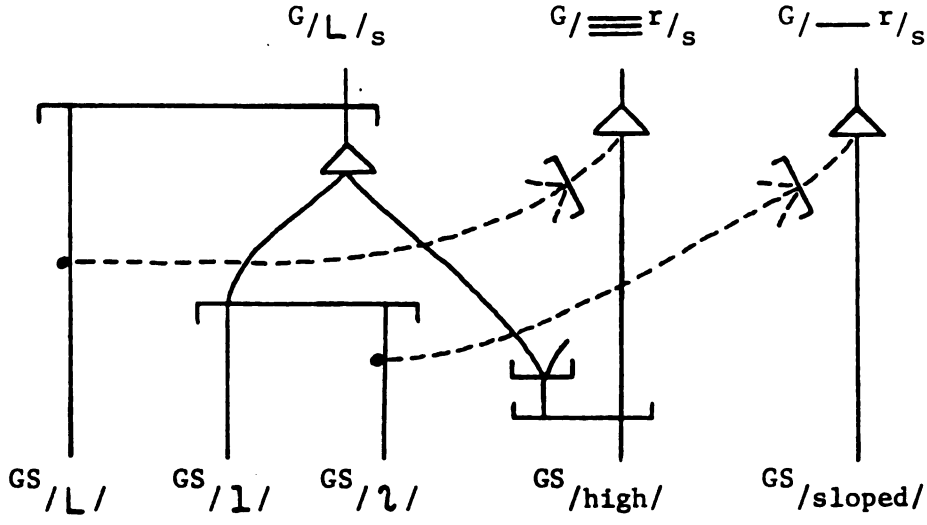


Figure III.4. (Contd.)



(12) Same formula as in (2), except that $^{G}/K^{r}/_{s}$ is realized by $^{GS}/k/$ or $^{GS}/K/$.

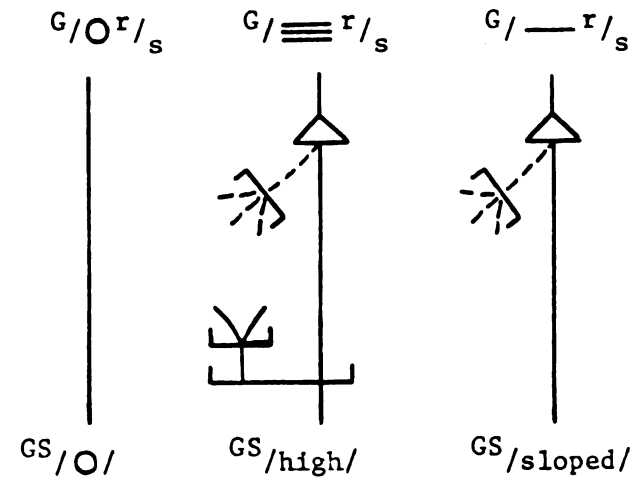


(14) Same formula as in (6), except that $^{G}/M^{r}/_{s}$ is realized by $^{GS}/m/$ or $^{GS}/M/$.

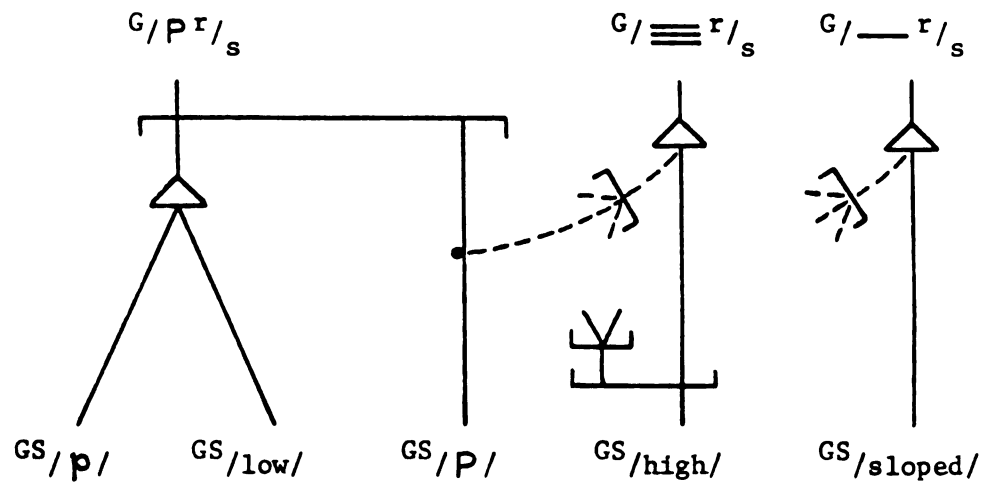
(15) Same formula as in (6), except that $^{G}/N/_{s}$ is realized by $^{GS}/n/$ or $^{GS}/N/$.

Figure III.4. (Contd.)

(16)



(17)



(18) Same formula as in (6), except that $^{G}/R/_{s}$ is realized by $^{GS}/r/$ or $^{GS}/R/$.

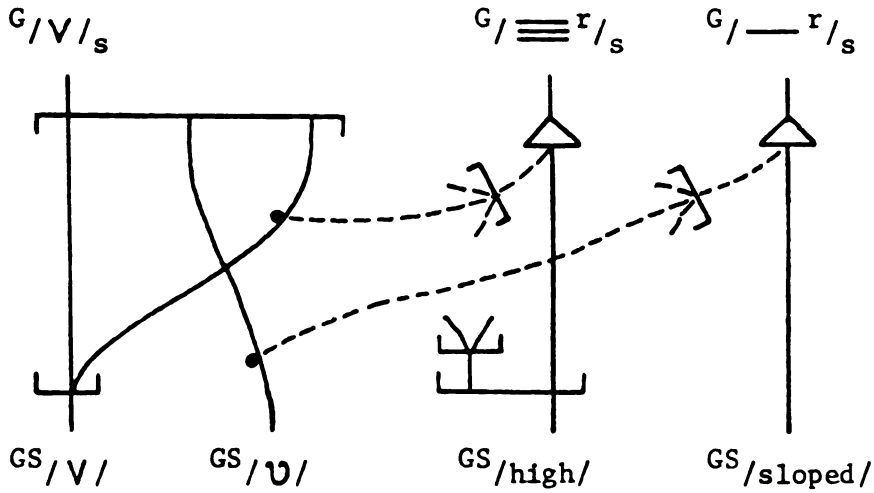
(19) Same formula as in (16), except that $^{G}/S/_{s}$ is realized by $^{GS}/S/$.

(20) Same formula as in (2), except that $^{G}/T^{r}/_{s}$ is realized by $^{GS}/t/$ or $^{GS}/T/$.

(21) Same formula as in (6), except that $^{G}/U/_{s}$ is realized by $^{GS}/U/$ or $^{GS}/U/$.

Figure III.4. (Contd.)

(22)



(23) Same formula as in (16), except that $^{G}/Z/_{s}$ is realized by $^{GS}/Z/$.

upright capital, upright lower-case, and sloped lower-case--and also the sloped capital coscript, since it is easier to include than to exclude it. The formulas assume that each letter script-grapheme is embodied by the marks shown as typical in Tables III.3. and III.4. Each group of simultaneous script-graphemes is ordinarily realized by one graphemic sign of shape; if it is embodied by two or more marks, it is realized by one graphemic sign of shape for each mark. If the mark which embodies a group of simultaneous script-graphemes does not extend above or below the height of the short lower-case characters (the height which printers call the "x-height"), it is not described by any graphemic sign of height; but if the embodying mark (or marks) extend above or below the x-height, it is described by ^{GS}/high/ or ^{GS}/low/ as the case may be. An upright mark is not described by any graphemic sign of slope, but a mark with a sloped non-horizontal axis is described by ^{GS}/sloped/.

In Figures III.3. and III.4., as in Figure III.2., some formulas contain identical systems of lines and nodes, and differ only in some of their labels. As before, only the first formula which uses a certain system of lines and nodes is drawn fully; each subsequent formula which uses that system has only the labels for its letter script-grapheme and graphemic signs of shape, and a reference to the formula where the appropriate system of lines and nodes may be found. The formulas in Figures III.3. and III.4. are arranged so that the downward transductions of the letter script-graphemes may be easily found. Some graphemic signs of shape help to realize more than one letter script-grapheme and appear in more than one formula. To aid in finding all the upward transductions of such graphemic signs, Table III.8. lists them and the letter

Table III.8.

Graphemic signs of shape involved in the realization of more than one Serbo-Croatian letter script-grapheme.

Graphemic sign of shape	Letter script-graphemes which it realizes or helps to realize
$^{GS}/\text{n}/$	$^{G}/\text{П}/_{s}$, $^{G}/\text{N}/_{s}$
$^{GS}/\text{m}/$	$^{G}/\text{Тс}/_{s}$, $^{G}/\text{Мг}/_{s}$
$^{GS}/\text{u}/$	$^{G}/\text{И}/_{s}$, $^{G}/\text{U}/_{s}$
$^{GS}/\text{B}/$	$^{G}/\text{Вс}/_{s}$, $^{G}/\text{Вг}/_{s}$
$^{GS}/\text{T}/$	$^{G}/\text{Тс}/_{s}$, $^{G}/\text{Тг}/_{s}$
$^{GS}/\text{M}/$	$^{G}/\text{Мс}/_{s}$, $^{G}/\text{Мг}/_{s}$
$^{GS}/\text{K}/$	$^{G}/\text{Кс}/_{s}$, $^{G}/\text{Кг}/_{s}$
$^{GS}/\text{H}/$	$^{G}/\text{Нс}/_{s}$, $^{G}/\text{Нг}/_{s}$
$^{GS}/\bullet/$	$^{G}/\text{I}/_{s}$, $^{G}/\text{Jс}/_{s}$, $^{G}/\text{Jг}/_{s}$
$^{GS}/\text{l}/$	$^{G}/\text{I}/_{s}$, $^{G}/\text{L}/_{s}$
$^{GS}/\text{ł}/$	$^{G}/\text{I}/_{s}$, $^{G}/\text{L}/_{s}$, $^{G}/\Gamma/_{s}$
$^{GS}/\text{O}/$	$^{G}/\text{Oс}/_{s}$, $^{G}/\text{Oг}/_{s}$
$^{GS}/\text{E}/$	$^{G}/\text{Ес}/_{s}$, $^{G}/\text{Ег}/_{s}$
$^{GS}/\text{e}/$	$^{G}/\text{Ес}/_{s}$, $^{G}/\text{Ег}/_{s}$
$^{GS}/\text{J}/$	$^{G}/\text{Jс}/_{s}$, $^{G}/\text{Jг}/_{s}$
$^{GS}/\text{P}/$	$^{G}/\text{Рс}/_{s}$, $^{G}/\text{Рг}/_{s}$
$^{GS}/\text{p}/$	$^{G}/\text{Рс}/_{s}$, $^{G}/\text{Рг}/_{s}$
$^{GS}/\text{A}/$	$^{G}/\text{Ас}/_{s}$, $^{G}/\text{Аг}/_{s}$
$^{GS}/\text{a}/$	$^{G}/\text{Ас}/_{s}$, $^{G}/\text{Аг}/_{s}$
$^{GS}/\text{ɑ}/$	$^{G}/\text{Ас}/_{s}$, $^{G}/\text{Аг}/_{s}$
$^{GS}/\text{C}/$	$^{G}/\text{Сс}/_{s}$, $^{G}/\text{Сг}/_{s}$

script-graphemes which they realize. The diacritic script-graphemes of the Roman script appear in Figure III.4.(3),(19),(23).

d. Similarities between the scripts--possibilities and problems. The competence of a modern, literate Serbo-Croat should not need two completely separate networks for the Roman and the Cyrillic scripts. Whether he has learned the two scripts at the same time or has learned one of them before learning the other, parts of his competence for one script will serve him equally well as competence for the other, and his experience in reading texts in both scripts will have forced him to notice the similarities between them. The historical relationships between the two scripts, which were described above, have resulted in several kinds of similarity between the two written forms of Serbo-Croatian, each of which will be reflected in the competence of a modern literate in that language.

A given Cyrillic script-grapheme and a given Roman script-grapheme may have utterly dissimilar realizations, or they may have realizations that are similar in any of five ways.

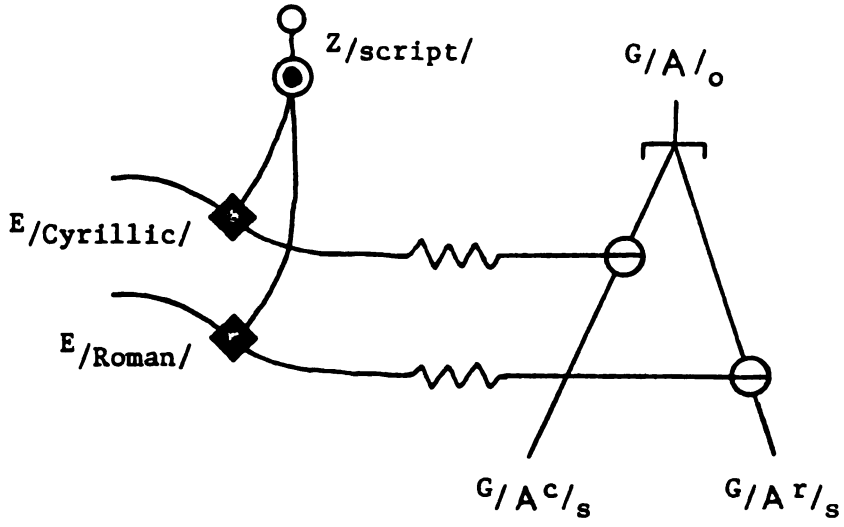
1. They may realize the same orthography-grapheme and may always be realized identically by graphemic signs.
2. They may realize the same orthography-grapheme and their capital coscripts (but not their lower-case coscripts) may be realized identically by graphemic signs.
3. They may realize different orthography-graphemes and may always be realized identically by graphemic signs.
4. They may realize different orthography-graphemes and their capital coscripts (but not their lower-case coscripts) may be realized identically by graphemic signs.

5. They may realize different orthography-graphemes and their sloped lower-case coscripts (but not their other coscripts) may be realized identically by graphemic signs.

These five kinds of similarity permit five different kinds of simplification between the networks for the two scripts. Each of these kinds of simplification will be considered in turn, with an example of it and with discussion of the theoretical problems which it raises.

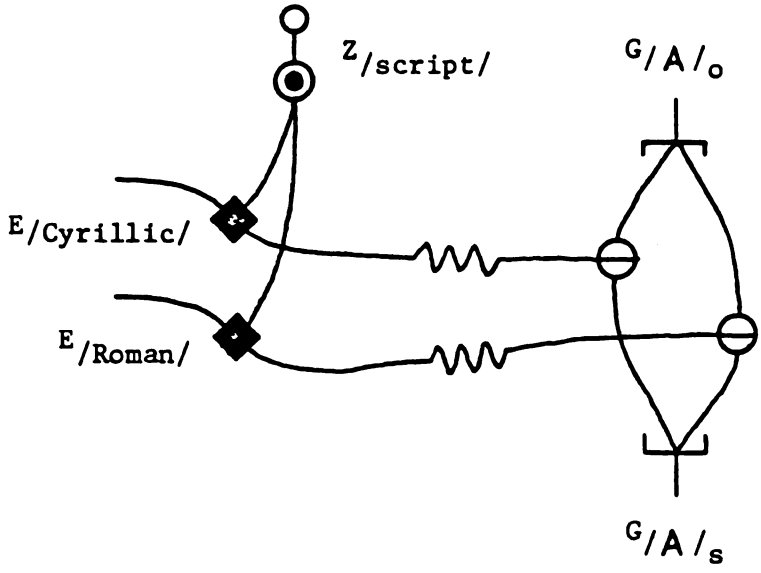
The simplification made possible by the first kind of similarity may be exemplified by $^{G}/A^{c}/_{s}$ and $^{G}/A^{r}/_{s}$. Because the formula for realizing $^{G}/A^{c}/_{s}$ (Fig. III.3.(1)) and that for realizing $^{G}/A^{r}/_{s}$ (Fig. III.4.(1)) are the same, downward output through the network will be the same if that formula occurs only once, with its top line labeled $^{G}/A/_{s}$, and if all other lines labeled either $^{G}/A^{c}/_{s}$ or $^{G}/A^{r}/_{s}$ are relabeled $^{G}/A/_{s}$. The formula for realizing $^{G}/A/_{o}$ (Fig. III.2.(1), repeated here for convenience)

(3)



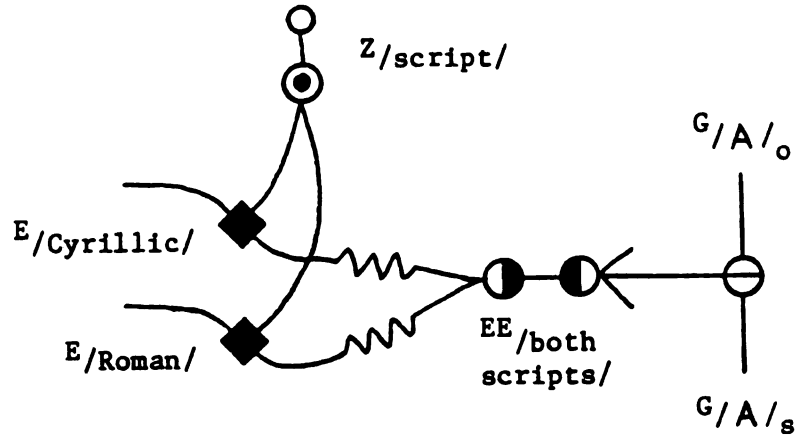
thus becomes

(4)



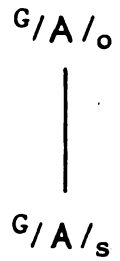
and a decision will be required as to the fate of GATE nodes during such a simplification. Transductions cannot be made satisfactorily through (4). During downward transduction, its downward OR node will allow transduction if either GATE node is opened, but the eclectic network described above will always open one or the other of those nodes; during upward transduction, its upward OR node appears to make the signaling of one or the other eclectad a matter of chance, which is an eventuality that the eclectic sector was intended to obviate. The latter problem could be avoided by connecting $^{G}/A/_{o}$ and $^{G}/A/_{s}$ by single line segments running to one GATE node, and by connecting that GATE node through an endoeclectad to both eclectads.

(5)



However, an analysis of the operation of (5) during transduction shows that a GATE node is meaningless if it is attached to all the eclectads dominated by a single zygad; (5) exerts no control during downward transduction and it provides no information during upward transduction. It can be replaced more economically by the same line without the GATE node,

(6)



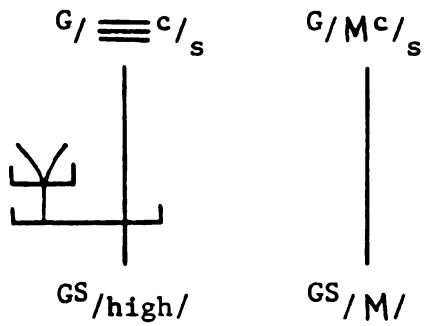
which is a trivial connection and which allows the label $^{G}/A/_{o}$ to replace the label $^{G}/A/_{s}$ everywhere it occurs. The effect of this similarity between the two scripts is, therefore, that characters described by $^{GS}/A/$, $^{GS}/a/$, or $^{GS}/\alpha/$ always realize $^{G}/A/_{o}$, whether those characters occur in isolation or in a written text, but that they never indicate which script they represent.

If it is assumed that the two written forms of Serbo-Croatian use their corresponding coscripts under the same circumstances, the same simplification may be applied to the suprasegmental graphemes. In all of these examples of simplification, it will therefore be assumed that the edge-line labels $^{G}/\equiv^{c}/_{s}$ and $^{G}/\equiv^{r}/_{s}$ may be replaced by $^{G}/\equiv/_{o}$, and that the labels $^{G}/—^{c}/_{s}$ and $^{G}/—^{r}/_{s}$ may be replaced by $^{G}/—/_{o}$.

The simplification made possible by the second kind of similarity may be exemplified by $^{G}/M^{c}/_{s}$ and $^{G}/M^{r}/_{s}$. The formula for realizing $^{G}/M^{c}/_{s}$ (Fig. III.3.(15), repeated here for convenience),[17]

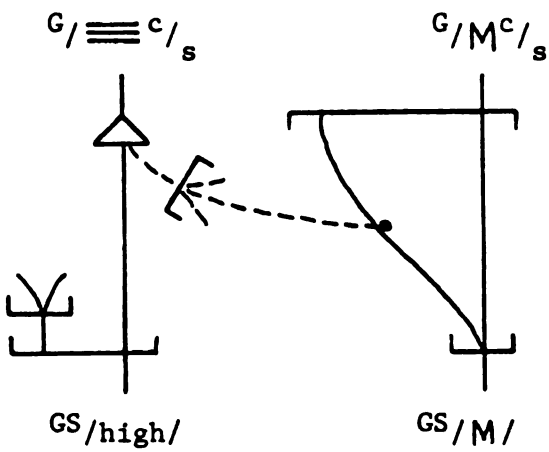
[17]Formulas (7) through (11) omit the realization of $^{G}/—/_{o}$, which is not involved.

(7)



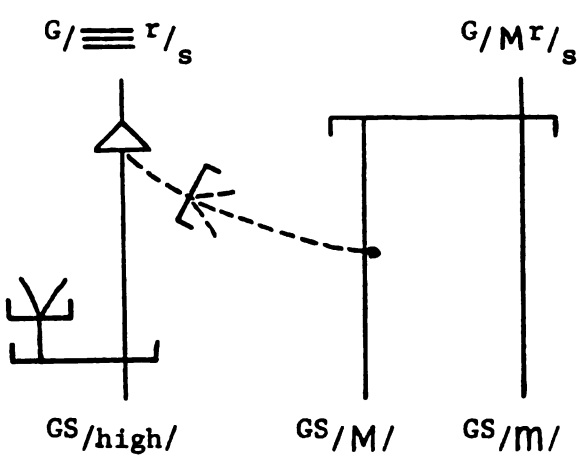
may be rewritten less economically as

(8)



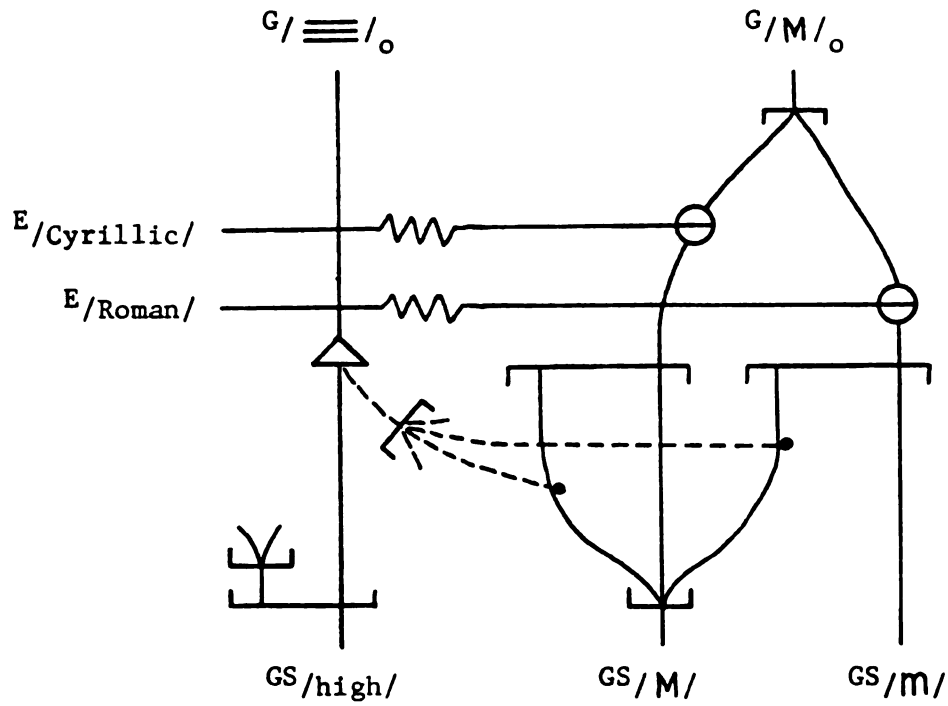
which is arranged more like the formula for realizing $^{G}/_{M^{r}/_{s}}$ (Fig. III.4.(14), repeated here for convenience),

(9)



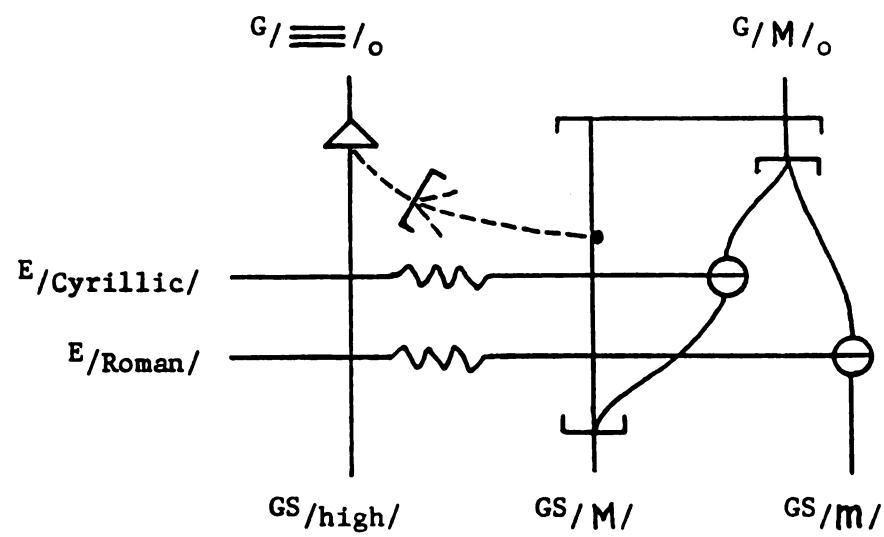
The formula for realizing $^{G}/_{M/_{o}}$ (Fig. III.2.(15)) can then be combined with (8) and (9) as

(10)



which readily simplifies to

(11)

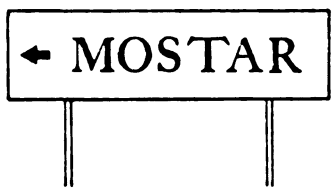


The effect of this similarity between the two scripts is, therefore, that characters described by both $^{GS}/M/$ and $^{GS}/high/$ always realize $^{G}/M/_{o}$ and $^{G}/\equiv/_{o}$, whether those characters occur in isolation or in a written text, but that they never indicate which script they represent.

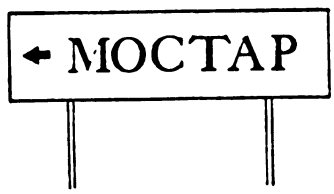
A practical example of the effects of these two kinds of similarity will occur if a motorist who knows that he is approaching the city of Mostar sees part of a highway sign, as illustrated in (12a).[18] From what

(12a)

(12b)



(12c)

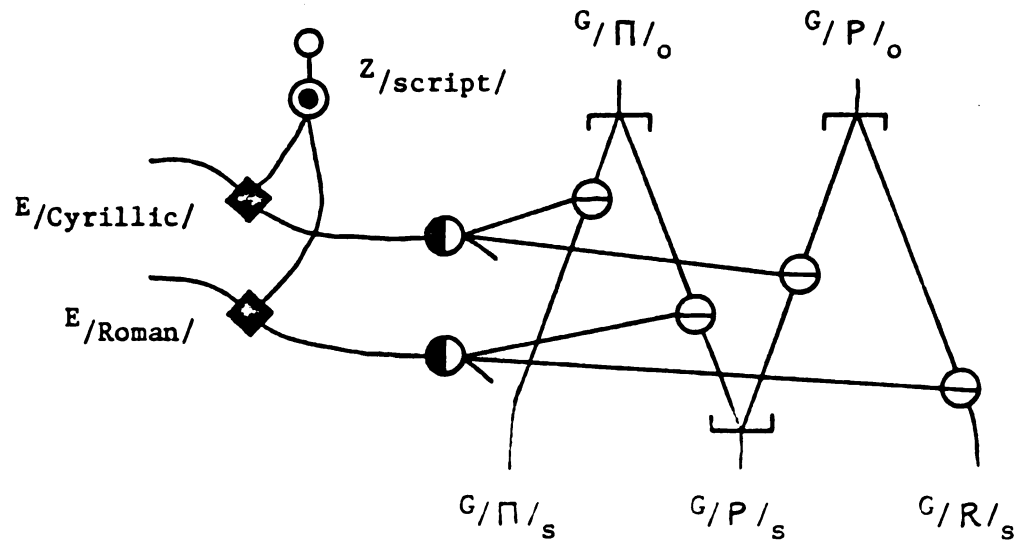


he sees, he can reasonably assume that the sign bears the name of the city he is approaching, but he has no way of knowing whether the entire sign is as illustrated in (12b) or as in (12c), since the upward realization of the two characters which he can see does not pass through any GATE nodes and does not identify the script in which the sign is written.

The simplification made possible by the third kind of similarity may be exemplified by $^{G}/P^{c}/_{s}$ and $^{G}/P^{r}/_{s}$. The formula for realizing $^{G}/P^{c}/_{s}$ (Fig. III.3.(20)) has exactly the same downward output as that for realizing $^{G}/P^{r}/_{s}$ (Fig. III.4.(17)). Transductions through the entire network will therefore be the same if that formula occurs only once, with its top line labeled $^{G}/P/_{s}$, and if all other lines labeled either $^{G}/P^{c}/_{s}$ or $^{G}/P^{r}/_{s}$ are relabeled $^{G}/P/_{s}$. The formulas for realizing $^{G}/\Pi/_{o}$ and $^{G}/P/_{o}$ (Fig.2.(19),(20)) therefore become

[18]The formulas for realizing $^{G}/O/_{o}$ are simplified in the same way as those for realizing $^{G}/A/_{o}$.

(13)

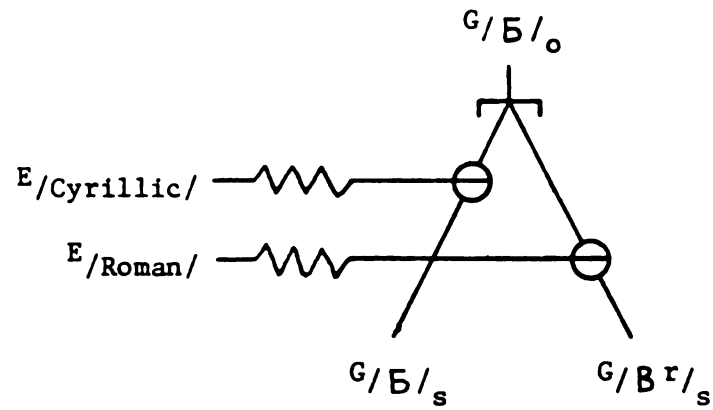


Upward transductions through networks such as (13), in which the lines from an upward UNORDERED OR node pass through GATE nodes which signal different eclectads of a single zygad, have an ambiguity which can be alleviated by a principle of presumed eclectic consistency. The eclectads which an utterance represents are an integral part of the message which it conveys, and a speaker or writer, when producing a well-formed utterance, should take care to let his hearers or readers know when he changes the eclectads which he intends to represent. The hearer or reader of an utterance, once he has identified the eclectads which it represents, should therefore be able to assume that those eclectads will remain the same for the rest of the utterance unless he is forced to notice a change in them. Upward transductions through a network such as that in (13) should therefore be chosen so that the utterance will remain eclectically self-consistent--unless that transduction becomes incompatible with something higher in the language, in which case a different transduction must be chosen and the eclectic inconsistency of the utterance must be noted. The upward transduction of $^{G}/P/_{s}$ should therefore go to $^{G}/P/_{o}$ if the rest of the written text has signaled ^{E}/Cyrillic/ and to $^{G}/\Pi/_{o}$ if the rest

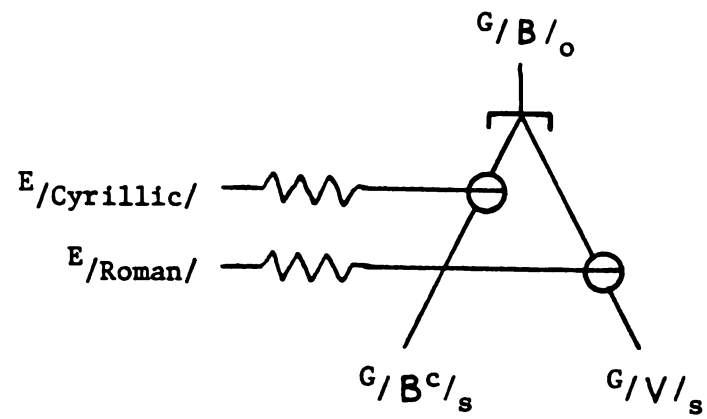
of the text has signaled $^{E}/\text{Roman}/$. The effect of this similarity between the two scripts is, therefore, that characters described by either $^{GS}/\text{Р}/$ or $^{GS}/\text{р}/$ always realize either $^{G}/\text{П}/_{o}$ or $^{G}/\text{P}/_{o}$. When seen in isolation, they do not indicate which orthography-grapheme they realize or which script they represent; but when they appear in a written text, they clearly indicate which of these two orthography-graphemes they realize, depending on which script was used to write the text.

The simplification made possible by the fourth kind of similarity may be exemplified by $^{G}/\text{B}^{c}/_{s}$ and $^{G}/\text{B}^{r}/_{s}$. The formulas for realizing $^{G}/\text{Б}/_{o}$ and $^{G}/\text{B}/_{o}$ (Fig. III.2.(2),(3), repeated here for convenience)

(14a)

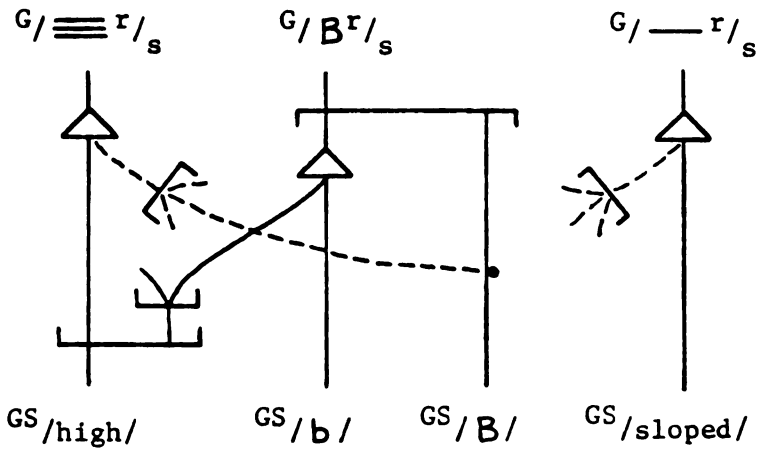


(14b)

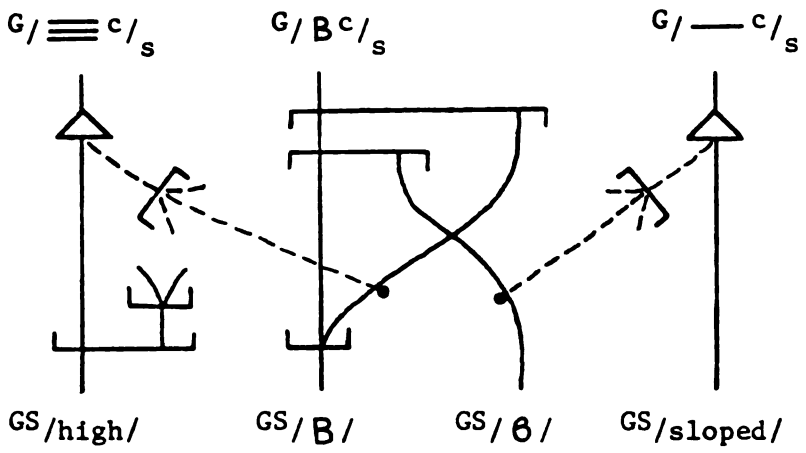


combined with the formulas for realizing $^{G}/\text{B}^{r}/_{s}$ and $^{G}/\text{B}^{c}/_{s}$ (Fig. III.4.(2) and Fig. III.3.(3), repeated here for convenience with a slight modification in the latter),

(15a)

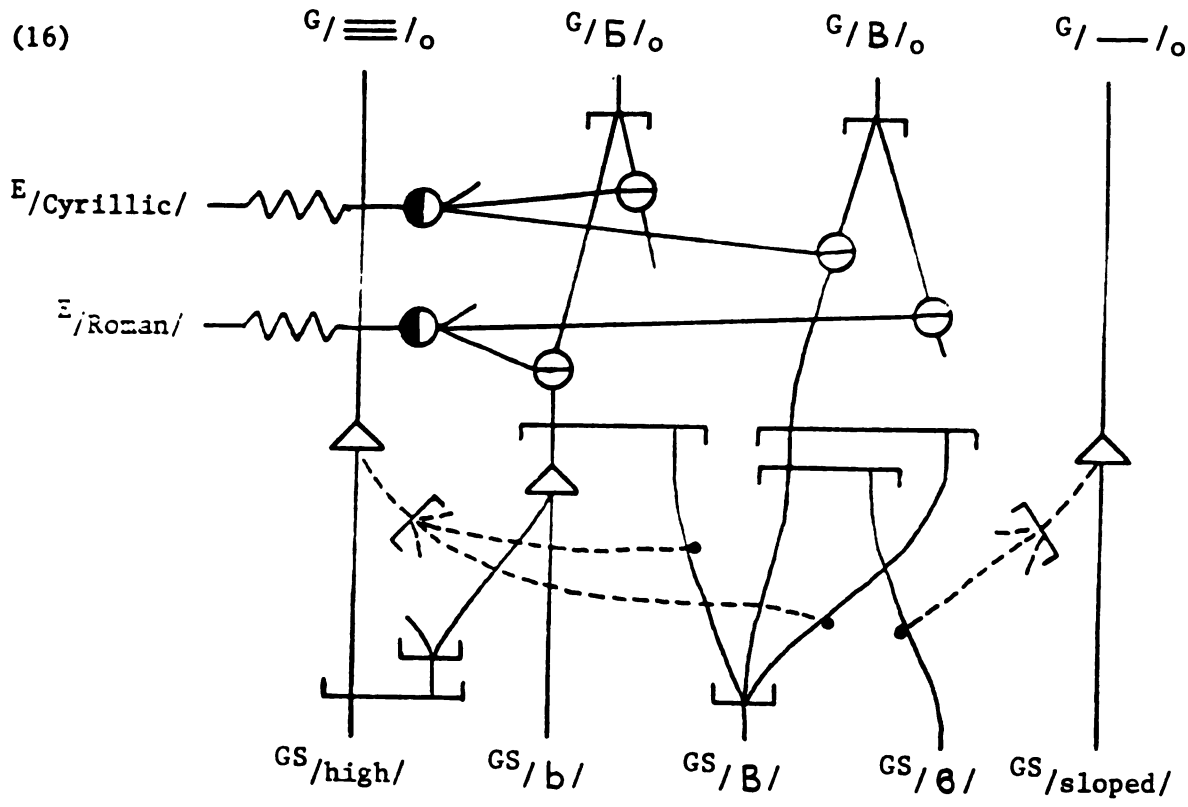


(15b)



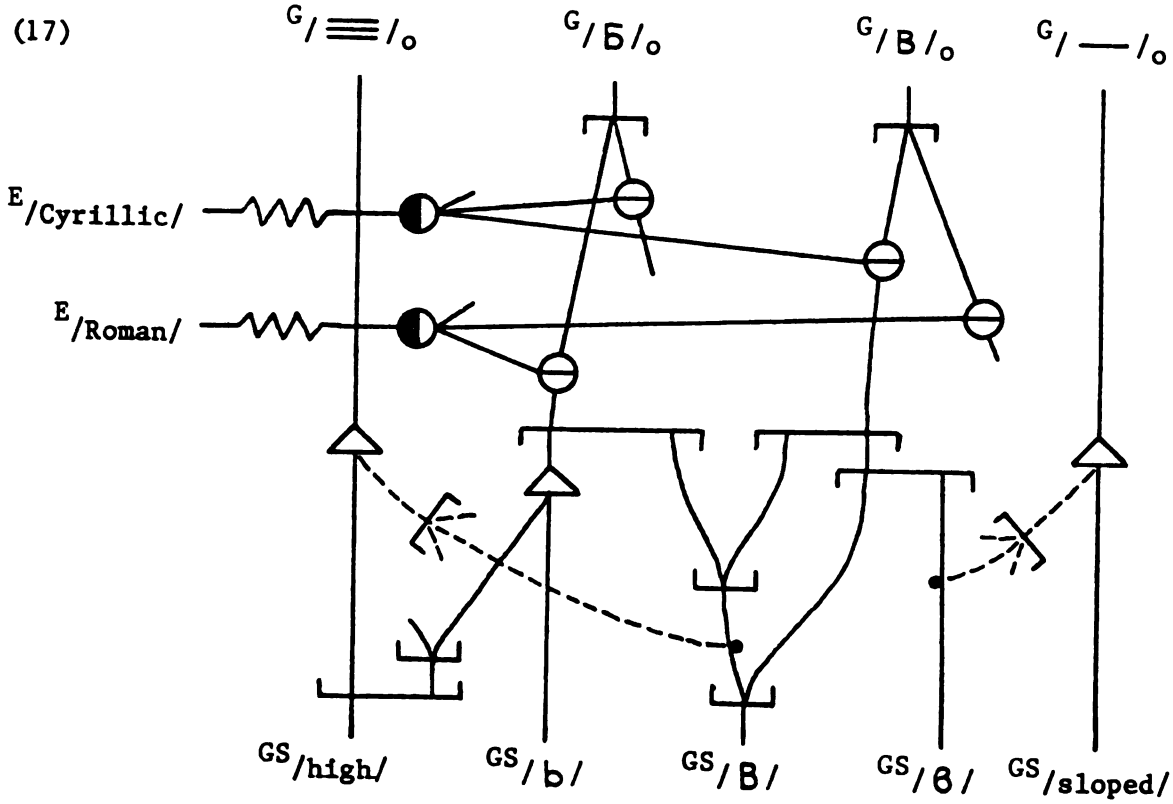
produce, with combining of the suprasegmental graphemes, the network

(16)



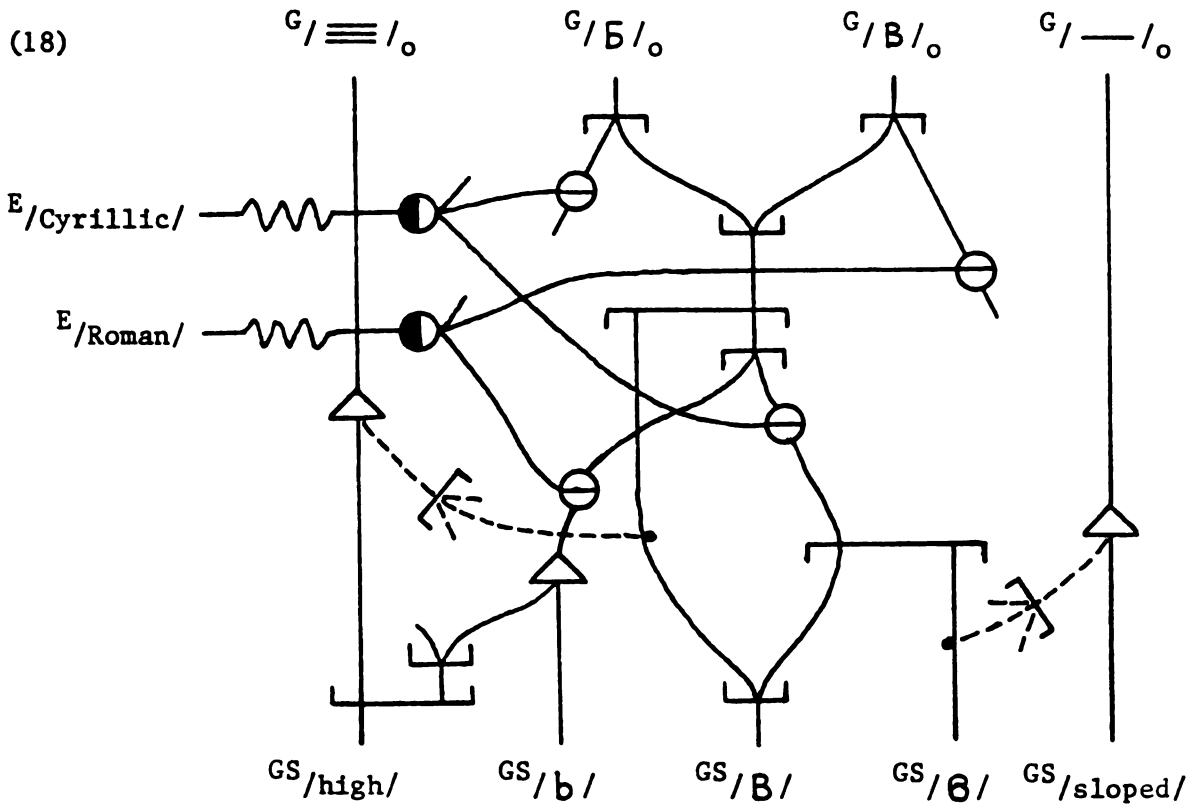
which readily simplifies to

(17)



If two of the GATE nodes, one from each eclectic disjunction cluster, were moved downward, (17) could be altered to

(18)



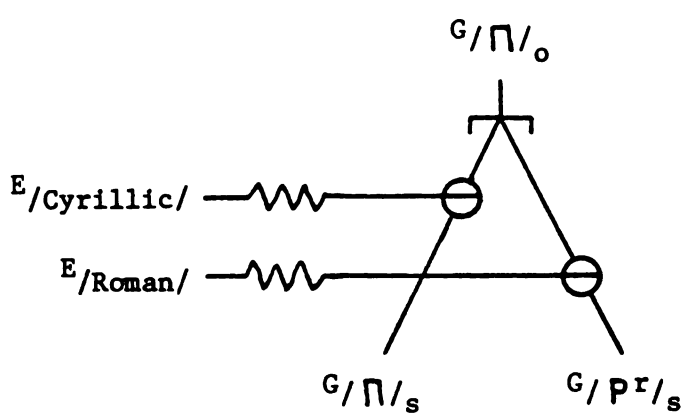
However, (18) is more economical than (17) by only the advantage of one UNORDERED OR node over one ORDERED OR node, and it has a serious defect in its performance during upward transduction. A character described by both $^{GS}/B/$ and $^{GS}/high/$, when transduced upward through (17), will behave like a character described by $^{G}/P/_{s}$ transduced upward through (13). Once it is known which GATE node it must pass through in order to maintain the presumed eclectic consistency of the utterance, the path of its upward transduction is clear. However, the transduction of such a character upward through (18) will face a dilemma at the highest upward UNORDERED OR node. The similar network in (12), which allows an upward transduction without GATE nodes, causes no trouble, since there the upward transduction of $^{GS}/M/$, which bypasses the GATE nodes, always leads

to the same orthography-grapheme. But in (18), the upward transduction from the highest upward UNORDERED OR node is uncontrolled within the graphemic stratal system, and must continue ambiguously upward until one or the other alternative becomes incompatible with something in a higher stratal system of the language. It therefore seems proper to suggest that (17) is the correct network for this transduction, and that the nodes forming an eclectic disjunction cluster should be kept together during any simplifications of networks that contain them.

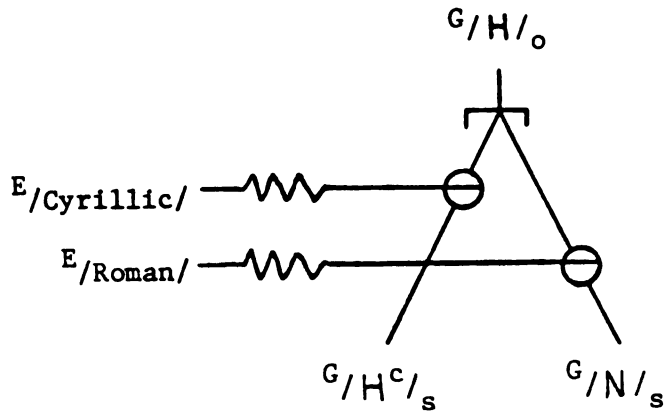
The effect of this similarity between the two scripts is, therefore, that characters described by both $^{GS}/B/$ and $^{GS}/high/$ always realize $^{G}/\equiv/_{o}$ and either $^{G}/Б/_{o}$ or $^{G}/B/_{o}$. When seen in isolation, they do not indicate which orthography-grapheme they realize or which script they represent; but when they appear in a written text, they clearly indicate which of these two orthography-graphemes they realize, depending on which script was used to write the text.

The simplification made possible by the fifth kind of similarity may be exemplified by $^{G}/П/_{s}$ and $^{G}/N/_{s}$. The formulas for realizing $^{G}/H/_{o}$ and $^{G}/П/_{o}$ (Fig. III.2.(16),(19), repeated here for convenience)

(19a)

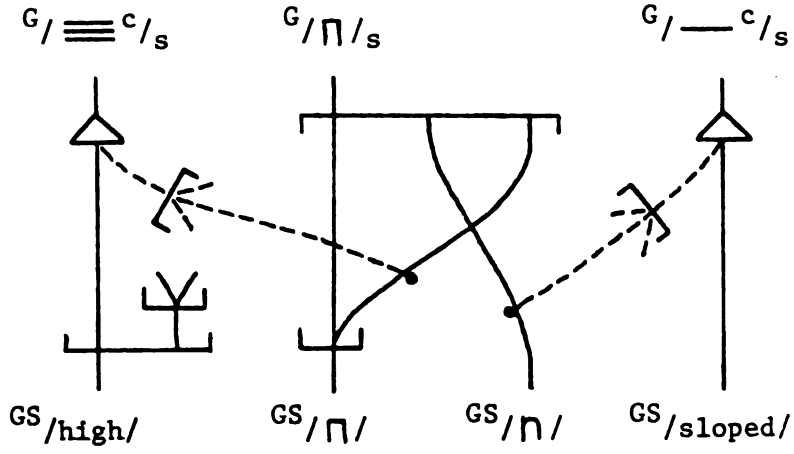


(19b)

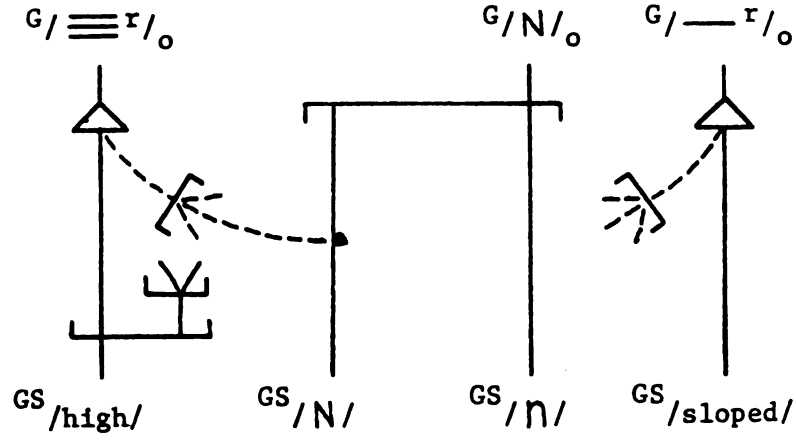


combined with the formulas for realizing $^{G}/N/_{s}$ and $^{G}/\sqcap/_{s}$ (Fig. III.4.(15) and Fig. III.3.(19), also repeated here for convenience)

(20a)

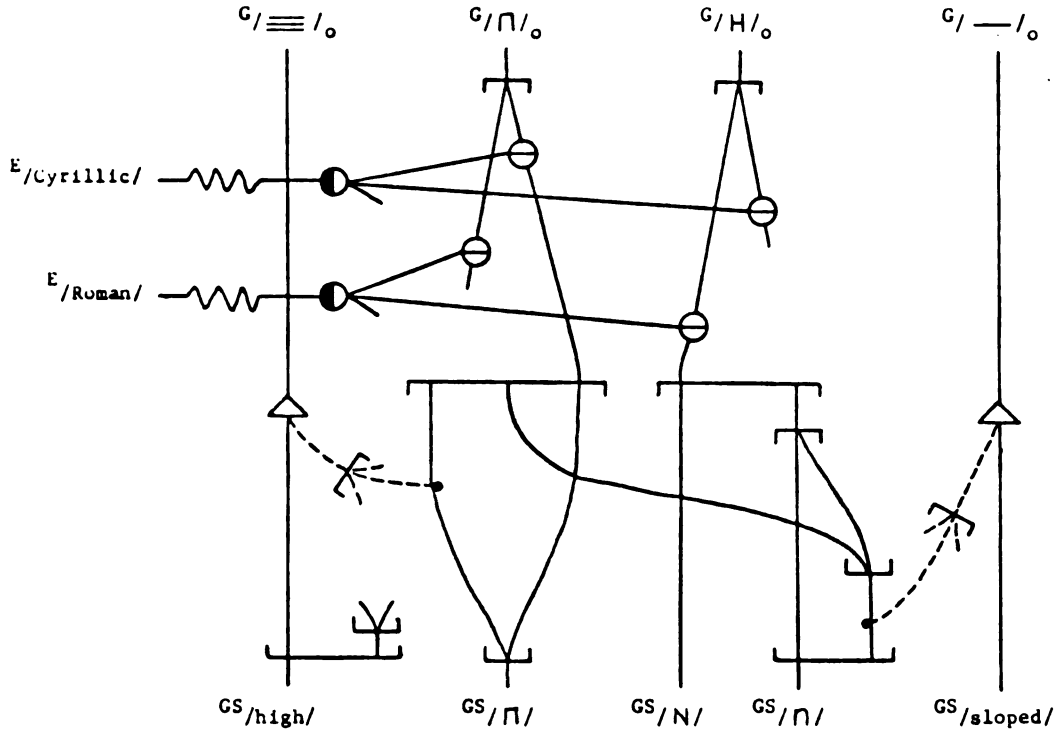


(20b)



produce a formula which, with the only slight simplification that it allows, results in

(21)



The effect of this similarity between the two scripts is, therefore, that characters described by both $^{GS}/\cap/$ and ^{GS}/sloped/ always realize $^{G}/—/_{o}$ and either $^{G}/H/_{o}$ or $^{G}/\sqcap/_{o}$. When seen in isolation, they do not indicate which orthography-grapheme they realize or which script they represent; but when they appear in a written text, they clearly indicate which of these two orthography-graphemes they realize, depending on which script was used to write the text.

e. <u>The simplified network</u>. The optimal description for the orthography of Serbo-Croatian, and for the competence of a modern literate in that language, may be obtained by taking the realization formulas for its 32 orthography-graphemes (from Figure III.2.), joining them to the realization formulas for all of the script-graphemes (from Figures III.3. and III.4.), and then applying to the resulting networks the five kinds of

simplification which have just been described. The following simplifications will have to be made, involving the 19 orthography-graphemes listed in Table III.9.

The realization networks for $^{G}/A/_{o}$, $^{G}/E/_{o}$, and $^{G}/O/_{o}$ will all be simplified in the way described above for $^{G}/A/_{o}$. The network for $^{G}/J/_{o}$ will be simplified in the same way, except that it must allow for the use of ^{GS}/dot/ to realize both $^{G}/J^{r}/_{s}$ and $^{G}/I/_{s}$. The networks for $^{G}/\equiv/_{o}$ and $^{G}/—/_{o}$ will also be simplified, as was mentioned above.

The realization of $^{G}/P^{r}/_{s}$, in the network for $^{G}/П/_{o}$, and the realization of $^{G}/P^{c}/_{s}$, in the network for $^{G}/P/_{o}$, will be simplified by replacing $^{G}/P^{c}/_{s}$, $^{G}/P^{r}/_{s}$, and their two identical formulas with $^{G}/P/_{s}$ and one formula, as described above. The realization of $^{G}/C^{r}/_{s}$, in the network for $^{G}/Ц/_{o}$, and the realization of $^{G}/C^{c}/_{s}$, in the network for $^{G}/C/_{o}$, will be simplified similarly by replacing $^{G}/C^{c}/_{s}$, $^{G}/C^{r}/_{s}$, and their two identical networks with $^{G}/C/_{s}$ and a single formula. Because they also involve $^{G}/C^{r}/_{s}$, the realization formulas for $^{G}/Ћ/_{o}$ and $^{G}/Ч/_{o}$ must be slightly modified in ways not detailed here.

The realization network for $^{G}/M/_{o}$ will be simplified in the way described above. The network for $^{G}/K/_{o}$ will be simplified similarly[19] by combining the parts of it which cause the capital coscripts of $^{G}/K^{c}/_{s}$ and $^{G}/K^{r}/_{s}$ to be identically realized by ^{GS}/K/ and ^{GS}/high/. The network for $^{G}/T/_{o}$ will be simplified by combining the parts of it which cause the capital coscripts of $^{G}/T^{c}/_{s}$ and $^{G}/T^{r}/_{s}$ to be identically realized by

[19]This assumes that any mark which can embody the capital coscripts of $^{G}/K^{c}/_{s}$ can also embody the capital coscripts of $^{G}/K^{r}/_{s}$, and vice versa. The truth of this assumption deserves investigation in the field; it depends on the relative acceptability for both scripts of marks with straight or curving lines toward the upper and lower right. Marks with straight lines in those positions may be more acceptable for Serbo-Croatian than for other languages using the Cyrillic script.

Table III.9.

Letter orthography-graphemes involved in simplifications between the Roman and Cyrillic scripts.

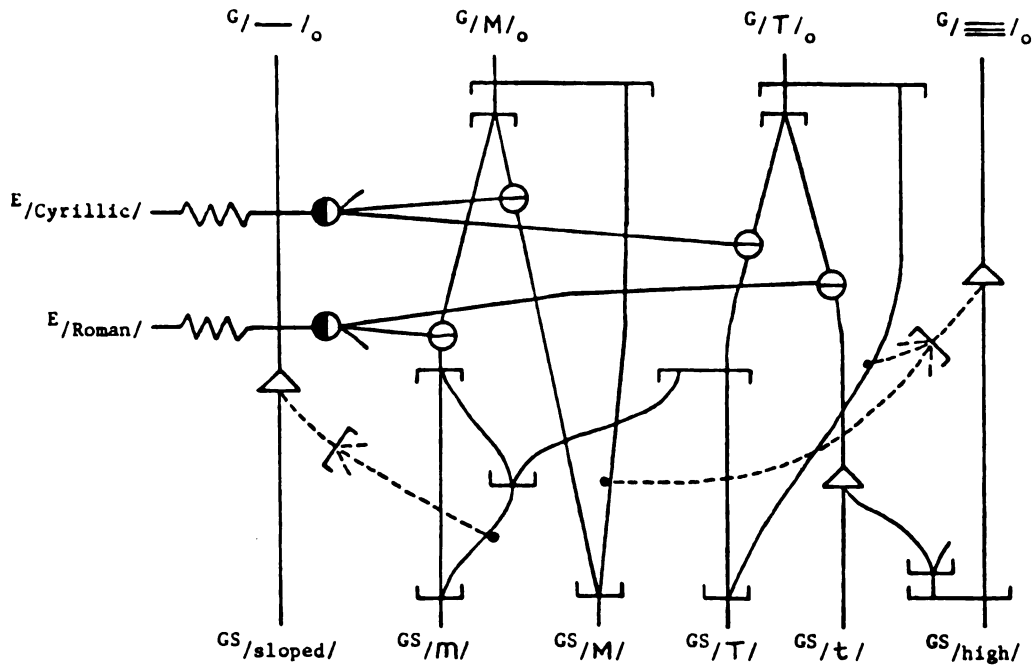
letter orthography-grapheme	kind of simplification	letter orthography-grapheme	kind of simplification
$^{G}/А/_{o}$	1	$^{G}/Н/_{o}$	4, 5
$^{G}/Б/_{o}$	4	$^{G}/О/_{o}$	1
$^{G}/В/_{o}$	4	$^{G}/П/_{o}$	3, 5
$^{G}/Г/_{o}$	5	$^{G}/Р/_{o}$	3
$^{G}/Е/_{o}$	1	$^{G}/С/_{o}$	3
$^{G}/И/_{o}$	5	$^{G}/Т/_{o}$	2, 5
$^{G}/Ј/_{o}$	1, 5	$^{G}/У/_{o}$	5
$^{G}/К/_{o}$	2	$^{G}/Х/_{o}$	4
$^{G}/Л/_{o}$	5	$^{G}/Ц/_{o}$	3
$^{G}/М/_{o}$	2, 5		

^{GS}/T/ and ^{GS}/high/. The networks for both $^{G}/T/_{o}$ and $^{G}/M/_{o}$ will receive another simplification, described below, to accomodate the fact that either, under certain circumstances, may be realized by ^{GS}/m/ and ^{GS}/sloped/.

The realization of $^{G}/B^{r}/_{s}$, in the network for $^{G}/Б/_{o}$, and the realization of $^{G}/B^{c}/_{s}$, in the network for $^{G}/B/_{o}$, will be simplified in the way described above. The networks for $^{G}/X/_{o}$ and $^{G}/H/_{o}$ will be simplified similarly by combining the parts of them which cause ^{GS}/H/ and ^{GS}/high/ to realize the capital coscripts of $^{G}/H^{r}/_{s}$ and $^{G}/H^{c}/_{s}$ identically.

The realization of $^{G}/П/_{s}$, in the network for $^{G}/П/_{o}$, and the realization of $^{G}/N/_{s}$, in the network for $^{G}/H/_{o}$, will be simplified in the way described above. The networks for $^{G}/И/_{o}$ and for $^{G}/У/_{o}$ will be simplified similarly by combining the parts of them which cause the sloped lower-case coscripts of $^{G}/И/_{s}$ and $^{G}/U/_{s}$ to be realized by ^{GS}/U/ and ^{GS}/sloped/. The networks for $^{G}/T/_{o}$ and $^{G}/M/_{o}$ will also be simplified by combining the parts of them which cause the sloped lower-case coscripts of $^{G}/T^{c}/_{s}$ and $^{G}/M^{r}/_{s}$ to be realized identically by ^{GS}/m/ and ^{GS}/sloped/; this simplification will combine with those already described for $^{G}/T/_{o}$ and $^{G}/M/_{o}$ to produce the network

(22)



One final simplification will be made which also involves sloped lower-case coscripts from both scripts, but which is complicated by the use of certain marks to embody more than one script-grapheme of the Roman script. In both the Cyrillic and Roman scripts, $^{GS}/\text{ɾ}/$ is always accompanied by ^{GS}/sloped/. In the Cyrillic script, $^{GS}/\text{ɾ}/$ is never accompanied by any other graphemic sign in addition to ^{GS}/sloped/, and it always realizes $^{G}/\Gamma/_{s}$. In the Roman script, $^{GS}/\text{ɾ}/$ may realize either $^{G}/I/_{s}$ or $^{G}/L/_{s}$; but when it realizes $^{G}/L/_{s}$ it is accompanied by ^{GS}/high/ and when it realizes $^{G}/I/_{s}$ it is accompanied by $^{GS}/\bullet/$, which refers to the shape of the other mark in the realization. $^{GS}/\bullet/$, in turn, is involved in the realization of $^{G}/J/_{o}$, as was previously mentioned. Simplification of all the networks which involve $^{GS}/\text{ɾ}/$, or which involve graphemic signs of shape that may accompany $^{GS}/\text{ɾ}/$, produces the network shown in Figure III.5.

The problems which arose during the analysis with respect to the process of transduction have thus been dealt with, partly by the choice

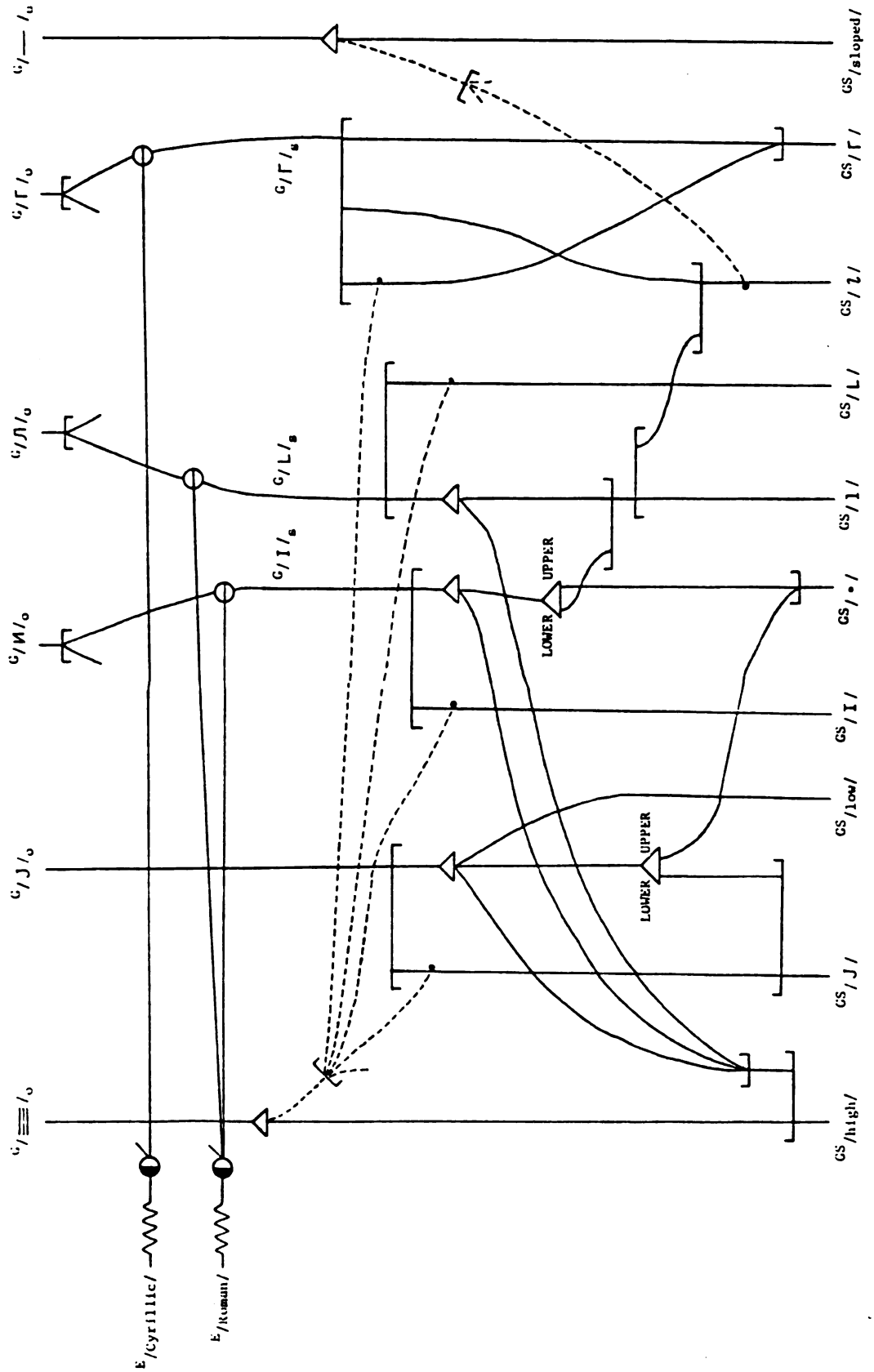


Figure III.5.

Serbo-Croatian formulas involving realization by GS/2/ or by other graphemic signs that may accompany it.

of certain networks and partly by the principle of presumed eclectic consistency. The only endoeclectad which was tentatively proposed during the analysis was found to be unnecessary, and the first approximation to the eclectic portion, with its single-level reversible sign pattern, may therefore be accepted as the correct analysis for that portion of Serbo-Croatian. When the first approximation to the realization portion of the language has been simplified in the ways just described, the resulting linguistic network will therefore be a model of the graphemic alternation pattern of Serbo-Croatian, and a model of the corresponding competence of a modern, literate Serbo-Croat.

B. SEX DIALECTS: YANA

1. The Language.

a. Identification of the language. Yana is a Hokan language. It was spoken in northern California, in what is now eastern Tehama county and south-central Shasta county, in an area located west of Lassen Peak in the drainage basin of the Sacramento River. The area inhabited by the Yana extended from the Pit River on the north to the valley of Deer Creek on the south, and from the mountains on the eastern edge of the drainage basin westward to include the foothills above the Sacramento River; the Yana did not live in the river valley itself.

The Yana language was spoken in four mutually-intelligible geographical dialects which, from north to south, are known as its Northern, Central, Southern, and Yahi dialects. At one time, there may have been as many as 1500 speakers of Yana, in all its dialects. However, they were never protected by having a reservation, and during the 1860's the white settlers of California carried out an avowed campaign to exterminate them.[20] By 1917, when Kroeber finished writing his survey of California Indians (Kroeber 1925:iv), the Southern and Yahi dialects were extinct, and the other dialects were spoken by no more than forty persons. The language is now extinct (Sapir & Swadesh 1960:ix).

[20]This information has been summarized and paraphrased from Kroeber 1925: ch. 23 and plate 1.

b. The situation to be handled in the eclectic portion. The entire Yana language was divided into two dialects;[21] only one could be used in any conversation, and the choice of the one to be used depended on the sex of the persons engaged in that conversation. One of these dialects, called the "male" dialect, was used by men when speaking to men; the other, which has been called the "female" dialect in the literature but will here be called the "common" dialect, was used by men speaking to women or by women speaking to either men or women.

The choice between these dialects depended on the identification of the speaker and hearer of the utterance, not on a taboo as to who might say what (Sapir 1929:206-7). In a quotation or in any other situation where the use of these dialects was displaced, a speaker of either sex used the dialect appropriate to the original, borrowed situation, not the one appropriate to the actual, borrowing situation. A man would use the "common" dialect when quoting to a man words originally spoken by or to a woman (Sapir & Swadesh 1960:8), while a woman would use the "male" dialect when quoting words originally spoken by a man to another man (Sapir 1929:206-7). Persons of either sex, when telling a folk-tale in which a character spoke, used the dialect appropriate to that character's situation in the tale (Sapir 1929:207); and within a folk-tale, a disguised character chose his dialect to fit his disguise (Sapir & Swadesh 1960:8).

2. The Data.

Sapir & Swadesh (1960:3) show a "normalized orthography" for Yana which is in fact a phonemic analysis of the language and which, they claim,

[21] This dialect division is in addition to, and cuts across, the geographical dialects already mentioned.

represents the phonological description for the language toward which Sapir himself was heading in his later work. They recognize five vowels and twenty-two consonants, list them according to their manner of articulation, and discuss their places of articulation and timbres, as well as some of their allophones. They treat long vowels as sequences of two identical vowels.

The Yana data used in this dissertation will be given in Sapir & Swadesh's "normalized orthography" with three exceptions. The symbols shown in Table III.10. will be used; a few of them differ from the symbols used by Sapir & Swadesh. Voiceless sounds, if their symbols do not indicate them to be so, will be written with a circle underneath. Long vowels will be written by a simple vowel symbol followed by a colon. The last change simplifies the description of certain suffixes which require

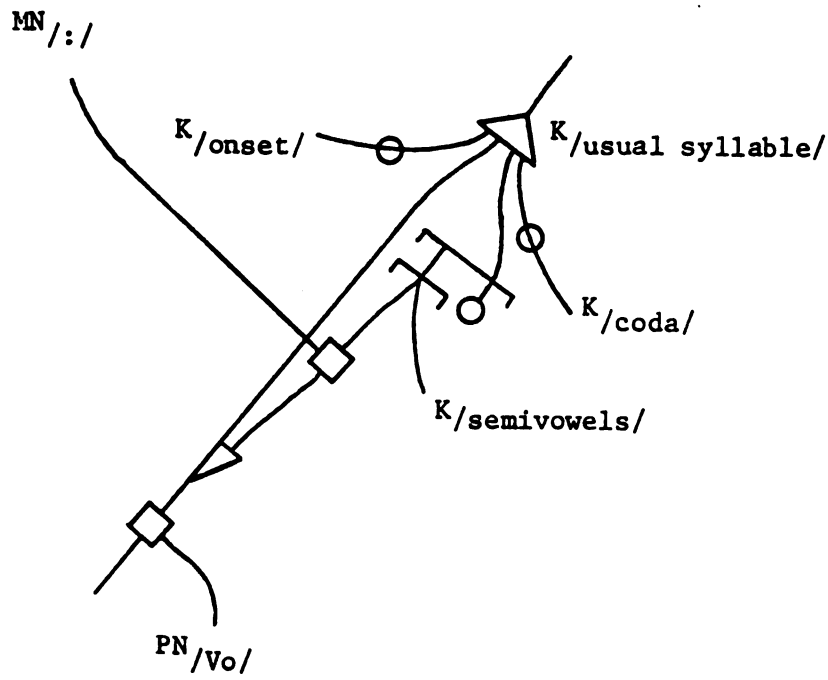
Table III.10.

Symbols for the "normalized" orthography of Yana adapted and revised from Sapir & Swadesh (1960).

spirants			s	x	h
aspirates	p	t	ȼ	k	
glottalized	p̰	t̰	ȼ̰	k̰	
neutral stops	b	d	ʒ	g	ʔ
nasals	m	n			
oral sonants	w	l r	y		
apex vowels	u		i		a
mid vowels	o		e		

the lengthening of a final short vowel; it represents a linguistic analysis which includes a vowel length morphon ^{MN}/:/ and a phonotactic network that contains a fragment such as [22]

(23)



In his 1929 paper, in which he addresses himself directly to the question of the sex dialects of Yana, Sapir lists many examples of pairs of forms belonging to the two dialects, although he says that he cannot "give a complete account . . . of all the rules of formation of sex forms, as [to do so] would involve too much grammatical detail. All [he] can do is to illustrate the main lines of phonetic and morphological detail"

[22]The labels in this diagram with superscript K represent "climacterads" in the phonotactics. It has been usual in stratificational work to attach labels to nodes or line segments in the tactic patterns, and it may be convenient to have a distinctive superscript to distinguish such labels. The term "climacterad" is based on the Greek word klimaktēr 'rung of a ladder' and the suffix -ad which has already been introduced. The letter K has been used to avoid confusion with the superscripts used for terms beginning with chilo-.

(p.207). Sapir classifies the words of the language according to the processes needed to change the forms of one dialect into the corresponding forms of the other; Sapir & Swadesh (1960:9) describe the differences between the two dialects by the same method, but divide the words of the language into slightly different groups.

Both Sapir (1929) and Sapir & Swadesh (1960) present their data by means of item-and-process descriptions. Using their descriptive method, the differences between the sex dialects of the language may be divided into two groups. For some Yana words, the "common"-dialect form can be derived from the "male"-dialect form by merely applying to the "male"-dialect form one of a few strictly phonological processes that affect its final syllable; for other Yana words, the two dialect forms show no such similarity. The first of these groups may be subdivided according to whether the "common"-dialect form can be derived by devoicing the final syllable, omitting the final syllable, or in some other way modifying the final syllable of the "male"-dialect form.

Tables III.11 through III.16 list a selection of the examples given by Sapir (1929), representing all the kinds of differences which he mentions between the two dialects. Table III.11. lists words for which the final syllable must have only voiceless sounds in the "common" dialect, although it may have voiced sounds in the "male" dialect. Table III.12. compares the possible word-final syllables for such words, as Sapir lists them. Table III.13. lists some suffixes for which, in an item-and-process analysis, the final syllable of the "male"-dialect form is omitted in order to produce the "common"-dialect form; Table III.14. lists some words which contain those suffixes. Table III.15. lists some word-final syllables for which the sex-dialect alternative forms are apparently

Table III.11.

Yana words having voiceless final syllables in the "common"-dialect form.*

	"male" dialect	"common" dialect	gloss
(1)	wawi̥ʔa	wawi̥ʔa	'little house'
(2)	hi:si	hi:si̥	'man'
(3)	mo:ʔi	mo:ʔi̥	'to eat'
(4)	dalu:wi	dalu:wi̥̥	'both hands'
(5)	waʔka:ra	waʔka:rḁ̥	'moon'
(6)	i:wu:lu	i:wu:lu̥̥	'inside'
(7)	timsiwa:ʔma	timsiwa:ʔmḁ̥	'I say to you'
(8)	imamba	imampḁ	'deer liver'
(9)	paẓa	paɬḁ	'snow'
(10)	padi	pati̥	'place'
(11)	mo:ti	mo:ti̥	'it is said he eats'
(12)	da:ha	da:xḁ	'river'
(13)	patʔama	patʔamhḁ	'bird sp.'
(14)	bahni:nu	bahni:nhu̥	'dentalia'

*The sounds [h] and [x], in item (12), function in this alternation as corresponding voiced and voiceless sounds, because the use of marked voicelessness in the componential (phononic) analysis allows [h] to be analyzed as the otherwise unmarked spirant and [x] as the spirant which is marked merely as voiceless. However, [h] will need some special handling when the phonetic details of its pronunciation are specified.

Table III.12.

Correspondences between word-final syllables in the two dialects of Yana.

	"male" dialect	"common" dialect		"male" dialect	"common" dialect
(1)	ʔpa	ʔpa˚	(12)	wa	wa˚˚
(2)	ʔta	ʔta˚	(13)	ya	ya˚˚
(3)	ʔȼa	ʔȼa˚	(14)	ra	ra˚˚
(4)	ʔka	ʔka˚	(15)	la	la˚˚~lha˚
(5)	sa	sa˚	(16)	ma	ma˚˚~mha˚
(6)	ʔa	ʔa˚	(17)	na	na˚˚~nha˚
(7)	pa	pa˚	(18)	ba	pa˚
(8)	ta	ta˚	(19)	da	ta˚
(9)	ȼa	ȼa˚	(20)	ʒa	ȼa˚
(10)	ka	ka˚	(21)	ga	ka˚
(11)	xa	xa˚	(22)	ha	xa˚

Table III.13.

Suffixes for which the Yana "common"-dialect form omits the final syllable of the "male"-dialect form.

	"male" dialect	"common" dialect	gloss
(1)	-e?e	-e	domonstrative
(2)	-numa	-nu	2p. singular
(3)	-ma?a	-ma	3p. usitative verb
(4)	-ma:?a	-ma:	3p. usitative causative verb
(5)	-ku?i	-ku	3p. dubitative verb
(6)	-ko:?a	-ko:	3p. dubitative causative verb

Table III.14.

Words for which the Yana "common"-dialect form omits the final syllable of the "male"-dialect form.

	"male" dialect	"common" dialect	gloss
(1)	aiẓe?e	aiẓe	'that one'
(2)	aige?e	aige	'to that one yonder'
(3)	?au?numa	?au?nu	'your fire'
(4)	ti:si?numa	ti:si?nu	'you say'
(5)	tu:ma?a	tu:ma	'he is accustomed to do'
(6)	nisa:ku?i	nisa:ku	'he might go away'
(7)	mo:te:?a	mo:te:	'it is said he gives to eat'
(8)	tu:si?i	tu:si	'he will do'
(9)	lautki?a	lautki	'he is said to be strong'
(10)	apẓi:siwa?a	apẓi:siwa	'he is killed'

Table III.15.

Final syllables in Yana having other differences that are apparently phonologically conditioned.

	"male" dialect	"common" dialect	gloss
(1)	ʔla	ʔla̤̤~lʔa̤	
(2)	ʔma	ʔma̤̤~mʔa̤	
(3)	ʔna	ʔna̤̤~nʔa̤	
(4)	haka:liʔli	haka:lilʔi̤	'lake'
(5)	mariʔmi	mariʔmi̤̤	'woman'
(6)	-ʔiʔ	-ʔi̤	imperative suffix
(7)	nisa:ʔiʔ	nisa:ʔi̤	'go away!'
(8)	diwaiza?	diwaida̤	'see me!'
(9)	-magaraʔ	-magarʔa̤̤	mild imperative
(10)	timmagaraʔ	timmagarʔa̤̤	'pray tell him!'

Table III.16.

Correspondences between suppletive alternative forms in the two dialects of Yana.

	"male" dialect	"common" dialect	gloss
(1)	-na	-h	noun suffix
(2)	bana	bah	'deer'
(3)	ʔina	ʔih	'tree, stick'
(4)	ʔauna	ʔauh	'fire'
(5)	yu:ɬaina	yu:ɬaih	'acorn mush'
(6)	-n	-:	interrogative
(7)	aiʂeʔen	aiʂeʔe:	'that one?'
(8)	ʔauʔasin	ʔauʔasi:	'is there fire?'
(9)	ti:siʔnuman	ti:siʔnuma:	'do you say?'
(10)	ʔɬe:walʔawaranʂan	ʔɬe:walʔawaranʂi:	'did I make a noise?'
(11)	gaʔla:yaunan	gaʔla:yauyi:	'crying'
(12)	na:	ga:	emphatic interrogative
(13)	ʔɬe:walʔasiʔnuga na:	ʔɬe:walʔasiʔnuk ga:	'are you (pl.) making a noise?'

phonologically conditioned in other ways, and also lists some words and suffixes which end in such syllables. Figure III.16. lists alternative forms which are so different in the two dialects that they must be treated as instances of suppletion.[23]

3. The Necessary Eclectic Portion.

a. Outline of the presentation. A speaker of Yana, if there were one still living, would know the circumstances under which he should use the "male" dialect or the "common" dialect, and he would know the different forms which he should include in his speech in order to make it conform to one dialect or the other. A linguistic model for his competence must therefore specify the circumstances which require the choice of one dialect or the other, and must specify the effects which that choice has on the realization of utterances. To arrive at such a model, separate descriptions will first be made of four parts of the linguistic network: the eclectic portion, the parts of the realization and tactic portions relevant to "common"-dialect forms with devoiced final syllables, the parts of those two portions relevant to "common"-dialect forms with omitted final syllables, and the parts of the realization portion relevant to suppletive forms in the two dialects. Possible simplifications between those networks will then be discussed, and the optimally simplified network for the eclectic, realization, and tactic portions will be described.

[23]The proofreading of Sapir (1929), at least as it is reprinted in the volume edited by Mandelbaum, is obviously haphazard with respect to the characters ɛ, ɓ, ɔ, and ʼ, and in other respects as well. It has occasionally has been necessary to emend forms containing these characters on the basis of related forms.

As Sapir (1929:207) himself remarks, there are some phenomena which he mentions but for which he does not provide enough data to permit complete linguistic analyses. This dissertation can only make approximate descriptions for such phenomena. The problem of quotations and other displaced utterances will be neglected here, since the proper handling of such phenomena must await further investigation of how the semantic and eclectic interfaces of language operate.

b. First approximation to the eclectic portion. An eclectic portion which can handle the two sex dialects of Yana is shown in Figure III.6. The single eclectic choice is shown by ^{Z}/sex dialect/, which dominates the two options ^{E}/male dialect/ and ^{E}/common dialect/ through a TACTIC CHAMELEON node. The ECLECTIC DIAMOND node for each of these eclectads is connected, through an OUTER CHAMELEON node, to one of the two GATE nodes in each eclectic disjunction cluster. This one eclectic choice is controlled, through the chiloeclectic alternation pattern, by two chiloeclectic choices made at the eclectic interface. One of these choices is made according to the sex which the speaker knows to be his or her own; it is represented by the options ^{CE}/male/ and ^{CE}/female/ dominated by ^{CZ}/sex of speaker/. The other choice is made according to the sex of the hearer, as perceived by the speaker; it is represented by the options ^{CE}/male/ and ^{CE}/female/ dominated by ^{CZ}/sex of hearer/.[24]

The successful operation of the network shown in Figure III.6. assumes that the eclectic portion of a language is constantly activated during transduction in either direction, and that the zero elements and ORDERED

[24]Neither Sapir (1929) nor Sapir & Swadesh (1960) say which dialect is used when a man speaks to a mixed audience of both men and women.

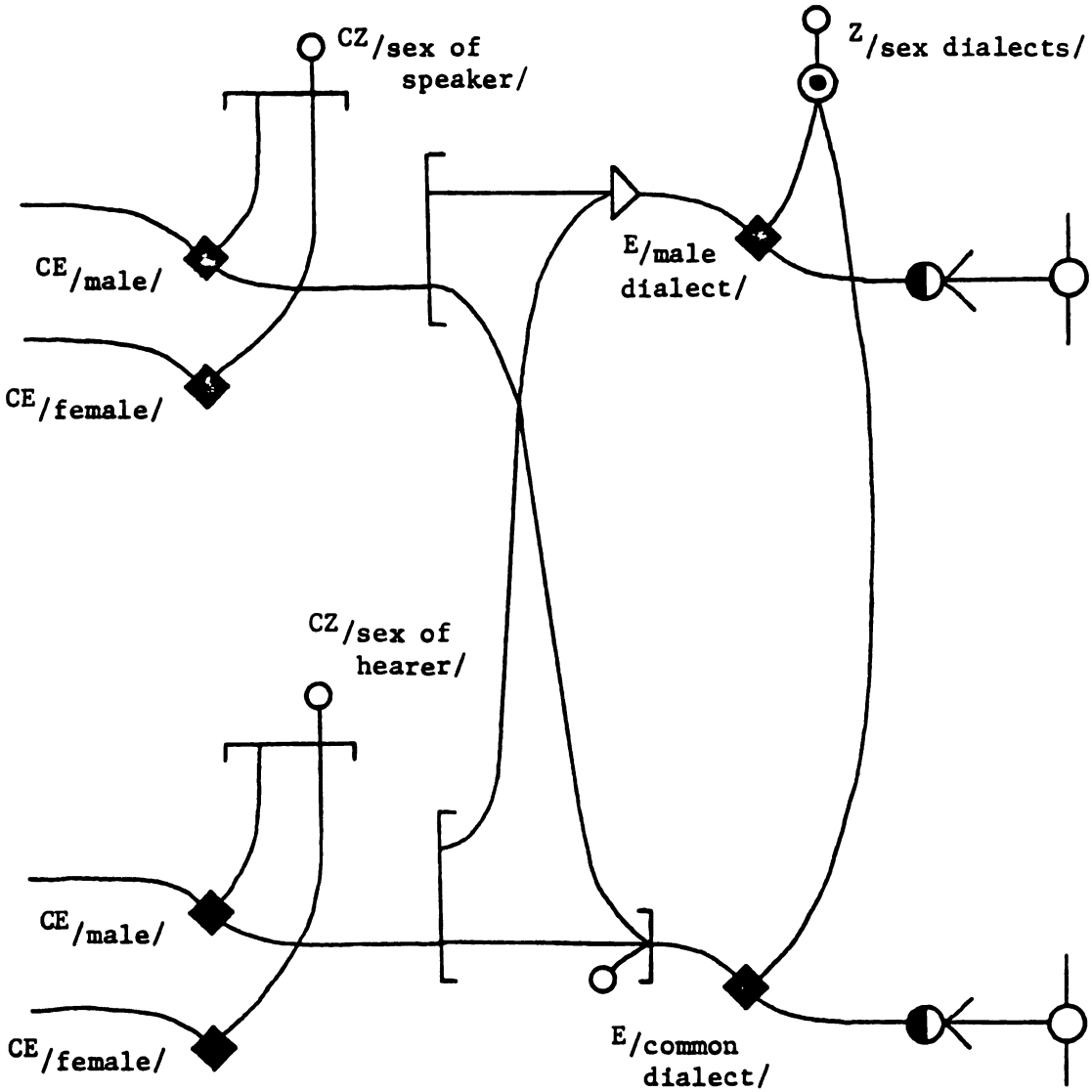


Figure III.6.

Eclectic portion for Yana.

OR nodes of the network will function as may be necessary to maintain such activation. If ^{CE}/male/ is activated in both spans of the chiloeclectic tactics, activation from both will run downward to ^{E}/male/; and if ^{CE}/male/ is activated in one span while ^{CE}/female/ is activated in the other, activation from ^{CE}/male/ will run downward to ^{E}/common/, while that from ^{CE}/female/ will run downward to zero realization at a two-way ECLECTIC DIAMOND node. But if ^{CE}/female/ is activated in both spans, activation from both of them will run downward to zero realizations at ECLECTIC DIAMOND nodes of the chiloeclectic tactics. So that the eclectic portion will have some activation in this span of the eclectic tactics, the zero element within the eclectic alternation pattern must be activated, and activation from that zero element will run to ^{E}/common/.

If ^{E}/male/ is activated in the eclectic tactics, activation from it will run upward to ^{CE}/male/ in both spans of the chiloeclectic tactics. If ^{E}/common/ is activated, however, activation may run upward from it in any of three ways. If it runs upward to ^{CE}/male/ in either span of the chiloeclectic tactic pattern, the activation from the chilozygad of the other span will activate ^{CE}/female/ as a determined element. If the activation from ^{E}/common/ runs upward to the zero element, ^{CE}/female/ will be activated as a determined element in both spans of the chiloeclectic tactic pattern.

c. <u>First approximation to networks for dialect forms pronounced differently in their final syllables.</u> Most Yana words have two forms, one for each sex dialect. Many alternations between the forms of such words can be handled, in item-and-process descriptions like those of Sapir (1929) and Sapir & Swadesh (1960), by processes that derive each word's

"common"-dialect form by changing the phonological composition of the last syllable of its "male"-dialect form.

Such alternations affect only the part of each word which is realized in the last syllable of its "male"-dialect form; the earlier part of a given word is always pronounced in the same way, whichever dialect is being spoken. Whether a syllable of a certain word is subject to these alternations depends entirely on its position in that word. Thus, the second syllable of the stem ʔku:wi is voiceless in the word

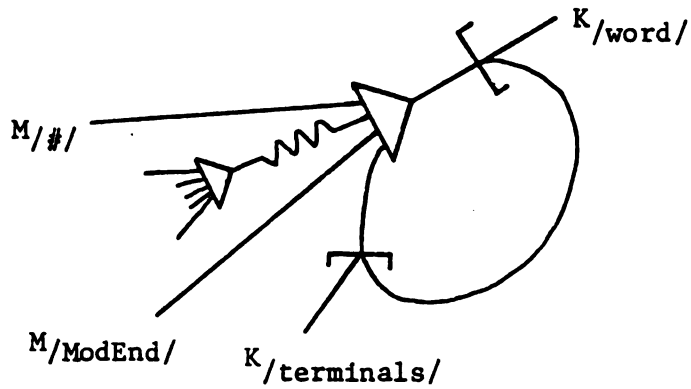
(24) [ʔku:wi̥] 'medicine-man' (common dialect)

where it is final, but is voiced in the word

(25) [ʔku:wiya] 'medicine-woman' (common dialect)

where it is not final because the word includes the suffix -ya (Sapir 1929:207). Because these alternations involve phonological differences occurring at the ends of morphologically-defined words, the present stratificational description handles them by a morphotactics which provides the determined morpheme ^{M}/ModEnd/ (= modification of end) at the end of almost every morphologically-defined word, and a phonemic stratal system which realizes that determined morpheme in one of several ways. The morphotactics therefore contains the fragment

(26)



in which ^{M}/#/ (=juncture) and ^{M}/ModEnd/ are determined morphemes, ^{K}/terminals/ dominates whatever phenomena occur at the ends of sentences, and the inferior ORDERED AND node dominates the morphemes which make up the word.

The possible realizations of ^{M}/ModEnd/ involve several alternations, three of which will be described here:

1. Alternation in which the final syllable of the "male"-dialect form corresponds to a final syllable of the "common"-dialect form which is of the same length but which is entirely voiceless. For such words, the vowel in the final syllable of the "male"-dialect form is always voiced, as is usual for Yana vowels, but the vowel in the final syllable of the "common"-dialect form is the voiceless vowel which is homorganic to it. If the final syllable of the "male"-dialect form has a voiceless consonant, the final syllable of the "common"-dialect form has the same consonant; but if that "male"-dialect syllable has a voiced consonant, the corresponding "common"-dialect syllable has the voiceless consonant which is homorganic to it.

2. Alternation in which the "common"-dialect form lacks the entire final syllable of the corresponding "male"-dialect form. For such words, the realizates of the final syllable of the "male"-dialect form have zero realization in the "common" dialect.

3. Alternation in which the "common"-dialect form is shorter, but not as much as one syllable shorter, than the corresponding "male"-dialect form. For such words, the syllable of the "common"-dialect form which corresponds to, and is pronounced the same as, the "male"-dialect form's penult syllable is followed, in the "common"-dialect form, by an additonal quantity of sound which is shorter than the "male"-dialect forms's final syllable.

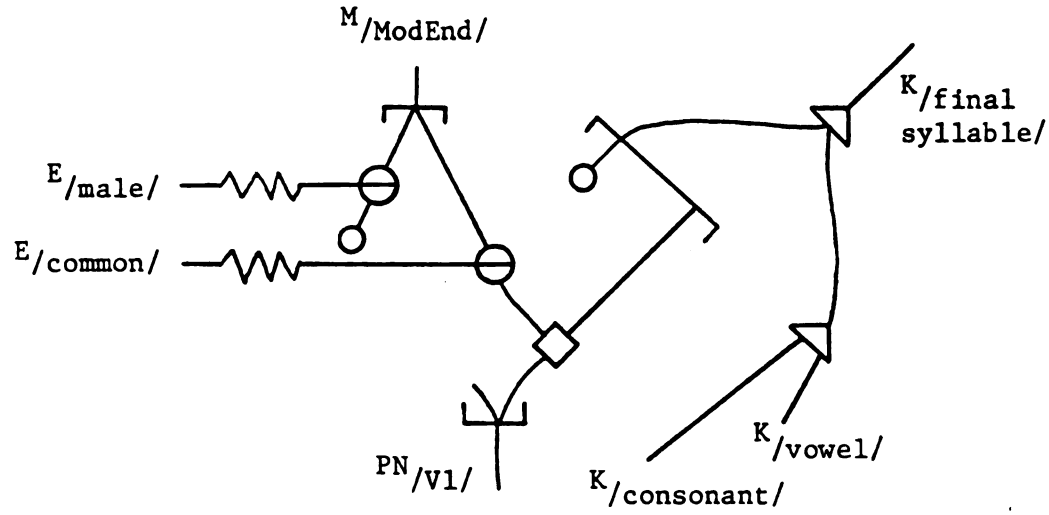
This additional quantity of sound may consist of one or more segments, and it may or may not be phonologically similar to the final syllable of the "male"-dialect form.

For each alternation of the first kind, the final syllable in the "common" dialect is the same as the corresponding syllable in the "male" dialect, except that all its sounds are voiceless, whether or not they are voiceless in the "male"-dialect syllable. The data for these alternations is given in Table III.11., which lists some words that undergo such alternations, and in Table III.12., which lists the pairs of alternating syllables themselves. (In Table III.12., as in Sapir's (1929: 208) listing, [a] stands for [a], [i], or [u] and [ḁ] stands for [ḁ], [i̥], or [u̥].)

The parts of the linguistic network which are especially involved in describing alternations of this kind are the phonotactics, the phonemic sign pattern, the phononic alternation pattern, and the tactics of the phonetic stratal system--or chilophonotactics. (The phonetic stratal system, which is the part of linguistic form nearest to the phonic substance of language, provides for non-distinctive determined elements and other kinds of non-distinctive phonological facts. It will be referred to here as the chilophonemic stratal system, using a term that includes the prefix already introduced for the parts of a language nearest to its interfaces.) The description of Yana must include the following network fragment, which specifies that, whenever ^{E}/common/ is activated, the tactic portion will produce an activation for the determined phonon ^{PN}/V1/ (= voiceless)[25] which will be simultaneous with the entire activation produced for the final syllable.

[25] Table III.17. lists the phonons used for this analysis of Yana.

(27)



For (27) to have its desired effect, the phonemic sign pattern of Yana, through which phonemic signs are realized by phonons, will have to be arranged so that the phonon bundles for the corresponding "male"-dialect syllables and "common"-dialect syllables (as shown in Table III.12.) will differ from each other only in the presence or absence of PN/Vl/. Table III.18. gives a componential analysis which shows the phonemic signs that

Table III.17.

Phonons used for this discription of Yana.

PN/Af/	affricated	PN/Lt/	lateral
PN/Ap/	apical	PN/Mi/	mid
PN/Cl/	closed	PN/Ns/	nasal
PN/Fr/	frontal	PN/Sp/	spirant
PN/Gl/	glottal	PN/Vb/	vibrant
PN/Gz/	glottalized	PN/Vl/	voiceless
PN/Lb/	labial	PN/Vo/	vocalic

Table III.18.

Realization of Yana phonemic signs by phonons.

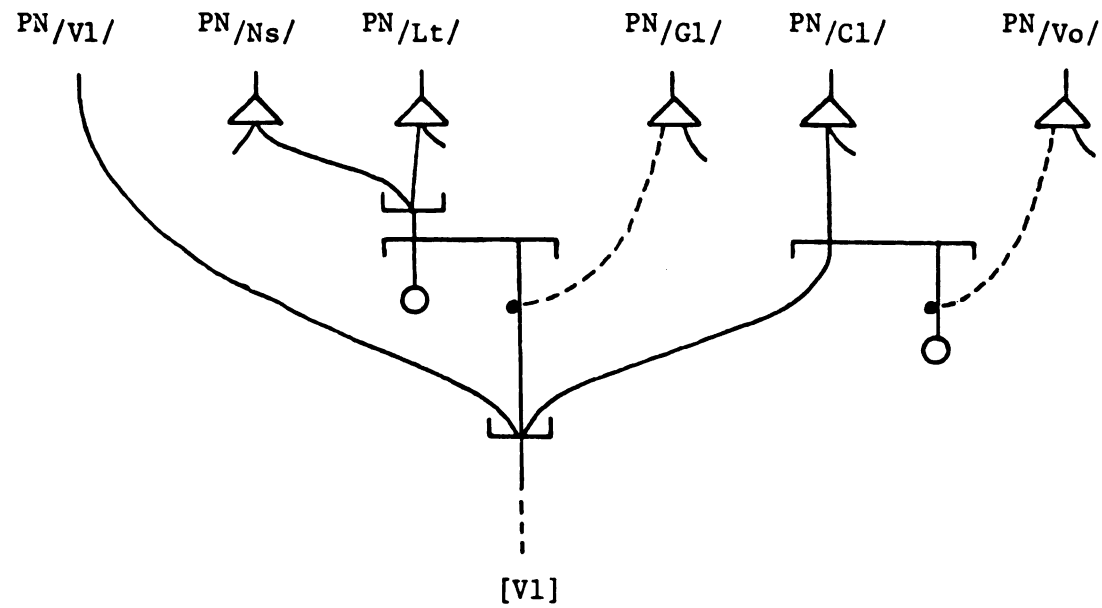
PS /p/	PS /t/	PS /ȶ/	PS /k/	PS /ʔp/	PS /ʔt/	PS /ʔȶ/
PN /Lb Vl/	PN /Ap Vl/	PN /Af Vl/	PN /Vl/	PN /Lb Gz/	PN /Ap Gz/	PN /Af Gz/
PS /ʔk/	PS /b/	PS /t/	PS /ʒ/	PS /g/	PS /s/	PS /x/
PN /Gz/	PN /Lb Cl/	PN /Ap Cl/	PN /Af Cl/	PN /Cl/	PN /Fr Sp Vl/	PN /Sp Vl/
PS /h/	PS /m/	PS /m̥/	PS /n/	PS /n̥/	PS /l/	PS /l̥/
PN /Sp/	PN /Lb Ns/	PN /Lb Ns Vl/	PN /Ap Ns/	PN /Ap Ns Vl/	PN /Lt/	PN /Lt Vl/
PS /r/	PS /r̥/	PS /ʔ/	PS /i/	PS /i̥/	PS /e/	PS /a/
PN /Vb/	PN /Vb Vl/	PN /Gl/	PN /Fr Vo/	PN /Fr Vo Vl/	PN /Fr Md Vo/	PN /Vo/
PS /ḁ/	PS /o/	PS /u/	PS /u̥/	PS /y/	PS /w/	
PN /Vo Vl/	PN /Lb Md Vo/	PN /Lb Vo/	PN /Lb Vo Vl/	PN /Fr/	PN /Lb/	

are used in this analysis of Yana, and the bundles of phonons which realize them. The phonemic signs given in Table III.18. may or may not be simple realizations of phonemes. Sapir & Swadesh (1960:6-7) describe several kinds of "automatic phonological adjustments", "combinatory phonological changes", and "combinatory rules"; all of those will presumably be handled somewhere within the morphonic and phonemic alternation patterns and the phonotactics of Yana, but they will not be discussed here.

The phononic alternation pattern and the chilophonotactics (or phonetic tactics) of Yana cannot be described as precisely as the higher patterns of the language, because the details of the stratal system to which they belong are not yet well understood (Lockwood 1972:232-3). A few things, though, should be said about how they must be formed in order to combine satisfactorily with the linguistic networks already described.

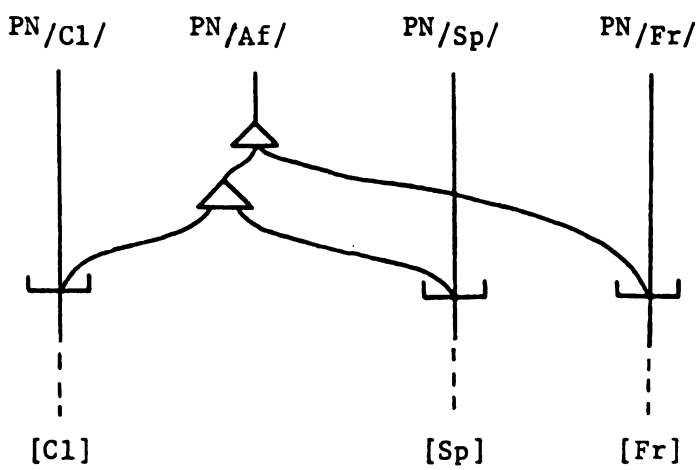
Some conditioning can be handled entirely within the phononic alternation pattern. The four "neutral stops" ^{PS}/b/, ^{PS}/d/, ^{PS}/ʒ/, and ^{PS}/g/, as Sapir & Swadesh (1960:3) call them, are all voiceless before consonants and at least partly voiced before vowels (except voiceless vowels in voiceless syllables). The two nasals ^{PS}/m/ and ^{PS}/n/ and the lateral ^{PS}/l/ are all voiceless before ^{PS}/ʔ/. These conditionings may all be represented by

(28)



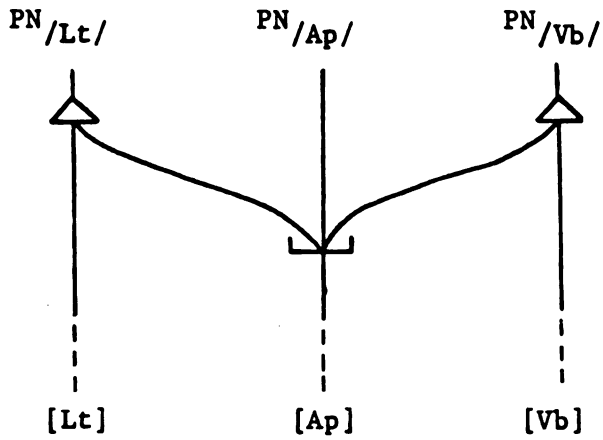
All the affricates of Yana are frontal in their place of articulation, but not all its frontal sounds are affricates. If $^{PS}/\text{ɬ}/$, $^{PS}/\text{ɬ}^{?}/$, and $^{PS}/\text{ʒ}/$ were realized by $^{PN}/Fr/$ according to their place of articulation, the phononic alternation pattern would have no convenient way of referring to them, which it must do when they are all realized as stops followed by spirants. They have therefore been realized by a special phonon $^{PN}/Af/$, which itself will presumably be realized through the network

(29)



The sounds [l] and [r], which are represented only by $^{PN}/Lt/$ and $^{PN}/Vb/$ respectively, are both apical in place of articulation, which fact may be represented by

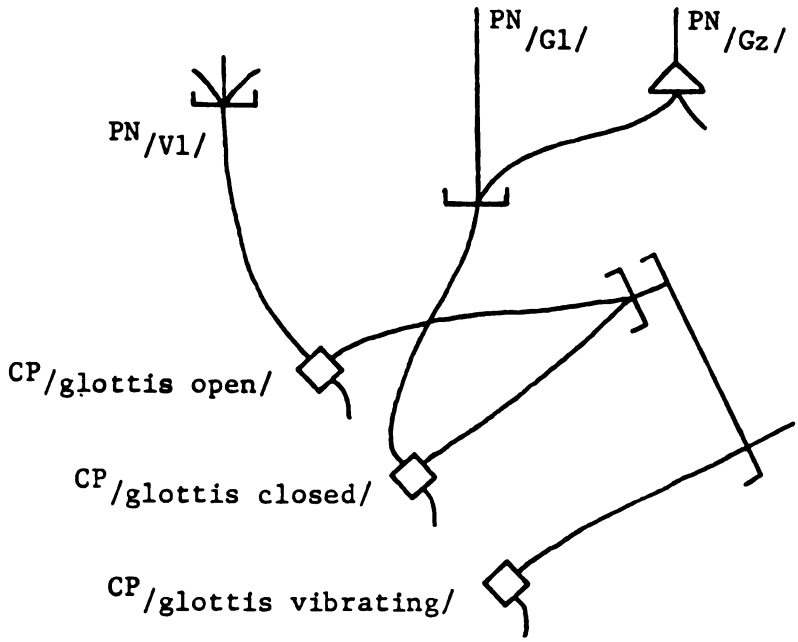
(30)



in the phononic alternation pattern.

The chilophonotactics (or phonetic tactics), which is the tactics of the language nearest to its phonic substance, will have to specify the position and tension of the vocal folds during the production of each speech sound--whether they are wide apart and not vibrating, held tightly together and not vibrating, or held more loosely together and vibrating. The linguistic model will therefore include the network fragment

(31)



(CP = chilophoneme). Both ^{PN}/G1/ and ^{PN}/Gz/ will be realized by ^{CP}/glottis closed/, but ^{PN}/Gz/ will have some further realization relating to closure in the mouth and to the upward movement of the larynx for compressing air in the vocal tract; ^{CP}/glottis open/ will be a realization only of ^{PN}/V1/, whether that phonon is part of the realization of some distinctive phoneme or is introduced as a determined element by the phonotactics. The phonetic tactics must also specify, as a determined element, the place of articulation for ^{PS}/k/, ^{PS}/k̟/, ^{PS}/g/, ^{PS}/x/, and ^{PS}/h/. Sapir & Swadesh (1960:3) say that these sounds are all "palatal", but Sapir (1910:5) says that [x] is like, though weaker than, the German "guttural spirant ch" in Dach. This place of articulation is distinctively further back than the place of articulation for ^{PS}/s/, ^{PS}/ʦ/, ^{PS}/ʦ̟/, and ^{PS}/ʒ/; Sapir & Swadesh (1960:3) call those sounds "palato-sibilants", although agreeing with Sapir (1910:5) that they can vary in quality from sibilants to shibilants.

Two other problems arising from this alternation cannot be settled

until the linguistic theory of how ideal performance should be described has been further developed. One of these problems involves the realization of the determined element ^{PN}/V1/, which is introduced by the phonotactics. As it is shown in (27), ^{PN}/V1/ is activated simultaneously with both the consonant and the vowel of the final syllable, which occur in sequence. The chilophonotactics will presumably have the task of combining the realization of ^{PN}/V1/ with the realizations of both the consonant and the vowel; but the output of a network in which one activation occurs simultaneously with a sequence of other activations has not yet been adequately defined. The other problem involves the alternative pronunciations shown in Table III.12.(15),(16),(17). The syllables represented there by [lha̤], [mha̤], and [nha̤] were given by Sapir (1929:208) as [l^{ɛa}], [m^{ɛa}], and [n^{ɛa}]; and the words given in Table III.11.(6),(7),(13),(14) as [i:wu:l̤ṳ], [timsiwa:ʔm̤a], [patʔamha̤], and [bahni:nhṳ] were given by Sapir (1929:208-9, underscore here represents italic type in the original) as [ɪwūl^{u}], [t^{ɛ}imsiwā'm^{a}], [p^{ɛ}att!am^{ɛa}], and [ba^{ɛ}nɪn^{ɛa}]. It may be suggested that the sound which Sapir recorded in these cases as [^{ɛ}] ("aspiration of preceding consonant or vowel", Sapir 1910:5) was phonetically a voiceless form of the preceding liquid or nasal produced epenthetically before the following voiceless vowel. The syllables transcribed here as [lha̤], [mha̤], and [nha̤] could then be transcribed instead as [l̤l̤a̤], [m̤m̤a̤], and [n̤n̤a̤]; with the variations shown in Table III.11. becoming [l̤a̤ ~ l̤l̤a̤], [m̤a̤ ~ m̤m̤a̤], and [n̤a̤ ~ n̤n̤a̤]. These syllables could then be treated like all the other voiceless final syllables of the "common" dialect, with a special provision that, when a final syllable which is to be voiceless begins with a liquid or a nasal, the chilophonotactics may delay the onset of the voicelessness until during the pronunciation of the liquid or nasal.

The second kind of alternation, in which the "common"-dialect form omits the entire final syllable of the "male"-dialect form, occurs only in certain affix morphemes. The morphemes which Sapir (1929) describes as showing this alternation are the demonstrative ending ^{M}/e?e/ realized by [e?e] or [e], the second person singular marker ^{M}/numa/ realized by [numa] or [nu], and "a considerable number of forms, chiefly verbal" (p.210) for which the "male"-dialect form is realized by an additional [?a] or [?i] at the end. As examples of these last, Sapir lists several verb forms and the "possessive verbal and nominal forms, also adverbial constructions" (p.210) ending in [ki?a] or [ki]. Some of the morphemes which show this alternation are listed in Table III.13., and some words containing them are listed in Table III.14. Although this alternation is limited to a few morphemes, the phonotactics must be involved in its analysis because it applies only to syllables which are realized in nexus-final[26] position. For example, the last syllable of ^{M}/numa/, which is realized by [numa ~ nu], shows this alternation in (Table III.14.(4), repeated here for convenience)

(32a) ti:si?numa 'you say' (male dialect)

(32b) ti:si?nu 'id.' (common dialect)

but not in (Table III.16.(9), repeated here for convenience)

(33a) ti:si?numan 'do you say?' (male dialect)

(33b) ti:si?numa: 'id.' (common dialect)

where it is not nexus-final because an interrogative suffix has been added to the end of the word.

[26]To avoid possible confusion about the meaning of the term "word", it will be used here only for morphologically-defined words, and the term "nexus", which Pulgram (1970) defines as a phonological word, will be used here instead in descriptions of phonology.

A formula for the realization of ^{M}/numa/ is shown in Figure III.7. as an example of the realizations of these morphemes. This formula includes an ENABLER node which causes ^{M}/ModEnd/ to be realized as ^{MN}/↓/ (= dropped syllable); it will be understood that this ENABLER node operates only when ^{M}/numa/ immediately precedes ^{M}/ModEnd/, and not when another morpheme occurs between them. The morphonic alternation pattern for the five morphons which are subject to this kind of zero realization is shown in Figure III.8. Whenever ^{MN}/↓/ is activated, the phonotactic activation for the final syllable of a nexus runs downward through the DIAMOND node in the interior of the phonotactics and reaches the two two-way DIAMOND nodes labeled ^{P}/C↓/ and ^{P}/V↓/. If those two DIAMOND nodes are activated, the realization of any of the five other morphons shown in Figure III.8. runs downward to one of them. If those two DIAMOND nodes are not activated, the realizations of those five morphons run downward to the three-way DIAMOND nodes labeled as ordinary phonemes.

The third kind of alternation, in which the "common"-dialect form is shorter, but less than one whole syllable shorter, than the corresponding "male"-dialect form, is represented by a noun suffix which Sapir (1929: 209) describes as [na] in the "male"-dialect and a "breath release" (which he represents by [-ᵉ] and which will be transcribed here as [h]) in the "common" dialect.[27] Examples of this suppletive suffix and four words containing it are given in Table III.16.(1)-(5). Sapir & Swadesh (1960:9) say that the noun suffix -<u>na</u> is simply dropped under certain circumstances

[27]Sapir (1929:209-10) mentions that Yana has certain "phonetic laws" which affect the actual pronunciations of some words containing this suffix, and which operate when certain sounds would otherwise occur next to one another. This will cause no difficulty for the present analysis because this eclectic disjunction cluster produces an alternation between morphons or sequences of morphons. The "phonetic laws" which Sapir describes can therefore by incorporated into the morphonic alternation pattern.

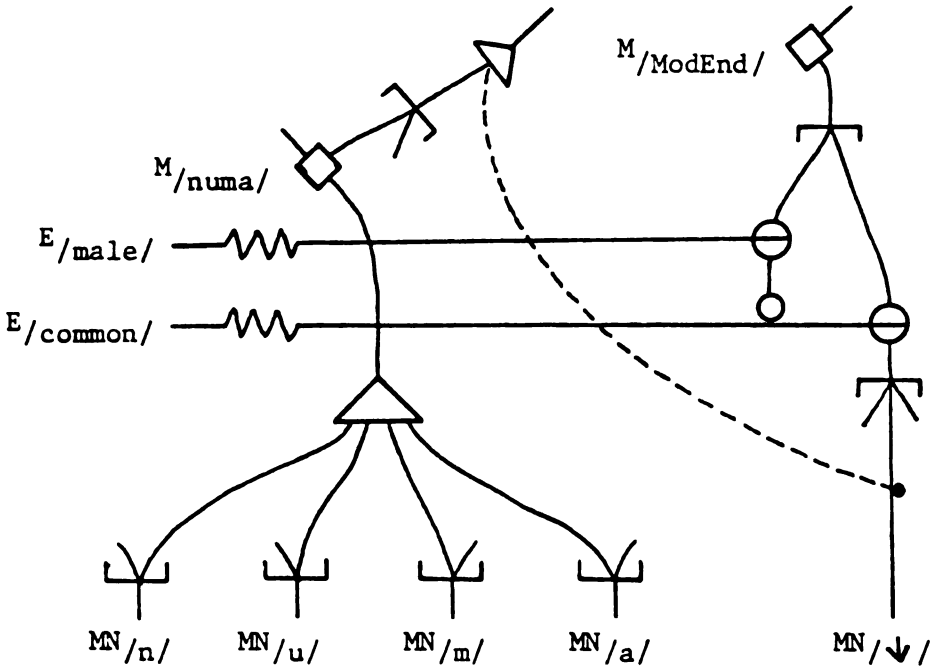


Figure III.7.

Morphonic realization of M/numa/.

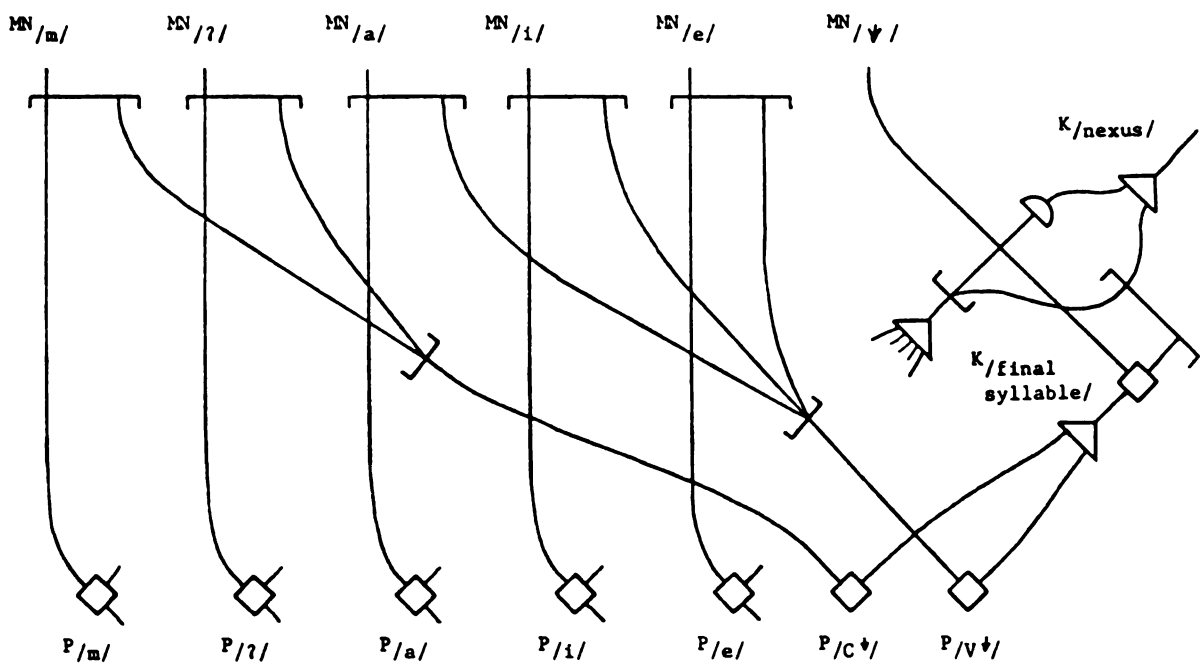
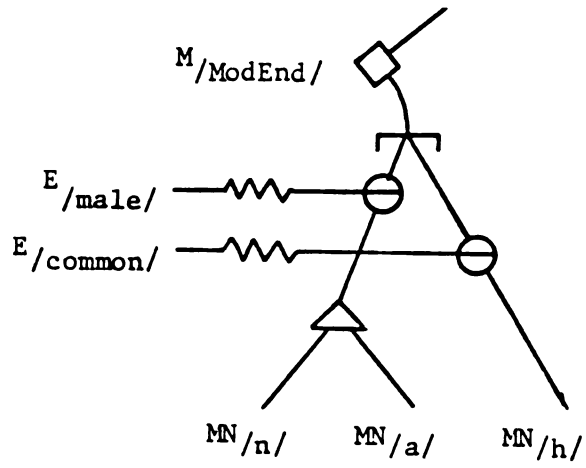


Figure III.8.

Zero realization of certain Yana morphons.

in the "common" dialect. Given the transcription used here for Sapir's data, this alternation itself could be described by

(34)



However, such a simple network is inadequate, because the realization of M/ModEnd/ by PS/na/ or PS/h/ is conditioned both morphologically and phonologically. This alternation occurs at the end of all nouns[28] (a morphological condition) which do not have polysyllabic stems ending in a short vowel (a phonological condition). These conditions are included in the network shown in Figure III.9. That network adds PS/na/ or P/h/ as a determined element at the end of each monosyllabic nexus and (under certain circumstances) at the end of each polysyllabic nexus, provided that M/ModEnd/ occurs after a noun stem. The earlier phonemes dominated by the nexus will be identical for utterances in both dialects; so that they may be dominated in the same way by the phonotactics, the alternants PS/na/, PS/h/ are described as determined elements conditioned by the realization

[28]This alternation is also used for realizing M/ModEnd/ after certain forms other than nouns; but since Sapir's statements with respect to nouns are explicit and his statements with respect to other grammatical categories are not so clear, this alternation will be described here only for nouns.

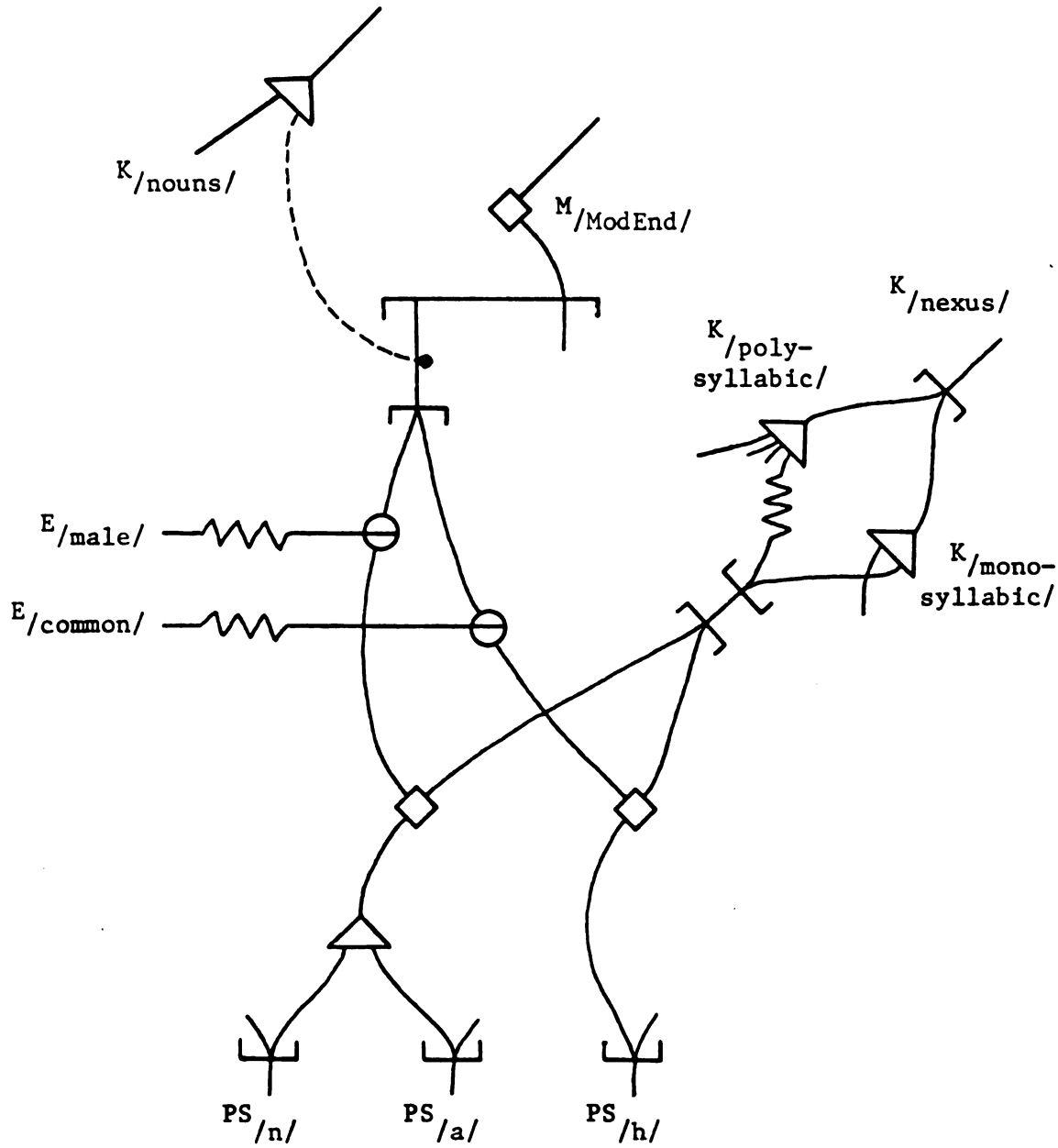


Figure III.9.

Realization of M/ModEnd/ after noun stems.

of ^{M}/ModEnd/. ^{PS}/na/ will then be pronounced as a syllable by itself, while ^{PS}/h/ will be pronounced as a part of the syllable which precedes it.

In addition to these three kinds of alternation, there are several others which could probably be handled by alternative realizations of ^{M}/ModEnd/, except that Sapir (1929) and Sapir & Swadesh (1960) do not give enough information to allow definite analyses for them. Forms for some of these alternations are listed in Table III.15. Each of the first three forms listed there has a final syllable that includes a nasal or lateral consonant occurring next to a glottal stop. Whenever one of these syllables is entirely voiced or entirely voiceless, the glottal stop precedes the consonant; but if only the vowel of the syllable is voiceless, the glottal stop follows the consonant. Sapir (1929:208) cites only two words as examples of this alternation (Table III.15.(4),(5)); they differ in their ordering of the glottal stop and consonant, and he offers no comment on the difference, as if it were a matter of chance. Because voiceless vowels normally occur in Yana only in voiceless syllables, the description of these forms should perhaps be integrated with that of the forms with the variants [l̥l̥a], etc., discussed above, in which the onset of voicelessness in a voiceless syllable may be delayed if the consonant of the syllable is a nasal or lateral.

Sapir (1929:209) notes that very few Yana words have "male"-dialect forms which end in a final glottal stop preceded by a vowel. Among those which do are certain imperative verbs which have the suffix [ʔaʔ] or [ʔiʔ] and which lose the final glottal stop of the suffix in their "common"-dialect forms (Table III.15.(6)). However, in the examples which Sapir gives (Table III.15.(7),(8)), the final syllables of the "common"-

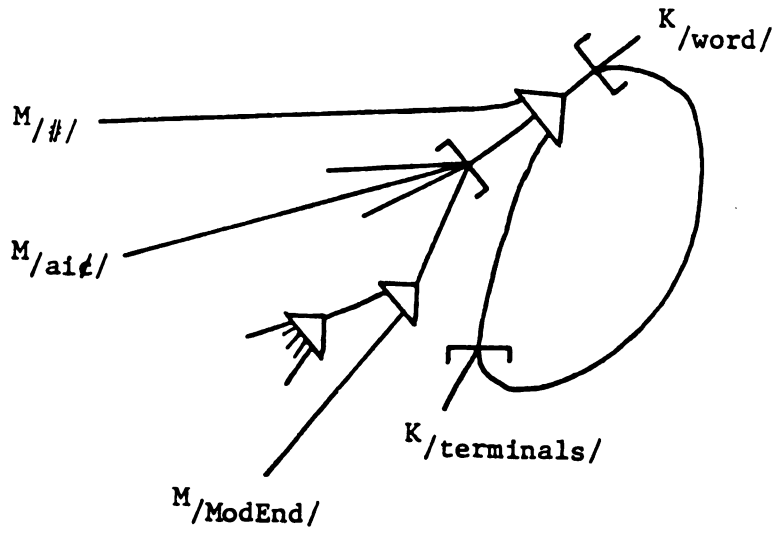
dialect forms are voiceless. This alternation should perhaps be integrated with that of the other words with voiceless final syllables in the "common" dialect, by adding a provision that ^{MN}/ʔ/ must have zero realization whenever it would otherwise follow a voiceless vowel. Sapir & Swadesh (1960:9) mention only the imperative suffix -ʔiʔ ~ -ʔi, and give no examples. However, they mention that this suffix has a plural form -wiʔi ~ -wiʔiʔ, which would not fit this analysis because, as they list the alternative forms, it is the "common"-dialect form which has an additional glottal stop. Sapir (1929) does not mention that these imperative suffixes have plural forms.

The zero realization of ^{MN}/ʔ/ just postulated does not occur, however, if the nexus-final syllable has ^{P}/r/ as its consonant preceding its vowel. In the suffix which contains the only example which Sapir cites of such a syllable (Table III.15.(9),(10) give the suffix and a word containing it), the "male"-dialect form has nexus-final [raʔ]; but when the final syllable is voiceless, the glottal stop, instead of disappearing, metathesizes with the vowel to produce [r̥ʔḁ].

Although almost every Yana word has separate forms for the two sex dialects, there are some circumstances under which a word has the same form in both dialects. A few words are simply invariant; Sapir (1929: 211) lists them as "1. the syntactic particles ([ai], third person subjective; [aiɬ], article; [ʂi] article with first person possessive; [ʂu] article with second person possessive; [k], possessive of third person; [gi], objective particle); 2. the substantive verbs [u] "it is" and [be:] "it is . . . who . . . "; 3. certain passive forms which end in a long

vowel (e.g. [ap?ʒi:wara:] "he was killed", [tim?i:] "to be told").[29] These invariant words require that (26) be modified, in the way shown below, by adding a downward UNORDERED OR node with line segments running down to the morphemes which compose those words.

(35)



Other instances of identical forms in the two dialects occur because of a phonological rule that word-final short vowels are elided before words beginning with a vowel, and that each resulting sequence of sounds functions as a single phonological word or nexus (Sapir 1929:211). Consequently, the word which has the dialect forms

(36a) [padi] 'place' (male dialect)

(36b) [patị] 'id.' (common dialect)

appears as [pad] in both of the phrases

(37a) [aiɬpadaiʒa] 'the place there' (male dialect)

(37b) [aiɬpadaiɬạ] 'id.' (common dialect)

[29] The Yana words cited by Sapir in this quotation have been transliterated into the notation otherwise used here for forms from his work.

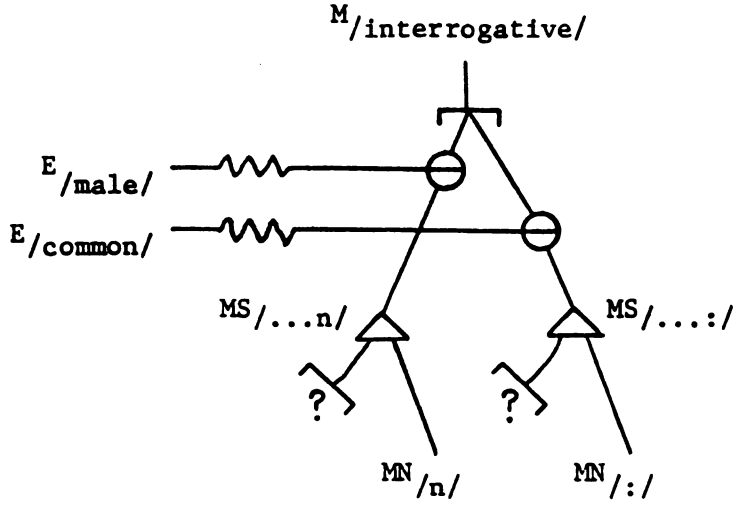
Since this phonological rule does not affect the differences between the two sex dialects, its details will not be discussed here. However, it would require only a small modification in the network immediately below ^{M}/ModEnd/, at the level of the morphons, in order to produce a zero realization for that morpheme and for an immediately preceding vowel morphon in the environment of a following vowel morphon.

d. First approximation to networks for certain suppletive dialect forms.

Sapir (1929) and Sapir & Swadesh (1960) mention three other alternations between the two sex dialects of Yana which will be described here as instances of suppletion. Their descriptions of these suppletions, and the few examples of them which Sapir gives, sometimes do not agree with one another.

One of these suppletive alternations is the usual interrogative marker in Yana, which is a suffix that may be attached to both demonstratives and verbs. This suffix always ends with [n] in the "male" dialect and with a long or lengthened vowel in the "common" dialect; it therefore can be described in general by

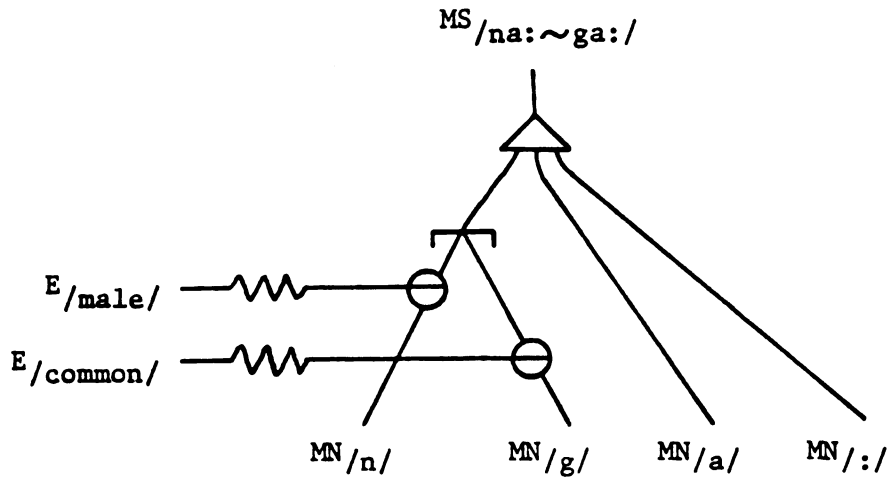
(38)



However, it is not clear what should appear in this realization formula below the OR nodes labeled with question marks. These realizations are apparently conditioned both phonologically and morphologically, but Sapir's (1929) and Sapir & Swadesh's (1960) statements do not completely agree with each other or with Sapir's examples. Sapir & Swadesh say that the suffix for the "male" dialect is always -n and that the suffix for the "common" dialect is phonologically conditioned, being -: for a stem ending in a vowel (i.e. lengthening of that vowel) and -yi: for one ending in a vowel-group. They do not mention stems ending in consonants. Sapir's examples (Table III.16.(7)-(9)) and statements confirm their remarks about stems ending in short vowels. However, Sapir says that "certain forms in -a" have their "common"-dialect interrogatives in [i:] and his example (Table III.16.(10)) shows a word which, if its interrogative suffix for the "male" dialect is simply [n], has dropped the [a] at the end of the stem before the "common"-dialect form [i:] was added. Sapir agrees with Sapir & Swadesh that stems ending in a dipthong take [yi:] as their suffix for the "common" dialect, but he adds that stems ending in a consonant take the same suffix. But if this is true, his example (Table III.16.(11)) has a "male"-dialect form with [nan], rather than with [n], as its interrogative suffix. Seemingly, network fragment (38) cannot be safely improved with this evidence.

The forms [na:~ga:] (Table III.16(12)), which Sapir (1929:211) calls "another interrogative, more emphatic than the preceding" and which Sapir & Swadesh (1960:9) call an "interrogative requiring negative answer" can be described by

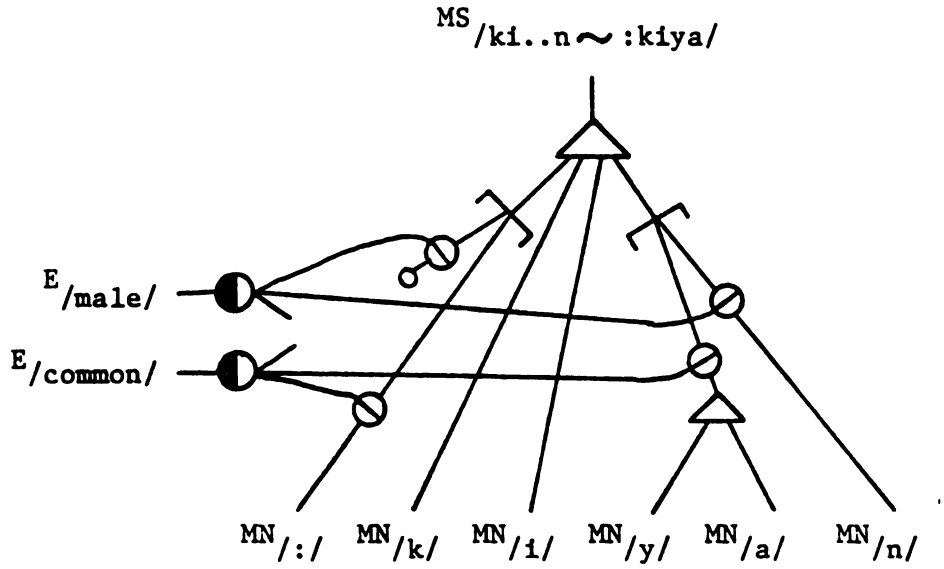
(39)



Although Sapir (1929) refers to these forms as enclitics, they cannot be such in the usual sense because, in the example he cites (Table III.16.(13)), the word which precedes [ga:] apparently has a voiceless final syllable, and therefore cannot be dominated by the same occurrence of K/nexus/ as the phonemic representation of [ga:].

Sapir & Swadesh (1960:9) mention a suppletive alternation which they describe as "male -ki..n, female -kiya and doubling of final vowel for emphatic affirmation (I did do so)". They give no example of complete words illustrating this alternation. Perhaps these forms can be described by

(40)



But if the notation -ki..n means that n is placed after the realization of some other morphemic sign, its location will be a problem to be handled by some tactics--either the phonotactics or, if this realization must be handled in a higher stratal system, by the morphotactics. Sapir (1929) does not mention this alternation; presumably he knew whereof he wrote when he said that some things "would involve too much grammatical detail" to be described in his short paper.

e. The simplified network. Simplification of the descriptive networks for Yana is largely a matter of specifying which kind of sex-dialect alternation is to apply to which words. Given the limited data available, it seems that only one kind of alternation can apply to each word. And despite a tendency for "male"-dialect forms to contain [n] and for "common"-dialect forms to contain certain vowels, there seems to be no economical way of combining all the dialect forms which have those sounds.

In order to produce a complete description of Yana, the partial networks which have been described here must be combined and the resulting

network must be simplified. The network fragments most easily integrated into the whole are the formulas for the suppletive alternations other than [na] ~ [h]. Diagram (39) may be incorporated directly into the description of the realization portion of the language, as may (38) and (40) when further research has remedied their deficiencies.

The other network fragments which have been described here and which include eclectic disjunction clusters are those in (27), in Figures III.7. and III.8. taken together, and in (35) The all give alternative realizations for ^{M}/ModEnd/ and they all include fragments of the part of the tactic pattern dominated by ^{K}/nexus/. These three parts of the linguistic network must therefore be combined and simplified into one, and the resulting network for the realization of ^{M}/ModEnd/ must specify the circumstances under which each realization is to be used. The alternation described in Figures III.7. and III.8. is morphologically conditioned, and the nodes and line segments shown there can be included directly in the simplified network. The other two alternatives for the realization of ^{M}/ModEnd/ occur in complementary distribution, at least with respect to noun stems. The alternation between [na] and [h], described in (35), occurs at the end of all monosyllabic noun stems and all polysyllabic noun stems which end in a long vowel, a diphthong, or a consonant. The alternation between voiced and voiceless syllables occurs within the final syllables of all polysyllabic noun stems which end in a short [a], [i], or [u];[30] it is described in (27). This alternation also occurs in the final syllables of many verbal forms which meet the same phonological conditions (Sapir (1929:207,209).

[30]Sapir's statement is unclear, but it may mean that these three are the only short vowels that can occur at the end of a noun stem.

Sapir & Swadesh (1960:9) give slightly different conditions for these alternations. They say that the voiced/voiceless alternation applies to all "phrase-final syllables ending in a single vowel"; Sapir (1929:211) cites some words which end in short vowels and are always voiced, but he does not say that any of them can be pronounced at the end of a nexus. Sapir & Swadesh say that the suffix [na] occurs in both sex dialects after a noun stem ending in a consonant; Sapir (p.209) says that both [na] and [h] occur after a stem ending in a consonant, alternating there as elsewhere according to the dialect being spoken, but he does not cite any examples of such words. The analysis given here will follow Sapir's statements.

Figure III.10. shows a network accounting for all the realizations of ^{M}/ModEnd/ which have been described here. The tactic network which handles nexuses is divided into two parts, for monosyllabic and polysyllabic stems respectively; and the three line segments that run downward from the joined OR nodes labeled ^{K}/final syllable/ show that that syllable of a polysyllabic stem may be realized in any of three ways. If ^{M}/numa/ or one of several other morphemes occurs immediately before ^{M}/ModEnd/, the final syllable will be either a "short syllable" or a usual syllable".[31] Whenever tactic activation runs from ^{K}/final syllable/ to either ^{K}/short syllable/ or ^{K}/usual syllable/, it must also run to certain ENABLER nodes in the realization portion below ^{M}/ModEnd/. They have the effect that, if the tactic activation reaches ^{K}/short syllable/, the determined element ^{PN}/V1/ must also be activated in the "common" dialect; and if activation reaches ^{K}/usual syllable/, the determined elements ^{PS}/n/ and ^{PS}/a/, or

[31] A "short syllable" consists of one consonant followed by one vowel; a "usual syllable" is defined in (23).

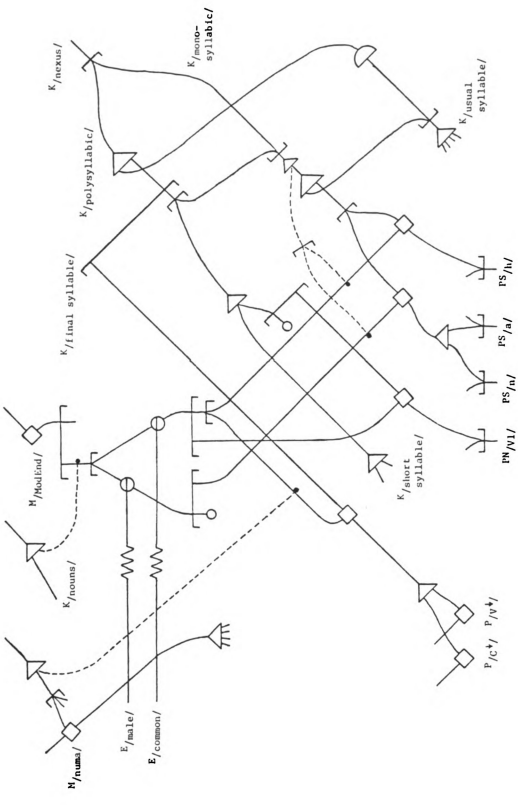


Figure III.10

Combined network for the realization of M/NodEnd/.

else ^{PS}/h/, must be activated, according to the dialect being spoken.

Because of the several kinds of alternations which distinguish the two sex dialects of Yana, it has been necessary to locate several eclectic disjunction clusters in the realization portion of its description. The several tactic and realization patterns in the lower part of the language have been described in ways designed to work in harmony with those eclectic disjunction clusters, and with each other. The first approximation to the eclectic portion, with its single-level reversible sign pattern, will be satisfactory if it is combined with the final analysis made for the phonotactics and with the several networks that have been at least partially described for other realization and tactic patterns. To the extent that an analysis is possible from the limited data available, the combined network will be a model for the parts of Yana affected by its sex dialects, and a model for the corresponding competence of a speaker of Yana.

C. PHONOLOGICAL DIALECTS: SICILIAN.

1. The Language.

a. Identification of the language. The term "Sicilian" includes all of the many local Romance dialects which are indigenous to the island of Sicily. All of the more than four and one half million inhabitants of Sicily, except those few who belong to acknowledged immigrant communities, are native speakers of one or another Sicilian dialect.[32] Within the southern dialect-group of the Italo-Romance branch of the Romance languages, the Sicilian dialects form a single dialect area (Hall 1974:29-30), and linguists who have discussed the vernacular speech of Sicily have remarked on its comparatively great uniformity. Although the Sicilian local dialects can be subdivided into groups, different dialectologists have subdivided them in different ways, and there are no major isogloss bundles that would clearly divide these dialects into two or more separate dialect areas.[33]

[32]Sicily being part of the Italian Republic, the language which is used there for official purposes and is taught in the schools is standard Italian.

[33]"Writers on the dialectology of Sicily constantly allude to [the] existent totality of structure [of its dialects.] Rohlfs says: 'In assuluto contrasto con la Sardegna e con l'Italia meridionale, i dialetti siculi danno l'impressione di una grande uniformità' and refers to ' . . . die ausgesprochene Einheitlichkeit der sizilianischen Mundarten'" (Fodale 1964:1). Fodale's first quotation is from Rohlfs 1933:85; the second is from Rohlfs 1926:152.

b. The use to be made of the eclectic portion. In the examples from Serbo-Croatian and Yana, it was assumed that the descriptive model of the language would also constitute a model of competence for actual speakers of the language. In the present example from Sicilian, the same descriptive model for the language will be used simply as a device for stating the similarities and differences among certain of its dialects.

To use this kind of model in this way, it will be necessary to hypothesize the existence of a person who fluently knows all of the dialects to be compared, and who has perfect, conscious command of the differences among them in both speaking and hearing, but who does not know any other dialects of that language. Such a person, if he chose to do so, could speak in any of those dialects so that another person who knew only that one dialect would never suspect that he knew any other dialect of the language; and such a person, if he heard the speech of a monodialectal speaker of any of those dialects, could sooner or later identify with complete certainty the dialect which that person was speaking.

The model for the hypothetical competence which such a person would have may be constructed from linguistic data gathered about the dialects of a language. The way in which the stratificational linguistic model presented in this dissertation may be used for describing the differences between dialects, and the method of constructing such a model, will be illustrated here by a restatement of some data from a phonological comparison which Fodale (1964) has made of six Sicilian dialects.

2. The Data.

Fodale's (1964) study is a structural analysis and comparison of dialects from six Sicilian localities, based on his own dialectological fieldwork. (These localities and their names are shown on the map in Figure III.11.) Both the theoretical foundations for his research and the methods he uses to present his findings are drawn from three sources. His work is based on the idea, from Weinreich (1954), that a structural dialectology is possible; and the notation which he uses to present his findings is basically the diasystem notation which Weinreich devised. However, Fodale accepts Cochrane's (1959) suggestion that phonemic and subphonemic differences between dialects should be analyzed and presented separately. He therefore presents each diasystemic statement in two

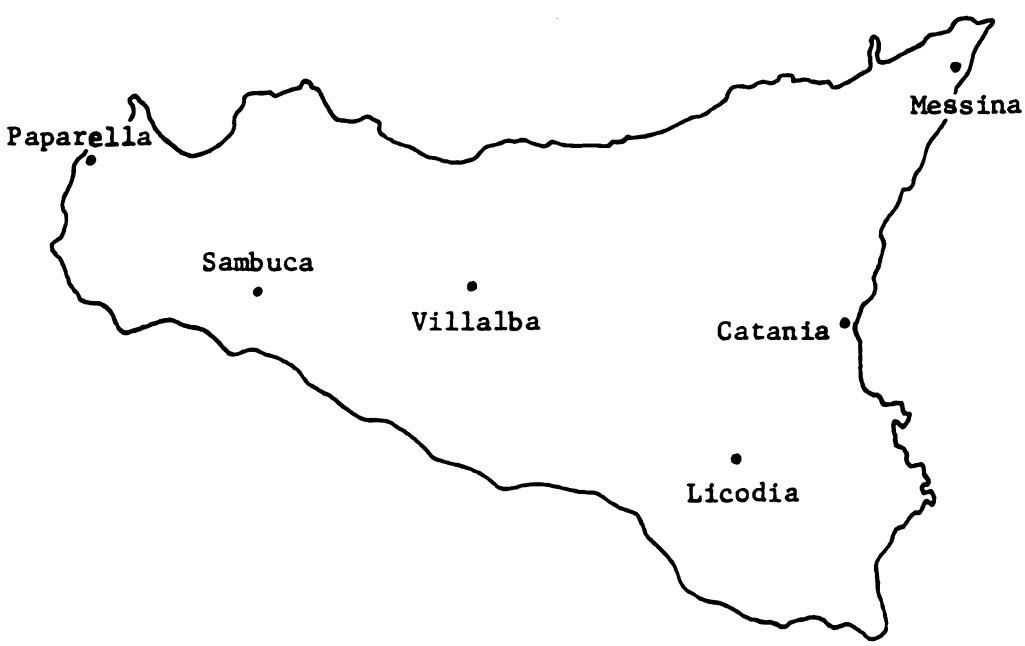


Figure III.11.

Locations with Sicilian dialects described by Fodale (1964).

forms: one listing only the phonemes of the dialects, the other listing all the allophones for each phoneme of each dialect. Finally, Fodale accepts Moulton's (1960) suggestion that a purely synchronic diasystemic statement may suggest false cognates by failing to "treat the situation that arises whenever there are phonemes in the dialects which, while synchronically equivalent, do not occur in the same lexical items, i.e. have different historical origins" (Fodale 1964:6). Fodale therefore uses "rules of correspondence" that show which diaphones (i.e. which phonemes) occur in cognate lexical items in the several dialects.[34]

Fodale begins his study by giving the data for the six dialects, systematically presenting the information separately for each dialect. Much of the data, however, is the same for some or all of the dialects, and such information will be presented here by one statement of the data which the dialects share and separate statements of the data which each dialect has in addition to their shared data. The name of each dialect may be indicated by the first letter of the name of its location:

C = Catania L = Licodia M = Messina

P = Paparella S = Sambuca V = Villalba

Fodale presents a phonemic analysis for each of the dialects; his analyses are made according to a set of principles which place great importance on producing the smallest possible inventory of phonemes (cf. pp.30,54,60). For five of the dialects--C, L, M, P, S--he finds the same 28-phoneme system:

[34] For Fodale, a phoneme is composed of phones or allophones. Because the diaphonemes of a diaphonemic system are each composed of phonemes from the dialects of that system, Fodale refers to such phonemes as "diaphones", thereby saying that a diaphoneme is to its diaphones as a phoneme is to its phones.

/ i			u
e			o
	a		
p	t		k
b	d	ḍ	g
	ȼ	č	
	ʒ	ǰ	
f	s	š	
v			
m	n	ñ	ŋ
	l		
	r		
w		y	/

For one dialect, V, he finds an additional phoneme /x/ and the 29-phoneme system:

/i			u
e			o
	a		
p	t		k
b	d	ḍ	g
	ȼ	č	
	ʒ	ǰ	
f	s	š	x
v			

m	n	ñ	ŋ
	l		
	r		
w		y	/

The consonants of the 28-phoneme system are arranged in the following array (Fodale labels only the manners of articulation and the voicing).

	Stops		Affricates		Fricatives		Nasals	Liquids	Glides
	vl	vd	vl	vd	vl	vd			
/	p	b			f	v	m		w
	t	d	ȼ	ʒ	s		n	l	
		ḍ						r	
			č	ǰ	š		ñ		y
	k	g					ŋ		/

The 29-phoneme system for V has the same arrangement and labeling for its phonemes, with /x/ appearing as the voiceless fricative in the last row of the array.

The allophones of the phonemes of these six dialects may be conveniently listed here by repeating the diasystem formulas which Fodale gives for them.

Vowels

Diaphonemic Formula:

$$\text{CLMPSV}\,//\ \text{i} \approx \text{e} \approx \text{a} \approx \text{o} \approx \text{u}\ //$$

Diaphonemic Formula, Allophonically Rewritten:

$$\text{CLMPSV}\,// \frac{\text{CMPS}^{[\text{i}]}}{\text{LV}^{[\text{i},\ \text{ɪ},\ \text{ɪ}^{\text{v}}]}} \approx \frac{\text{C}^{[\varepsilon]}}{\frac{\text{MPS}^{[\text{e}]}}{\text{LV}^{[\underset{\sim}{\text{e}},\ \varepsilon]}}} \approx [\text{a}] \approx \frac{\text{C}^{[\text{ɔ}]}}{\frac{\text{MPS}^{[\text{o}]}}{\text{LV}^{[\underset{\sim}{\text{o}},\ \text{ɔ}]}}} \approx \frac{\text{CMPS}^{[\text{u}]}}{\text{LV}^{[\text{u},\ \text{ʊ},\ \text{ʊ}^{\text{v}}]}}\ //$$

Stops

Diaphonemic Formula:

$$\text{CLMPSV}/\!/\ \text{p} \approx \text{t} \approx \text{k} \approx \text{b} \approx \text{d} \approx \text{ḍ} \approx \text{g}\ /\!/$$

Diaphonemic Formula, Allophonically Rewritten:

$$\text{CLMPSV}/\!/\ [\text{p̥}, \text{p:}, \text{p}] \approx \frac{\text{CV}[\text{t̥}, \text{t:}, \text{t}]}{\text{LMPS}[\text{ṭ}, \text{ṭ:}, \text{t:}, \text{t̤}, \text{t}]} \approx \frac{\text{p}[\text{k̥}, \text{k:}, \text{k}]}{\text{CLMSV}[\text{k̥}, \text{k̂}, \text{k̂:}, \text{k:}, \text{k̤}, \text{k}]}$$

$$\approx [\text{b:}, \text{b}] \approx \frac{\text{CP}[\text{d:}, \text{d}]}{\text{LMSV}[\text{d:}, \text{d}, \text{d̤}]} \approx [\text{d:}] \approx \frac{\text{CP}[\text{g:}, \text{g}]}{\text{LMSV}[\text{g̰:}, \text{g:}, \text{g}, \text{g̤}]}$$

Affricates

Diaphonemic Formula:

$$\text{CLMPSV}/\!/\ \text{ȼ} \approx \text{ʒ} \approx \text{č} \approx \text{ǰ}\ /\!/$$

Diaphonemic Formula, Allophonically Rewritten:

$$\text{CLMPSV}/\!/\ \frac{\text{MP}[\text{ȼ:}, \text{ȼ}]}{\text{CLSV}[\text{c̥}, \text{ȼ:}, \text{ȼ}]} \approx [\text{ʒ:}, \text{ʒ}] \approx [\text{č̥}, \text{č:}, \text{č}] \approx [\text{ǰ:}, \text{ǰ}]\ /\!/$$

Fricatives

Diaphonemic Formula:

$$\text{CLMPSV}/\!/\ \text{f} \approx \text{v} \approx \text{s} \approx \frac{\text{V}/\text{s} \sim \text{x}/}{\text{CLMPS}^{\text{s}}}\ /\!/$$

Diaphonemic Formula, Allophonically Rewritten:

$$\text{CLMPSV}// \frac{\text{M}[\text{f:, f}]}{\text{CLPSV}[\underset{\bullet}{\text{f}}\text{, f:, f}]} \approx \frac{\dfrac{\text{CMPS}[\text{v}]}{\text{L}[\text{ɮ, v}]}}{\text{V}[\text{ɮ}]} \approx \frac{\text{CLMPV}[\text{z, }\underset{\bullet}{\text{s}}\text{, s:, s}]}{\text{S}[\underset{\bullet}{\text{s}}\text{, s:, s}]}$$

$$\approx \frac{\dfrac{\text{CP}[\check{\text{s}}\text{:, }\underset{\frown}{\check{\text{s}}}]}{\text{LM}[\underset{\bullet}{\check{\text{s}}}\text{, }\check{\text{s}}\text{:, }\check{\text{s}}]}}{\text{S}[\check{\text{z}}\text{, }\check{\text{s}}\text{:, }\check{\text{s}}]} // \quad \overline{\text{V}/[\underset{\bullet}{\check{\text{s}}}\text{, }\check{\text{s}}\text{:}] \sim [\underset{\frown}{\text{x}}\text{:, }\underset{\frown}{\text{x}}]/}$$

Nasals

Diaphonemic Formula:

$$\text{CLMPSV}// \text{ m} \approx \text{n} \approx \tilde{\text{n}} \approx \text{ŋ} //$$

Diaphonemic Formula, Allophonically Rewritten:

$$\text{CLMPSV}// \text{ [m]} \approx [\underset{\frown}{\text{n}}\text{, n}] \approx [\tilde{\text{n}}] \approx \frac{\text{P}[\text{ŋ}]}{\text{CLMSV}[\underset{\frown}{\text{ŋ}}\text{, ŋ}]} //$$

Liquids and Glides

Diaphonemic Formula:

$$\text{CLMPSV}// \text{ l} \approx \text{r} \approx \text{w} \approx \text{y} //$$

Diaphonemic Formula, Allophonically Rewritten:

$$\text{CLMPSV}// \frac{\text{CLMPS}^{[1]}}{\text{V}^{[\text{i},\ 1]}} \approx \frac{\begin{array}{c}\text{CP}^{[\text{ɸ},\ \text{r},\ \text{ř}]} \\ \hline \text{L}^{[\text{ɸ},\ \text{ř},\ \text{ř}]} \\ \hline \text{M}^{[\text{ɸ},\ \text{r},\ \text{ř}]} \\ \hline \text{S}^{[\text{ɸ},\ \text{ř},\ \text{ř},\ \text{ř:}]} \\ \hline \text{V}^{[\text{r},\ \text{ř}]}\end{array}}{} \approx [\text{w}] \approx \frac{\text{P}^{[\text{y},\ \text{y}]}}{\text{CLMSV}^{[\text{y}]}} //$$

The conditions under which these allophones occur are given by Fodale (pp. 22-8,46-52,61-2,73-8,90-5,107-12,124-30,132-3).

The canonical shapes of syllables are the same in all dialects. Only a vowel can occur before a pause; after a pause any vowel, any consonant, or certain two- and three-consonant clusters can occur. When /r/ occurs after a vowel and before another consonant, Fodale divides the syllables so that /r/ is the coda of the earlier syllable and the rest of the intervocalic consonants form the onset of the later syllable. Syllables in all six dialects may therefore be of the shapes

V	Vr-
CV	CVr-
CCV	CCVr-
CCCV	

The consonant clusters which may occur after pause are not the same in all dialects. They will be shown here by two lists: Table III.19. gives the clusters which occur in all six dialects; Table III.20. gives the clusters which occur in only some of the dialects and names the dialects in which they occur.

Having described each of the six dialects separately, Fodale proceeds to give formulas for lexical correspondences among them. These "rules of correspondence" are, in form, rewrite rules stating how each diaphoneme

Table III.19.

Consonant clusters which occur postpausally in all six dialects of Sicilian.*

/	sp	mp		pr	py		
	spr	mpr					
	sb			br	by		bl
	sbr						
	st	nt		tr			
		ntr					
	sd						
			ḍḍ				
	sk	ŋk	ḳḳ	kr	ky	kw	
	skr	ŋkr					
	skw	ŋkw					
	sky	ŋky					
	sg			gr			
	sgr						
	sgw						
	sgy						
		nȼ					
		nč̌					
				fr			
			ss				
			šš̌				
	sm		mm	mr			
	sn		nn				
	sñ						
				ŋr			
						ŋw	
			rr				/

*In the list of clusters which Fodale gives for the S dialect, all the clusters in the first column of this table are replaced by clusters which are the same except that they begin with /š̌/ instead of /s/. In a stratificational analysis, this alternation between apical and frontal fricatives can be handled in the lowest levels of the phonology instead of as an alternation between phonemes.

Table III.20.

Consonant clusters which occur postpausally in only some of the six dialects of Sicilian.

C	L	M	P	S	V
/					str
					sdr
sf	sf	sf	sf	šf	
sfr	sfr	sfr	sfr	šfr	
sv	sv	sv	sv	šv	
šr	šr	šr	šr	šr	
nf	nf	nf	nf	nf	
nfr	nfr	nfr	nfr	nfr	
			ns		ns
ŋl	ŋl		ŋl	ŋl	ŋl
pp					
	tt				
	dd	dd		dd	
kk	kk	kk		kk	kk
kky	kky	kky		kky	
ggy		ggy		ggy	
ȼȼ	ȼȼ	ȼȼ			
	dr				dr
	vr	vr	vr	vr	vr
gy	gy	gy	gy	gy	
		gw			
					ly /

may be rewritten, or "actualized", by the appropriate phoneme of each dialect. Fodale distinguishes three types of rules of correspondence: those in which a certain diaphone is actualized by the "same" phonemes in all the dialects (i.e. by the phonemes which have corresponding places in their respective phonemic systems); those in which a certain diaphoneme is regularly actualized in different dialects by different phonemes (i.e. by phonemes which do not have corresponding places in their respective phonemic systems); and those in which a certain diaphoneme is actualized "so erratically across dialects that no correspondence can be set up" (p.181). In his listing of these rules, Fodale writes correspondences of the first type in the form

(41) $$//p// \dashrightarrow /p/$$

to show that the diaphoneme //p// is actualized in every dialect by the phoneme /p/ of that dialect. He writes correspondences of the second type in the form

(42) $$//\check{c}// \dashrightarrow {}_{LSV}/\check{c}/$$
$$\dashrightarrow {}_{CMP}/\check{s}/$$

to show that the diaphoneme //$\check{c}$// is actualized in dialects L, S, V by their respective phonemes /$\check{c}$/, and in dialects C, M, P by their respective phonemes /$\check{s}$/.

However, Fodale seems reluctant to admit that any actualizations are too erratic to be described, and he introduces a system of subscript numerals which could multiply the number of diaphonemes without limit. Using this notation, he writes correspondences in the form

(43)
$$_1//\acute{e}// \dashrightarrow /\acute{e}/$$
$$_2//\acute{e}// \dashrightarrow {}_{LV}/\acute{\imath}e/$$
$$\dashrightarrow {}_{CMPS}/\acute{e}/$$

to show that //e//, when stressed, is always actualized by /é/ in dialects C, M, P, S; but that in dialects L, V some occurrences of //é//, which are written with subscript "1", are actualized by /é/ while others, which are written with subscript "2", are actualized by /íe/ (which is his phonemic representation for the phonetic diphthong [íe̯]).[35] Table III.21. presents Fodale's summary list (pp.212-4) of the rules of correspondence which he finds for these six dialects.

3. The Necessary Eclectic Portion.

a. Outline of the presentation. In order to describe the competence of the hypothesized fluent speaker of these six Sicilian dialects, the form which such a competence must have for its eclectic portion will first be outlined. Stratificational analyses for several typical, interesting parts of Fodale's data will then be made, and the necessary networks, with their eclectic disjunction clusters and fragments of all three portions, will be described for them. Finally, all of the networks which analyze this data will be combined and simplified, and the resulting eclectic portion of the model will be discussed in detail.

[35] When Fodale chooses the symbols for these diaphonemes and decides which ones are to be distinguished only by numbers, he apparently has in mind etymologies which are not recoverable from these six dialects by reconstruction among them.

Table III.21.

Fodale's rules of correspondence between the six dialects of Sicilian.*

Vowels

//í// ---> /í/	//ú// ---> /ú/
$_1$//é// --> /é/	//-i// --> /-i/
$_2$//é// --> $_{LV}$/íe/	//-a// --> /-a/
--> $_{CMPS}$/é/	//-u// --> /-u/
//á// ---> /á/	//-i-// --> /-i-/
$_1$//ó// --> /ó/	//-a-// --> /-a-/
$_2$//ó// --> $_{LV}$/úo/	//-u-// --> /-u-/
--> $_{CMPS}$/ó/	

Stops

//p// ---> /p/	$_3$//d// --> $_{LMSV}$/d/
//t// ---> /t/	--> $_{CP}$/d ~ r/
//k// ---> /k/	//-ddr-// --> $_{LV}$/-ddr-/
//-kk-// --> /-kk-/	--> $_{CMPS}$/-ḍḍ-/
$_1$//b// --> /b/	//ḍ// ---> /ḍḍ/
$_2$//b// --> $_L$/b/ ~ Ø	//g-// --> $_V$/g-/
$_1$//d// --> $_{LV}$/dd/	--> $_{LPS}$ Ø
--> $_{CMPS}$/d/	--> $_{CM}$/y-/
$_2$//d// --> $_{LMSV}$/d/	//-g-// --> $_{LV}$/-g-/
--> $_{CP}$/r/	--> $_{CP}$ Ø
	--> $_{MS}$/-g-/ ~ Ø

*The rules of correspondence which are given here are exactly those given by Fodale (pp.212-4); he does not give any rules for the situations which these rules do not cover.

Table III.21. (Contd.)

//ggy// --> CLMPS/ggy/
--> V/lly/

//gr-// --> V/gr-/
--> CMP/r/
--> LS/gr ~ r/

Affricates

//ɕ// ---> /ɕ/
//ʑ// ---> /ʑ/
//-čč-// --> /-čč-/
//nč// --> /nč/

//č// ---> LSV/č/
---> CMP/š/
//ǰ// ---> /ǰ/

Fricatives

//f// ---> /f/
//v// ---> /v/ + i e a
1//v// --> M/b/
2//v// --> L/b ~ v/
3//v// --> CP/v/ ~ ∅
3a//v// --> L/v ~ w/
3b//v// --> CP ∅
//s// ---> /s/
//ss// ---> /ss/
//sC// ---> CLMPV/sC/
---> S/šC/

//sf// ---> V/sp/
---> S/šf/
---> CLMP/sf/
//str// --> V/str/
--> CLMPS/šr/
//šš// ---> /šš/
1//š// --> LSV/č/
--> CMP/š/
2//š// ---> CLMPS/š/
---> V/x/
//x// ---> V/x/
---> CLMPS/š/

Nasals

//m// ---> /m/
1//mm// --> /mm/

2//mm// --> M/nv/
--> CLPSV/mm/

Table III.21. (Contd.)

//mC// --> /mC/

//n// ---> /n/

//nn// --> /nn/

//nf// --> $_{CLMPS}$/nf/

--> $_{V}$/mp/

//nv// --> $_{M}$/nv/

--> $_{CLMSV}$/mm/

//ns// --> $_{V}$/ns/

--> $_{CLMPS}$/n¢/

$_{1}$//n¢// --> /n¢/

$_{2}$//n¢// --> $_{CLMPS}$/n¢/

--> $_{V}$/ns/

//$\tilde{n}$// ---> /$\tilde{n}$/

//ŋ// ---> /ŋ/

Liquids and Glides

//l// ---> /l/

//lly// --> $_{V}$/lly/

--> $_{CLMPS}$/ggy/

$_{1}$//r// --> /r/

$_{2}$//r// --> $_{CP}$/r/

--> $_{LMSV}$/d/

$_{3}$//r// --> $_{V}$/gr/

--> $_{CLMPS}$/r/

//rr// ---> /rr/

//rC// ---> $_{LSV}$/rC/

---> $_{CM}$/-rC-~-CC-/

---> $_{P}$/-rC-~-iCC-/

//rv// ---> $_{CPV}$/rv/

---> $_{LMS}$/rb/

//rb// ---> /rb/

b. First approximation to the eclectic portion. Whenever this linguistic model is used as a device for comparing dialects, it will have a trivial chiloeclectic alternation pattern and a complex, multilevel sign pattern. Figure III.12. shows the alternation pattern for the Sicilian material and a schematic suggestion of the multilevel sign pattern which will result from the analysis of that material.[36]

Each of the dialects is represented in Figure III.12. by an ECLECTIC DIAMOND node labeled as an eclectad; because only one of these dialects can be spoken at a time, their ECLECTIC DIAMOND nodes all belong to the same span of the eclectic tactic pattern, which is dominated by ^{Z}/geographical dialect/. The technique of using an eclectic portion as a device for comparing dialects assumes that the cause of each dialect is simply the fact that its speakers all come from a certain locality. A person's place of origin is therefore arbitrarily assumed to be the only significant fact about him, and the eclectad for each dialect will be simply connected to a chiloeclectad which names the place where that dialect is spoken. All of these chiloeclectads belong to one span of the chiloeclectic tactic pattern, dominated by ^{CZ}/place of origin/.

When this linguistic model is being used for the comparison of dialects, the interesting things about it will be the complexities in its eclectic reversible sign pattern. In an eclectic network which has only two eclectads, the eclectic reversible sign pattern can have only a single level, for reasons that were shown in the discussion of the

[36] Whenever the chiloeclectic alternation pattern is trivial, as it is in Figure III.12., it is admittedly redundant, and it could be eliminated, along with the chiloeclectic tactic pattern. This is one of the artificialities which result from using this linguistic model as a device for comparing dialects, rather than as a model of the competence of some actual speaker.

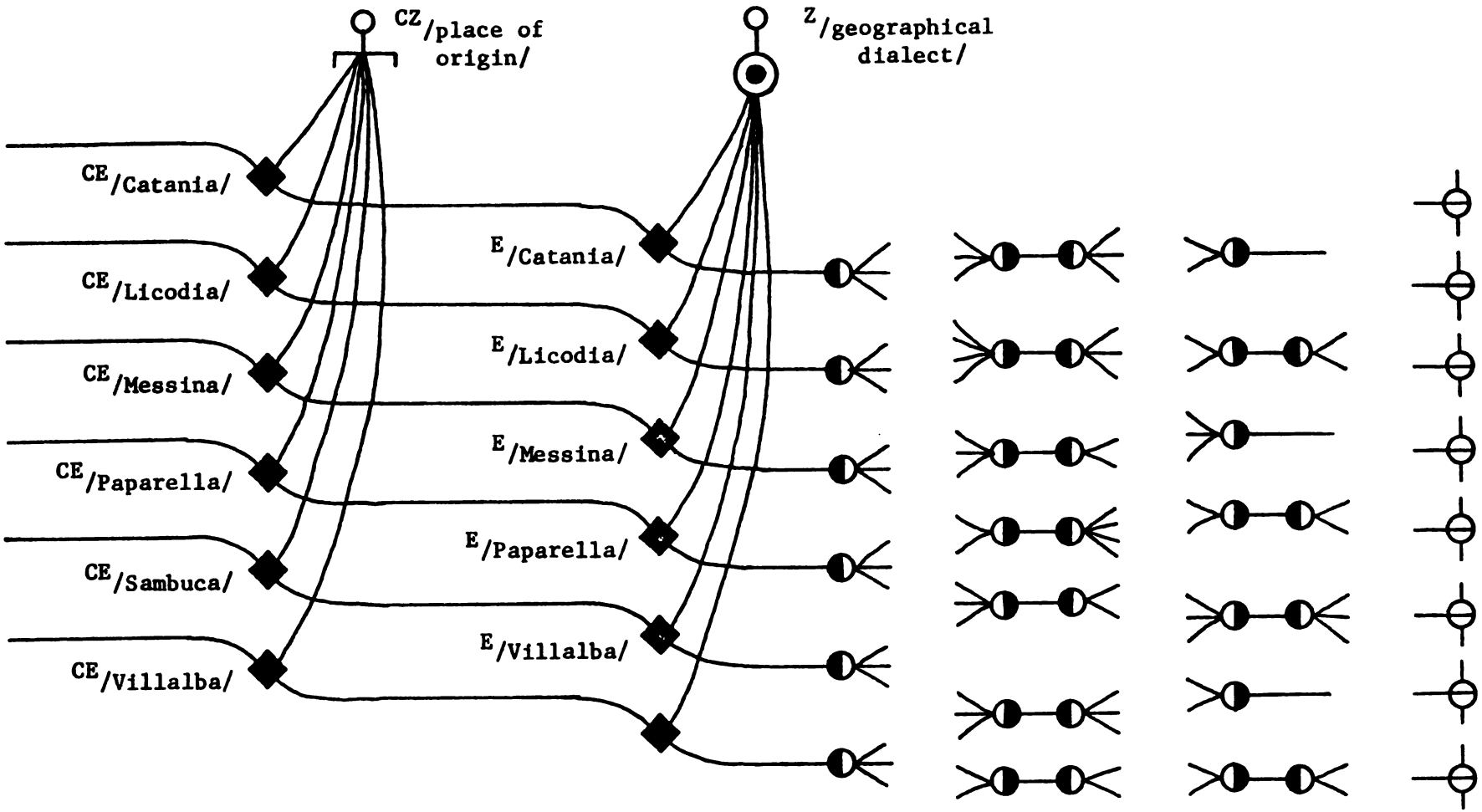


Figure III.12.

Schematic network of the eclectic portion for Sicilian.

Serbo-Croatian example (pages 114-5 above). But since ^{Z}/geographical dialect/ in this eclectic network dominates the eclectads for six dialects, and since those dialects may share their various features in many different ways, the sign pattern will be a multilevel sign pattern which will show, by its structure, the various kinds of similarity and divergence which exist among the dialects being described.

c. First approximation to analyses of other portions. The relationship which exists in this linguistic model between the eclectic portion and the other portions will first be investigated by making detailed analyses of four fragments of the network.

Fodale's analysis of his data is partly a purely synchronic analysis of the phonologies of his six dialects and partly a description of present-day synchronic relationships which have arisen by diachronic changes in those dialects. The last chapter of his study is, in effect, an exercise in the method of comparative reconstruction, presented as a synchronic analysis of a system of abstract diaphonemes which are to be actualized by phonemes of the individual dialects. Because the synchronic similarities which he describes in this way are exactly those which have arisen by such changes within the cognate vocabulary of these dialects, Fodale--and Moulton, whose suggestion he is following--would feel that this is a perfectly proper descriptive procedure.

Some amount of such recapitulation of diachronic events within an analysis of synchronic dialects seems unavoidable, and this stratificational model for these six Sicilian dialects will use Fodale's inventory of such diaphonemes as a first approximation to its inventory of morphons. In distinguishing one diaphoneme from another, however, Fodale sometimes

seems to go beyond what could be found by a comparative reconstruction of these six dialects. His description often has two or more diaphonemes which are actualized by the same alternation of phonemes. For example, he gives four separate diaphonemes (repeated here from Table III.21. for convenience)

(44) //č// ---→ $_{LSV}$/č/
---→ $_{CMP}$/š/

(45) $_1$//š// ---→ $_{LSV}$/č/
---→ $_{CMP}$/š/

(46) $_2$//š// ---→ $_{CLMPS}$/š/
---→ $_{V}$/x/

(47) //x// ---→ $_{V}$/x/
---→ $_{CLMPS}$/š/

which have, among them, only two patterns of actualization; the differences between //č// and $_1$//š// and between $_2$//š// and //x// presumably rest on some historical differences which have disappeared in all six of these dialects, and when Fodale states the diaphonemes for a certain lexical item, he presumably chooses between //č// and $_1$//š// and between $_2$//š// and //x// on the basis of those historical differences.

Stratificational theory makes a clear distinction between how it handles synchronic variations and how it handles diachronic variations. Synchronic variations--whether within a single idiolect, a single dialect, or any other single describable congeries of synchronically alternating forms--are treated as alternative activations of the same network. Diachronic variations are treated as actual changes of the connections within the network (Lockwood 1972:275). This stratificational model for the

competence of a speaker[37] of Fodale's six dialects will therefore make no distinction between Fodale's //č// and $_1$//š// or between his $_2$//š// and //x//. The phonemes which actualize both //č// and $_1$//š//, viz.

(48) $_{LSV}/\check{c}/$
$_{CMP}/\check{s}/$

will be treated here as alternative realizations of a single morphon $^{MN}/\check{c}/$; and the phonemes which actualize both $_2$//š// and //x//, viz.

(49) $_{CLMPS}/\check{s}/$
$_{V}/x/$

will be treated here as alternative realizations of a single morphon $^{MN}/x/$.[38]

These two morphons will be sufficient to describe these alternations in the hypothesized competence of the hypothesized speaker of these six dialects. If it happens that the words which are described by these two morphons had older forms which, in an earlier period of the language, would have had to be described by three or more distinct morphons, that is an interesting fact about the history of the speaker's language, but not an interesting fact about his own competence.

Figure III.13. gives a completely unsimplified first approximation to the network for realizing $^{MN}/\check{c}/$ and $^{MN}/x/$, which assumes the following componential analysis for the three phonemes which realize these morphons.

(50)

$^{P}/\check{c}/$	$^{P}/\check{s}/$	$^{P}/x/$
$^{PN}/$Cl Sp Fr$/$	$^{PN}/$Sp Fr$/$	$^{PN}/$Sp$/$

[37] Although the speaker of these six dialects is only hypothetical, he must be hypothesized to exist synchronically, as an actual speaker would exist.

[38] The symbols for these morphons have been chosen only for their maximal distinctiveness, not for any implications about their pronunciations.

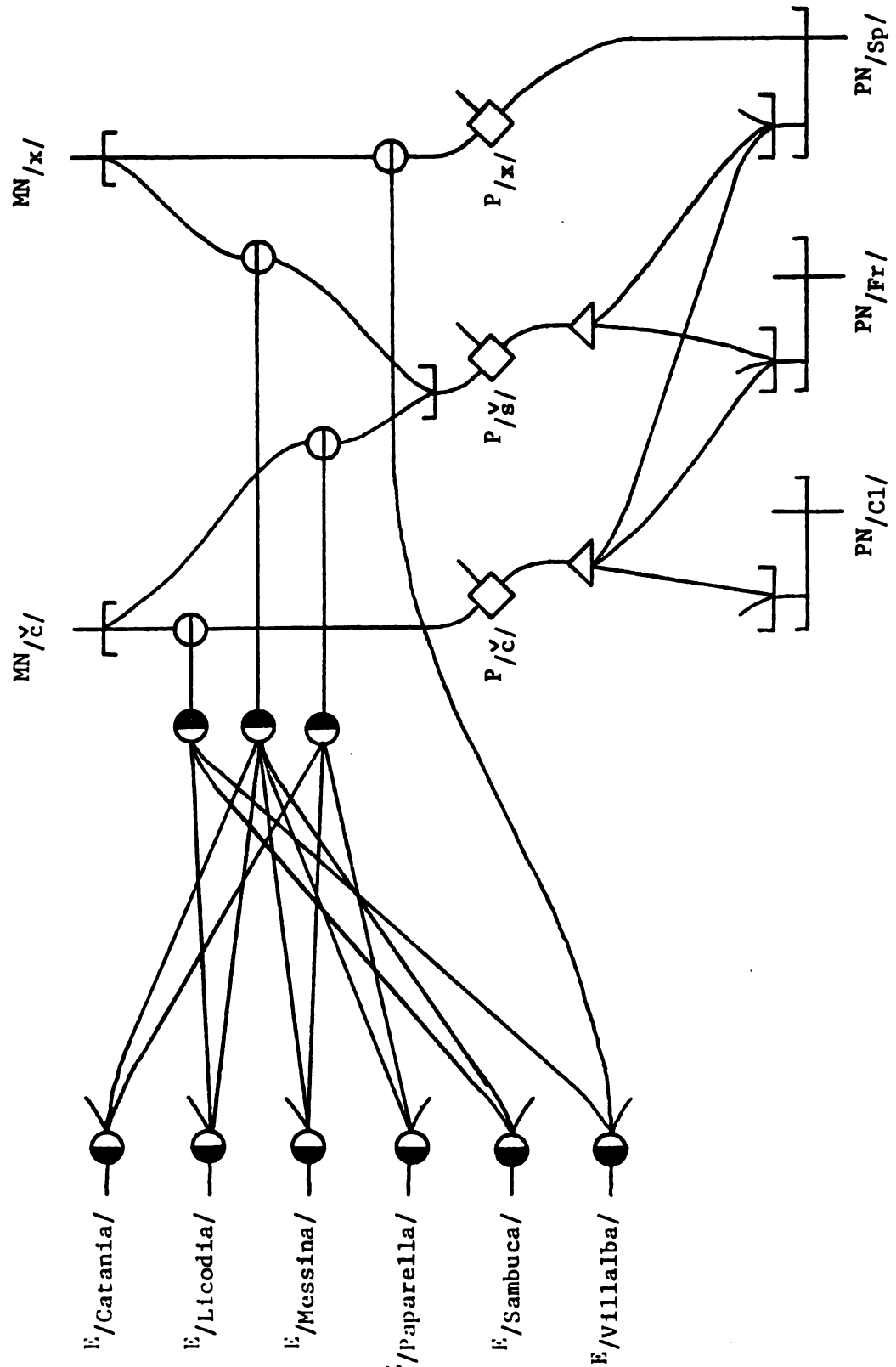


Figure III.13.

Unsimplified network for realization of MN/č/ and MN/x/.

In this network, $^{MN}/\check{c}/$ is realized by either $^{P}/\check{c}/$ or $^{P}/\check{s}/$. If dialect L, S, or V is being spoken, the corresponding eclectad labeled $^{E}/L/$, $^{E}/S/$, or $^{E}/V/$ will be activated, and the connections within the eclectic reversible sign pattern will cause the GATE node on the left below $^{MN}/\check{c}/$ to be opened so that $^{MN}/\check{c}/$ will be realized by $^{P}/\check{c}/$. However, if dialect C, M, or P is being spoken, eclectad $^{E}/C/$, $^{E}/M/$, or $^{E}/P/$ will be activated, the GATE node on the right below $^{MN}/\check{c}/$ will be opened instead, and $^{MN}/\check{c}/$ will be realized by $^{P}/\check{s}/$. Similarly, activating $^{E}/C/$, $^{E}/L/$, $^{E}/M/$, $^{E}/P/$, or $^{E}/S/$ will open the GATE node through which $^{MN}/x/$ will be realized by $^{P}/\check{s}/$, but activating $^{E}/V/$ will open the GATE node through which $^{MN}/x/$ will be realized by $^{P}/x/$.

Both the phonemic sign pattern and the eclectic reversible sign pattern in Figure III.13. are single-level sign patterns which can be factored and simplified into the multilevel patterns shown in Figure III.14. That phonemic sign pattern has been simplified in the usual way, except that upward ORDERED OR nodes are used, in the way described on pages 55-6, to handle the fact that some properties of some phonemes are unmarked by phonons. The eclectic sign pattern and the morphonic alternation pattern in Figure III.14. have been factored, recombined, and simplified in order to show more satisfactorily the similarities and differences among the six dialects.

This simplification has required changes in both of those patterns. A simplification of only the eclectic sign pattern of Figure III.13. produces the following multilevel sign pattern.

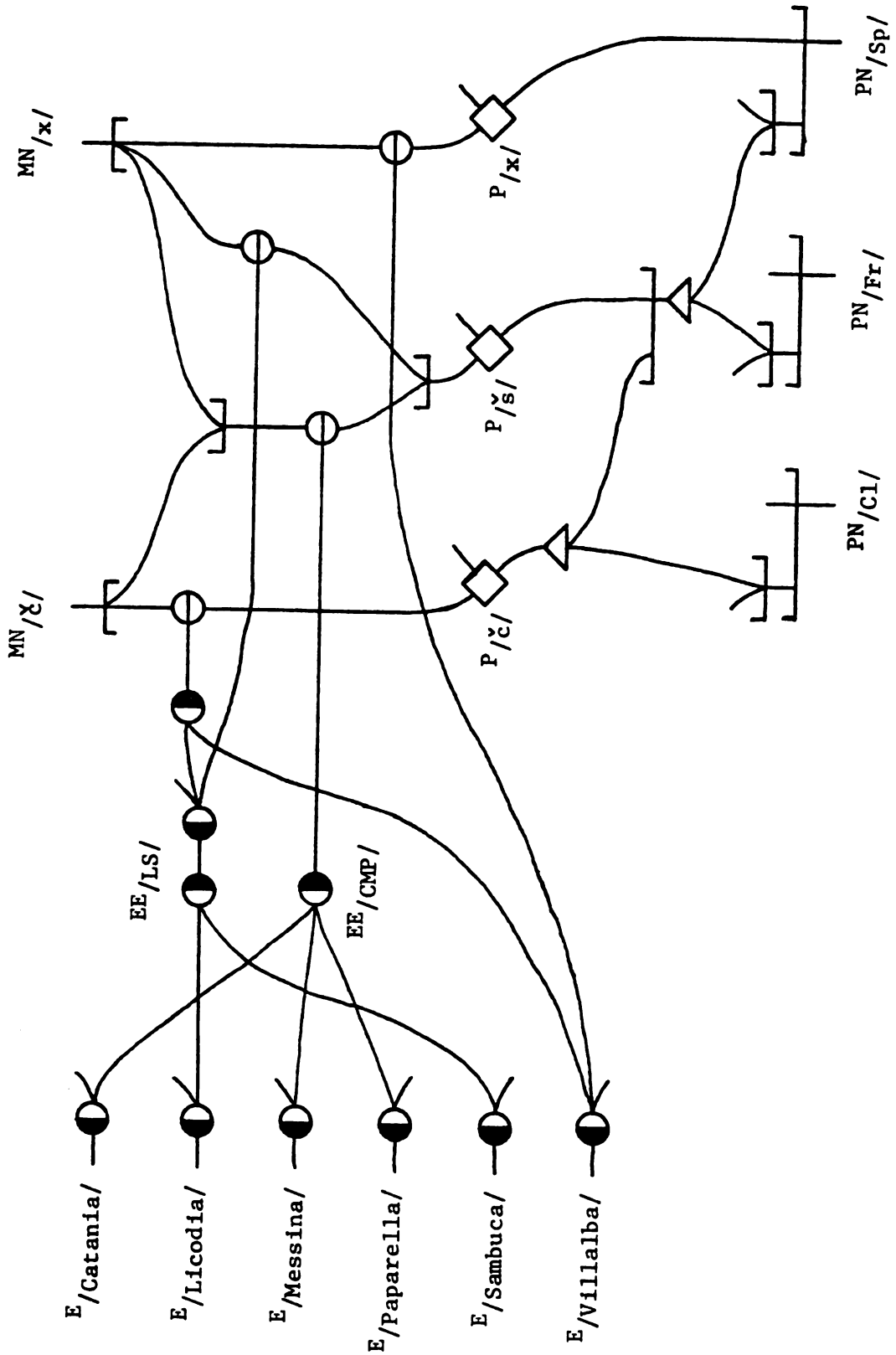
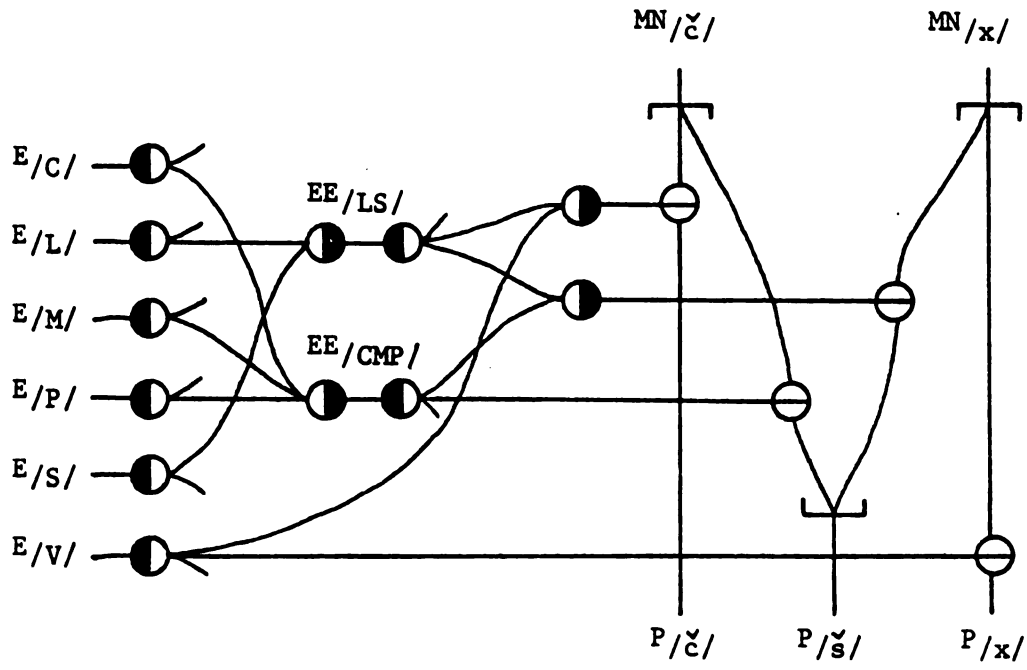


Figure III.14.

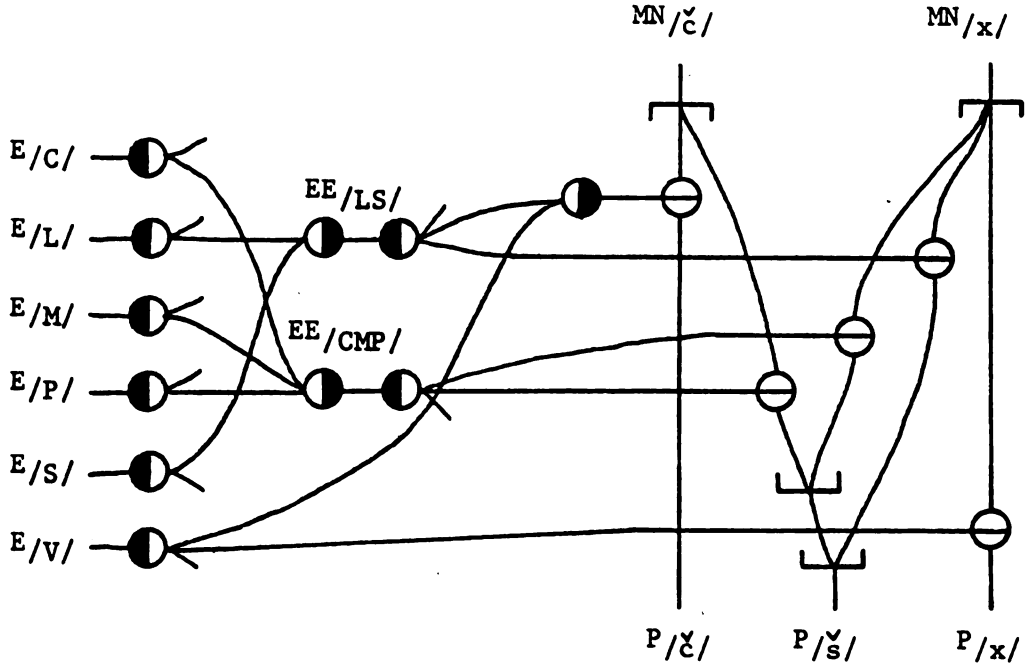
Simplified network for realization of MN/č/ and MN/x/.

(51)



However, if the realizates of $^{P}/\check{s}/$ are factored into three groups in the following way,

(52)



the two GATE nodes above the upward UNORDERED OR node in that network, which are both joined to $^{EE}/CMP/$, may be replaced by a single GATE node

placed below that UNORDERED OR node. Such a replacement will produce the morphonic alternation pattern shown in Figure III.14., which clearly states that $^{P}/\check{s}/$ is an ambiguous realization of either $^{MN}/\check{c}/$ or $^{MN}/x/$ for dialects C, M, P.

The multilevel eclectic reversible sign pattern which results from this simplification clearly shows the relevant relationships among the six dialects. For this part of the language, transduction can occur in three ways: in one way for dialects C, M, P; in another way (completely unlike that for dialects C, M, P) for dialects L, S; in a third way (partly like that for dialects L, S and partly idiosyncratic) for dialect V.

In order to describe the places of articulation for the voiceless stops, a stratificational description of these six Sicilian dialects must have eclectic disjunction clusters located below the phonons. Fodale's diasystem formulas for these phonemes (repeated here for convenience)

(53) Diaphonemic Formula:

$$_{CLMPSV}//\ p \approx t \approx k\ //$$

Diaphonemic Formula, Allophonically Rewritten:

$$_{CLMPSV}//[\underset{\circ}{p},\ p{:},\ p] \approx \frac{_{CV}[\underset{\circ}{t},\ t{:},\ t]}{_{LMPS}[\underset{\cdot}{t},\ \underset{\cdot}{t}{:},\ t{:},\ \underset{\circ}{t},\ t]} \approx \frac{_{P}[\underset{\circ}{k},\ k{:},\ k]}{_{CLMSV}[\underset{\circ}{k},\ \underset{\wedge}{k},\ \underset{\sim}{k}{:},\ k{:},\ \underset{\partial}{k},\ k]}\ //$$

include 14 allophones, which are listed, with their phonetic descriptions

and the environments in which they occur, in Table III.22. In a stratificational phonology, the slight voicing of some of these allophones will be handled in a rather simple way by the chilophonotactics (or phonetic tactics), since its presence is conditioned by the occurrence of ^{PN}/Ns/ or ^{PN}/Vo/ in adjacent phonological segments. The description of the conditioning for fortisness will depend entirely on the description which is used for the long or fortis consonants; that is a complicated problem which will not be discussed here. However, the conditioning of the places of articulation for these consonants varies slightly among the six dialects, and the description of this conditioning raises an interesting problem about the proper arrangement of nodes and line segments in a network.

The following componential analysis for these three phonemes and their allophones, and the phonemic and dialectal conditions for the alternatives within it, may be assumed,

(54)

^{P}/p/	^{P}/t/		^{P}/k/	
^{PN}/Cl Lb/	^{PN}/Cl Ap/		^{PN}/Cl Do/	
	in dialects L,M,P,S before /r/	elsewhere	in dialects C,L,M,S,V before /y/	elsewhere
[Cl Lb]	[Cl Rz]	[Cl Ap]	[Cl Fr]	[Cl Do]

and the realization formula for ^{P}/p/ will be the very simple one given in Figure III.15.(1). However, the realization formulas for ^{P}/t/ and ^{P}/k/ cannot be so simple. For each phoneme, one phonetic component is

Table III.22.

Allophones of voiceless stop phonemes of Sicilian.

[p̬]	slightly voiced lenis bilabial stop	after [m]
[p:]	voiceless fortis bilabial stop	when long
[p]	voiceless lenis bilabial stop	elsewhere

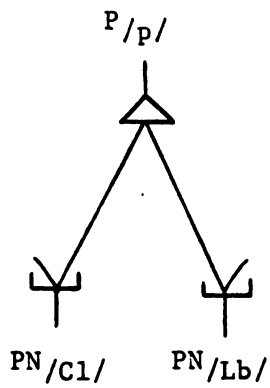
		dialects C V	dialects L M P S
[t̬]	slightly voiced lenis dental stop	intervocalic or after [n]	after [n]
[t:]	voiceless fortis dental stop	when long	when long (except before [r̥])
[t]	voiceless lenis dental stop	elsewhere	elsewhere
[t̥]	voiceless lenis postalveolar stop		before [r̥]
[t̥:]	voiceless fortis postalveolar stop		when long before [r̥]

		dialects C L M S V	dialect P
[k̬]	slightly voiced	after [ŋ]	intervocalic or after [ŋ]
[k:]	voiceless fortis velar stop	when long (except before [y])	when long
[k]	voiceless lenis velar stop	elsewhere	elsewhere
[k̟]	slightly voiced lenis palatal stop	after [ŋ] and before [y]	
[k̟:]	voiceless fortis palatal stop	when long before [y]	
[k̟]	voiceless lenis palatal stop	before [y]	

Figure III.15.

Separate formulas for realization of the three voiceless stop consonants of Sicilian.

(1)



(2)

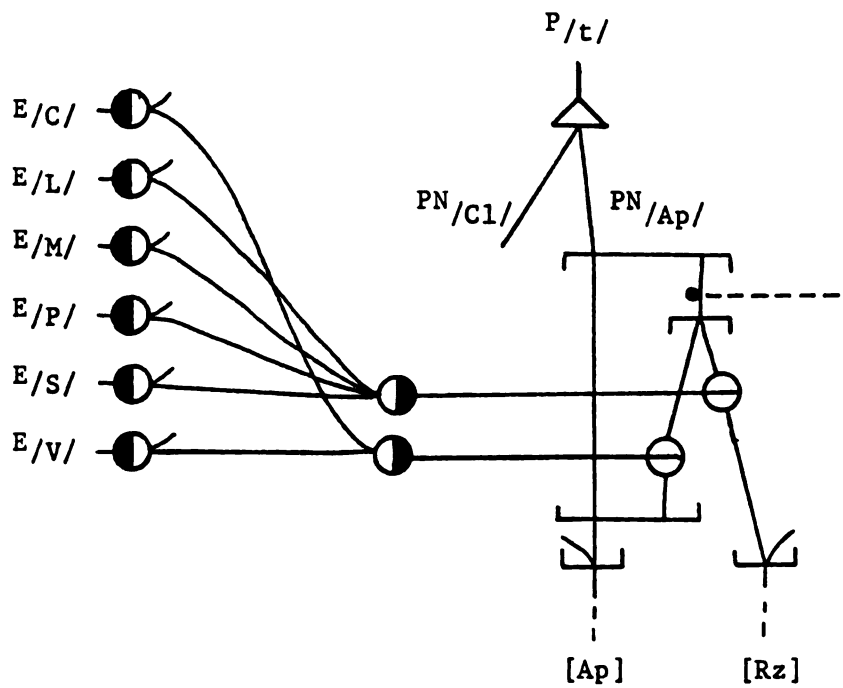
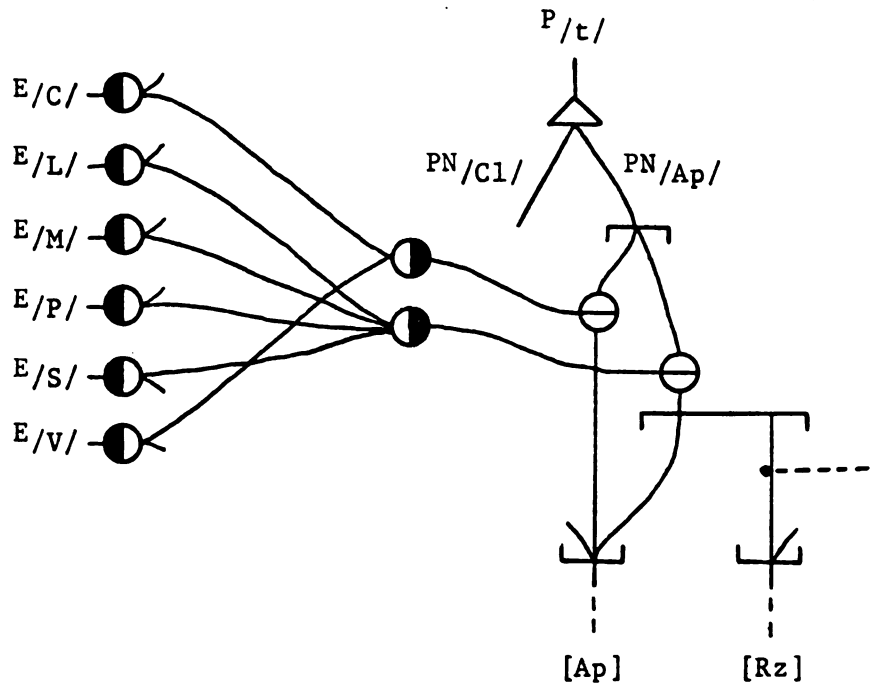
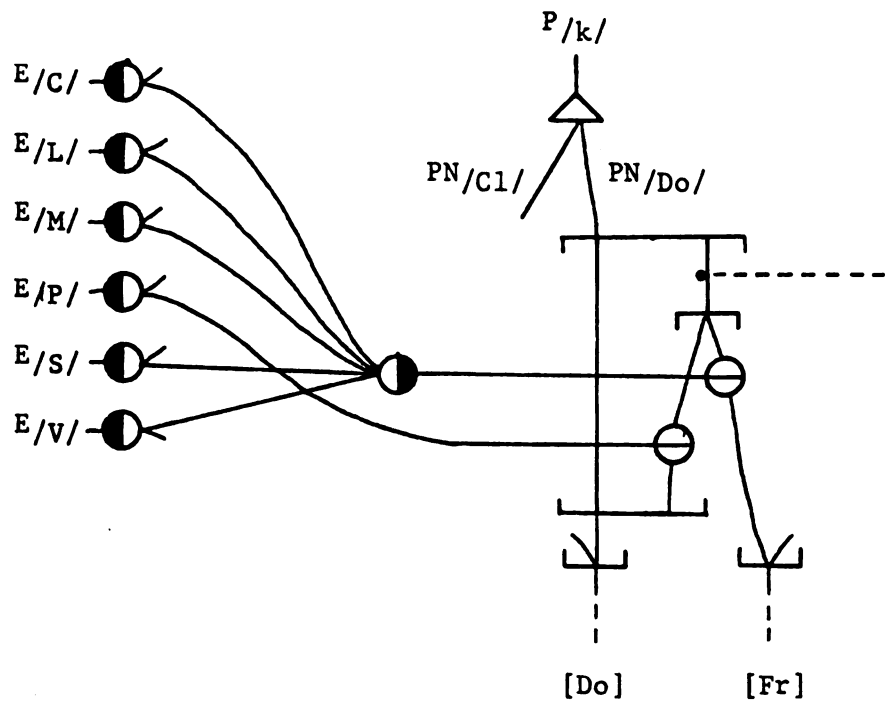


Figure III.15. (Contd.)

(3)



(4)



part of its realization when both of two conditions are met, while another phonetic component is part of its realization when neither or only one of those conditions is met. One of these conditions, which involves the choice among the six dialects, requires that the realization formula include an eclectic disjunction cluster. The other condition, which involves the phoneme following the one being realized by the formula, requires that the formula include a disjunction cluster composed of a downward ORDERED OR node above an enabler joined to the chilophonotactics (or phonetic tactics).

Figure III.15.(2) has a formula for the realization of ^{P}/t/ in which the eclectic disjunction cluster is below the other disjunction cluster, while Figure III.15.(3) has a formula for that realization in which the two disjunction clusters are arranged in the opposite relative positions. Either of these two formulas will function adequately for downward transduction, during which the GATE nodes control the course which the activation takes through the network. But for upward transduction, during which the GATE nodes record (rather than control) the course of the activation through the network, only the formula in Figure III.15.(2) will function adequately. In it, any transduction upward from [Rz] is sure to reach ^{P}/t/, because [Rz] will not be activated unless the chilophonotactics activates the line to the enabler, which will only be done as part of an activation which will run upward to ^{P}/r/. Such a transduction must pass across a certain GATE node in the network, and must cause that GATE node to emit an eclectic activation that runs through the eclectic sign pattern to ^{E}/L/, ^{E}/M/, ^{E}/P/, and ^{E}/S/. However, a transduction upward from [Ap] through this formula may have to run a more tortuous course. Its activation first runs along the priority line segment from the upward

ORDERED OR node, passing across a GATE node which therefore emits an eclectic activation that runs to ^{E}/C/ and ^{E}/V/. However, when [Ap] is activated, the following phoneme may or may not be ^{P}/r/. If it is not, the activation from [Ap] must return to the upward ORDERED OR node, and must run along the other line segment joined to that node to reach ^{P}/t/.

For a network such as this, in which a GATE node is joined by a line segment to the priority side of an upward ORDERED OR node, it must be assumed that the GATE node emits, in the usual way, an eclectic activation into the eclectic portion whenever an upward realization passes across it. But it must also be assumed that, if the upward realization has to return through the GATE node to the upward ORDERED OR node, the eclectic activation which the GATE node emitted will be retrieved or cancelled, and it will have no effect within the eclectic portion.

The formula in Figure III.15.(3) will not function adequately for upward transduction, because its upward UNORDERED OR node appears to make the signaling of one or the other endoeclectad a matter of chance, which is an eventuality which the eclectic portion was intended to obviate. The formula in Figure III.15.(2) apparently functions successfully during upward transduction because of the line segment which joins the non-priority ends of the two ORDERED OR nodes. Because that line segment is not connected to any GATE node, activations which are not characteristic of any one group of eclectads may pass along it without causing any activation in the eclectic portion.

Figure III.15.(4) gives a realization formula for ^{P}/k/ that has the same arrangement of nodes as that for ^{P}/t/ in Figure III.15.(2); and the three formulas given in Figure III.15.(1),(2),(4) are combined into one network in Figure III.16. The eclectic reversible sign pattern for

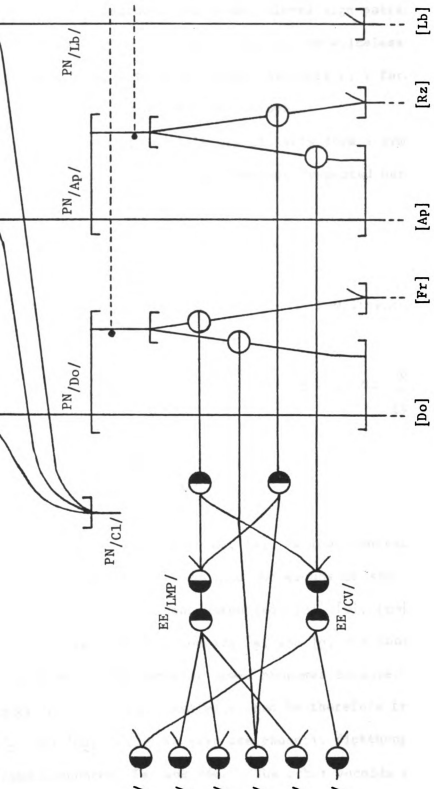


Figure III.16.

Combined network for realization of the three voiceless stop consonants of Sicilian.

that network has been factored into a multilevel sign pattern, which shows that, for the places of articulation of the voiceless stop consonants, dialects L, M, S form one group, dialects C, V form another group, and dialect P forms a group of its own.

The vocoids of each of Fodale's six dialects form a symmetrical system. His diasystem formulas for the vowel phonemes (repeated here for convenience)

(55)

Diaphonemic Formula:

$$\text{CLMPSV}/\!/\ \text{i} \approx \text{e} \approx \text{a} \approx \text{o} \approx \text{u}\ /\!/$$

Diaphonemic Formula, Allophonically Rewritten:

$$\text{CLMPSV}/\!/\ \frac{\text{CMPS}^{[\text{i}]}}{\text{LV}^{[\text{i},\ \text{ɪ},\ \text{ɪ}^{\text{v}}]}} \approx \frac{\text{C}^{[\varepsilon]}}{\frac{\text{MPS}^{[\text{e}]}}{\text{LV}^{[\underset{\frown}{\text{e}},\ \varepsilon]}}} \approx [\text{a}] \approx \frac{\text{C}^{[\text{ɔ}]}}{\frac{\text{MPS}^{[\text{o}]}}{\text{LV}^{[\underset{\frown}{\text{o}},\ \text{ɔ}]}}}$$

$$\approx \frac{\text{CMPS}^{[\text{u}]}}{\text{LV}^{[\text{u},\ \text{ʊ},\ \text{ʊ}^{\text{v}}]}}/\!/$$

include 13 allophones. One allophone, [a], is low, central, and unrounded. All the others may be divided into two groups of six each: [i], [ɪ], [ɪ$^{\text{v}}$], [e], [ɛ], [$\underset{\frown}{\text{e}}$] are front and unrounded; [u], [ʊ], [ʊ$^{\text{v}}$], [o], [ɔ], [$\underset{\frown}{\text{o}}$] are back and rounded. The mid vocoids [$\underset{\frown}{\text{e}}$] and [$\underset{\frown}{\text{o}}$] are nonsyllabic. Fodale lists them as allophones of vowel phonemes because he wants to have no diphthongs in his phonemic analysis, and he therefore treats the sequences [í$\underset{\frown}{\text{e}}$] and [ú$\underset{\frown}{\text{o}}$], which he says are phonetic diphthongs, as the vowel phoneme sequences /íe/ and /úo/. The other vocoids are all syllabic, and are paired according to height: [i] and [u] are high, [ɪ] and [ʊ] are mid-high, [ɪ$^{\text{v}}$] and [ʊ$^{\text{v}}$] are lowest-high, [e] and [o] are high-mid, [ɛ]

and [ɔ] are low-mid. The vowel phonemes /e/ and /o/ each have two allophones in dialects L, V because of Fodale's analysis of the phonetic diphthongs. In those dialects, these vowels have the allophones [e̯], [o̯] when they occur as the nonsyllabic part of a diphthong and the allophones [ɛ], [ɔ] when they are syllabic. In the same dialects, the vowel phonemes /i/ and /u/ have the allophones [i], [u] when they occur stressed and either as part of a diphthong or followed by /a/; [ɪˇ], [ʊˇ] occur when they are stressed in other environments; [ɪ], [ʊ] occur when they are unstressed.

Fodale gives seven rules of correspondence (repeated here for convenience)

(56)

$$//\acute{i}// \longrightarrow /\acute{i}/$$
$$_1//\acute{e}// \longrightarrow /\acute{e}/$$
$$_2//\acute{e}// \longrightarrow {}_{LV}/\acute{i}e/$$
$$\longrightarrow {}_{CMPS}/\acute{e}/$$
$$//\acute{a}// \longrightarrow /\acute{a}/$$
$$_1//\acute{o}// \longrightarrow /\acute{o}/$$
$$_2//\acute{o}// \longrightarrow {}_{LV}/\acute{u}o/$$
$$\longrightarrow {}_{CMPS}/\acute{o}/$$
$$//\acute{u}// \longrightarrow /\acute{u}/$$

according to which his diaphonemes are actualized by phonemes of the six dialects. His list of vowel diaphonemes will be taken here as a first approximation to a list of vowel morphons, and will be written, using his subscript numbers, as ${}^{MN}/i/$, ${}^{MN}/e_1/$, ${}^{MN}/e_2/$, ${}^{MN}/a/$, ${}^{MN}/o_1/$, ${}^{MN}/o_2/$, ${}^{MN}/u/$.

The stratificational analysis which is made here for this data assumes that its vocalic phonemes for these dialects should be similar to those

described by Fodale and very similar to those which have been recognized in many other stratificational analyses. Five of the phonemes assumed by this analysis--^{P}/i/, ^{P}/e/, ^{P}/a/, ^{P}/o/, ^{P}/u/--are syllabic; one of them --^{P}/V̲/--is nonsyllabic and represents Fodale's allophones [e̲], [o̲]. This analysis also assumes that the allophones listed by Fodale correspond to the following bundles of phonetic components.[39]

(57)

[i]	[ɪ~ɪ˅]	[e]	[ɛ]	[e̲]	[a]
[Fr Hi Vo]	[Fr Hi Op Vo]	[Fr Vo]	[Fr Op Vo]	[Fr Sv]	[Vo]
[o̲]	[ɔ]	[o]	[ʊ~ʊ˅]	[u]	
[Lb Sv]	[Lb Op Vo]	[Lb Vo]	[Lb Hi Op Vo]	[Lb Hi Vo]	

The network for the realization of these seven morphons by these phonemes and these phonetic components is shown in Figure III.17. It has eclectic disjunction clusters which are located both above and below the phonemes. Those above, in the morphonic alternation pattern, are there because of the realizations of ^{MN}/e_2/ and ^{MN}/o_2/. If the GATE nodes there which are joined to ^{EE}/CMPS/ are opened, these morphons are realized simply by the vowels ^{P}/e/ and ^{P}/o/, respectively; if the GATE nodes joined to ^{EE}/LV/ are opened instead, these morphons are realized by

[39] [ɪ] and [ɪ˅] are shown here as corresponding to the same bundle of phonetic components because a person can identify a dialect which uses them by merely hearing a vowel that is pronounced somewhat more openly than [i]. The inventory of chilophonemes will have to include both ^{CP}/extremely open/ and ^{CP}/open/; and the chilophonotactics will have to assure that [Op]$_{CP}$ is represented by ^{CP}/extremely open/ when the vowel is stressed and by ^{CP}/open/ when the vowel is unstressed. The same reasoning and analysis applies to [ʊ] and [ʊ˅].

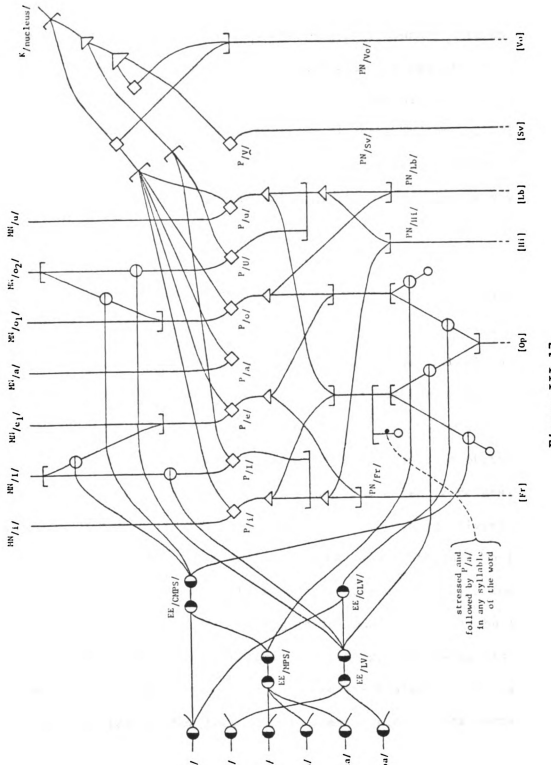


Figure III.17.

Network for realization of the Sicilian vocalic morphons.

diphthongs, represented on the phonemic level by the special phonemes ^{P}/I/ and ^{P}/U/. The eclectic disjunction clusters located below the phonemes are there because certain vowels are pronounced more openly in some dialects than in others. If the vowels are realized by the bundles of phonetic components given in (57), all these dialect differences can be handled by arranging that, for some dialects in some or all environments,[40] [Op] (= Open) is added to the bundles which realize certain vowel phonemes. Because different dialects have different vowel phonemes which are pronounced more openly, two eclectic disjunction clusters are needed.

The tactic portion of the network in Figure III.17. requires that a syllable nucleus consist of either a simple vowel or of a diphthong. For the diphthongs, the phonotactics requires that the special phonemes ^{P}/I/ and ^{P}/U/, and the phonons which respectively realize them, must occur simultaneously with the determined element ^{PN}/Vo/ followed by the determined element ^{PN}/Sv/ (= semivowel). The tactic portion of this network is not especially interesting otherwise. The eclectic reversible sign pattern in Figure III.17. has been factored into a multilevel sign pattern, and the labels for endoeclectads which are attached to it show the groupings of the dialects with respect to the vowels which they use.

The last fragment of this linguistic model which will be investigated here is the part of the phonotactics which imposes restraints on the consonant clusters which may occur in these six dialects. Tables III.19. and III.20. clearly show that some of these dialects lack certain phonologically-definable groups of consonant clusters which other dialects

[40] One conditioning environment is stated informally in Figure III.17.

have. Thus, dialect V has no consonant clusters in which the second consonant is ^{P}/f/ or ^{P}/v/, while all the other dialects have the same group of such clusters. Dialect S lacks all the consonant clusters which Fodale describes as beginning with /s/,[41] but it has instead a corresponding series of clusters which Fodale describes as beginning with /š/. The variation between dialects which involves ^{P}/f/, ^{P}/v/, and the absence of either must be handled at the level of the phonemes, since entire segments are either present or lacking; it will therefore be described by an eclectic disjunction cluster located in the phonotactics, as shown in Figure III.18.. However, the alternation between apical and frontal fricatives as initial sounds of consonant clusters can be handled most economically by an eclectic disjunction cluster in the chilophonotactics, since one or the other occurs for every dialect, and the two segments differ in only a single phonetic component.

d. The consolidated network. This stratificational description of Sicilian phonology is only a partial description, unlike that given here for Serbo-Croatian, which is a complete description of two entire patterns of its graphonomy, and the description given here for Yana, which handles all the kinds of phenomena which Sapir (1929) mentions as being important and for which he gives sufficient data. Comparable descriptions of all the rest of Fodale's data would have to be made before the entire analysis could be simplified into a definitive descriptive network for Sicilian phonology.

However, enough of an analysis has been made of this data that it may be asked what form the completed network should take. It is generally

[41]It has /ss/, but geminated clusters may well be handled by a different branch of the phonotactics.

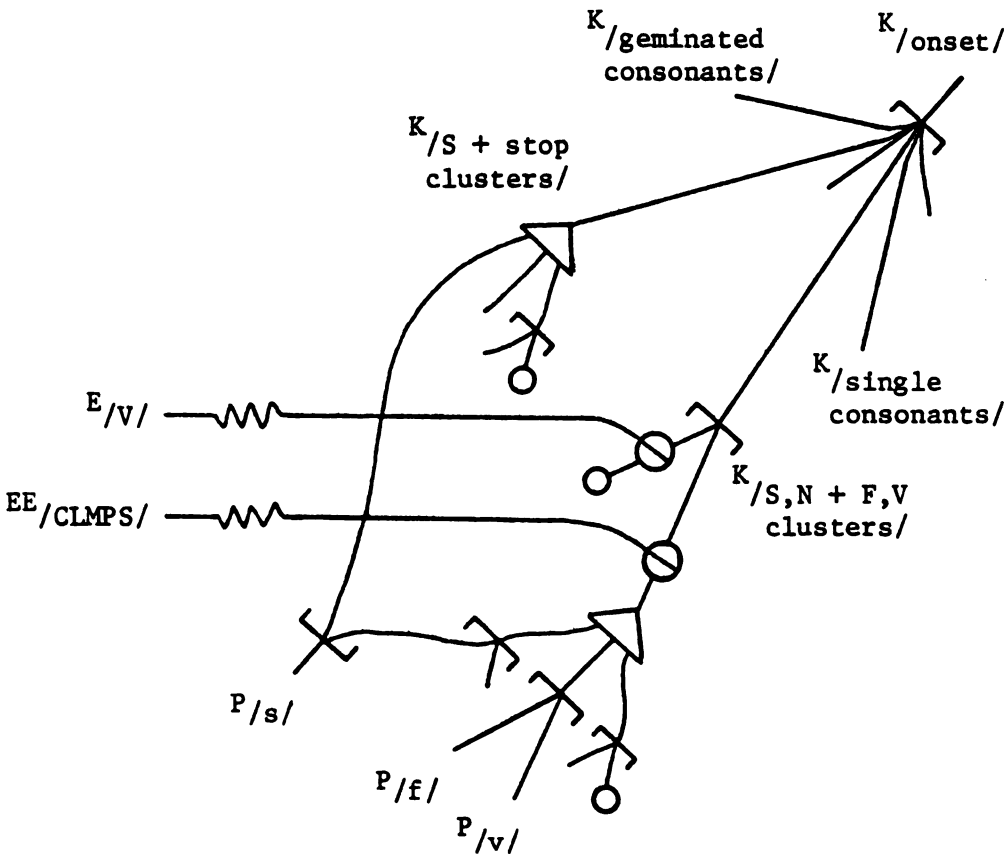


Figure III.18.

Fragment of the phonotactics of Sicilian, with eclectic disjunction clusters.

agreed that a stratificational network which models a person's competence should be as economical as possible; Occam's razor is presumably one of the tools that people use to learn languages. However, it may be that every learner of a language does not ply that tool with consummate skill. Every person's competence is perhaps not simplified to the extent that would be mathematically possible, and to that extent our linguistic descriptions are idealizations.

This analysis of these Sicilian dialects is not, however, an analysis of a real speaker's competence, but a linguist's descriptive device in the guise of an analysis of a hypothetical speaker's competence. It may therefore be proper to write a description which is less than optimally simplified in order to make the information which it contains more readily available to those who will use it. For example, the alternation of simple vowels and diphthongs which has been handled here by eclectic disjunction clusters located in the morphonic alternation pattern could also be handled by eclectic disjunction clusters located in the phonotactics.

Figure III.19. shows an alternative network for the part of the phonotactics dominated by ^{K}/nucleus/. If incorporated into a complete analysis, this network fragment would presumably require that certain changes be made in order to simplify the entire network. However, by itself, Figure III.19. clearly states that all six dialects have ^{P}/i/, ^{P}/a/, ^{P}/u/; while dialects C, M, P, S have the simple vowels ^{P}/e/, ^{P}/o/; and dialects L, V have diphthongs. These diphthongs are represented, according to this phonotactic network, by the activation of ^{PN}/Vo/ followed by the activation of ^{PN}/Sv/, the sequence of those activations occurring in each case simultaneously with the activation of ^{P}/I/ or of ^{P}/U/. The

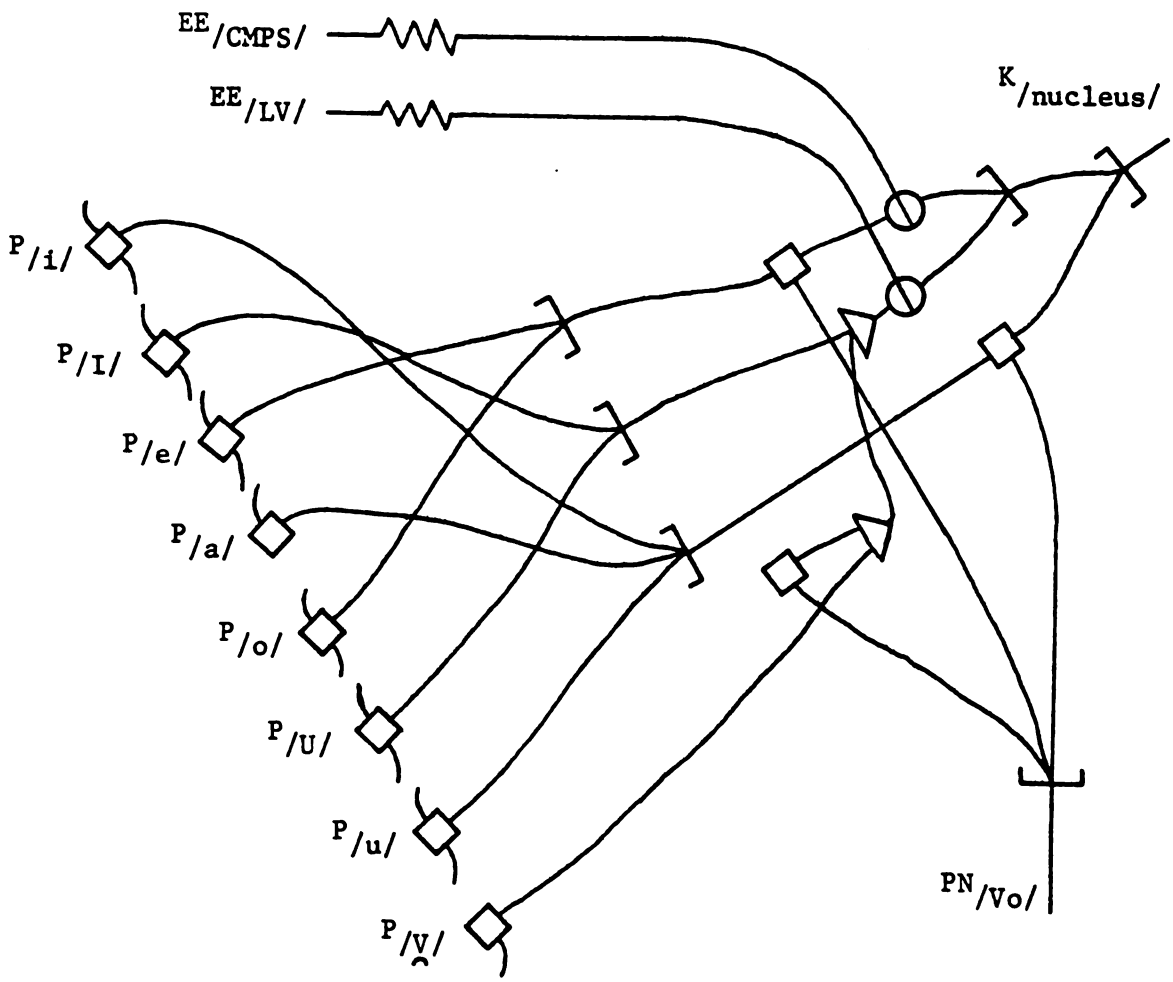


Figure III.19.

Alternative network for dialectal alternation of Sicilian simple vowels and dipthongs.

facts of this alternation can be adequately handled by eclectic disjunction clusters located either in the phonotactics or in the morphonic alternation pattern. A linguistic network which includes both sets of clusters will be redundant, and both of them cannot survive an ordinary simplification of the network. However, if the network is intended to serve as a descriptive device for the linguistic comparison of dialects, rather than as a model of an actual person's competence, it may be more useful if it includes eclectic disjunction clusters in both patterns. A linguist who wants to compare diphthongs will then find the dialectal conditions for them stated at the point where they first appear in the realization portion, while a linguist who wants to compare syllable nuclei will find the same information stated at the point where semivowels are produced in the phonotactics.

The difference between the network with eclectic disjunction clusters in only one pattern and the network with such clusters in both patterns would be the difference which has long been recognized in linguistics between a structural sketch and a reference grammar. The writer of a structural sketch tries his best to say everything only once, and sometimes seems to dare his readers to find the relevance among his statements. The writer of a reference grammar is willing to say the same thing many times, so that the information will be available to his readers in connection with every topic to which it is relevant. If the hypothesized competence of a fluent multidialectal speaker is to be used as a linguistic device for stating the similarities and differences among dialects, it will be necessary to decide whether that competence should be modeled by an optimally simplified network, in the nature of a structural sketch, or by a somewhat redundant network, in the nature of a reference grammar.

D. LEVELS OF RESPECT: JAVANESE.

1. The Language.

a. Identification of the language. Javanese is a language of the Indonesian branch of the Malayo-Polynesian (Austronesian) family; it is spoken by over 50 million people who form the largest and dominant ethnic group of the island of Java; it has a rich and ancient literature and has its own traditional script, which is distantly related to the Devanagari script. Despite its former prestige and present wide-spread use, it now has no status as an official language, since Java forms part of the Republic of Indonesia, throughout which the official language is Bahasa Indonesia, a language essentially the same as Malay (Vreeland, et al. 1975:88; Soepomo 1968:80).

b. The situation to be handled in the eclectic portion. Javanese has a highly-developed system of linguistic alternations, for which the alternative forms are chosen according to the social relationships which exist between the interlocutors of an utterance or between one of them and another person referred to in the utterance. These alternations are independent of, and cut across, all the other kinds of alternation or variation which occur in the language.

> Social dialects do exist in Javanese, and so do geographical dialects; but speech levels are not distributed among groups of different social classes or different geographical regions. Rather, every speaker of Javanese, regardless of his social status or geographical origin, uses all of the speech levels, each level in the appropriate situation depending upon whom he is addressing. (Soepomo 1968:57.)

Linguists have also referred to these levels of respect as a system of "respect forms" or "forms of politeness", or as a "vocabulary of courtesy".[42]

The best-known descriptions of these alternations in English are probably those by Geertz (1960, ch. 17) and by Horne (1961). Uhlenbeck, however, has claimed from his own acquaintance with Javanese that neither should be relied on. He contends (Uhlenbeck 1963:81-2) that Horne's view of this system of levels of respect is overly-simplistic and sometimes downright inaccurate; and he says (Uhlenbeck 1970:449) that Geertz' analysis denies the possible existence of many linguistic forms which actually exist and have well-defined functions in the language. Uhlenbeck also says that Geertz erroneously "give[s] the impression that the use of different speech styles is a static matter [and that] once the social relation between the speech partners is established and the choice of one of the . . . styles is made, one keeps to that speech style in further speech contact" (Uhlenbeck 1970:448).

Instead of such a static, categorical system, Uhlenbeck (1970) and Soepomo (1968) both describe a system of levels of respect which requires a great deal of probabilistic analysis. Uhlenbeck (1970:459) remarks that "in Javanese society, as in many others, social situations in which a speaker may find himself are highly varied and it is therefore difficult to imagine how a rigid system as described by Geertz would be able to function". He claims that instead, "one has to recognize the existence not of <u>one</u> particular Madya-speech style, but a great variety of

[42]The terminology for this system is based on three terms: "krômô" (high respect), "madyô" (intermediate respect), and "ngoko" (low respect). These Javanese words are sometimes transliterated in other ways.

speech styles which have as common characteristics the use of the Madya-forms, but which show different proportions as to the occurrence of Krama-forms. They also allow the speaker to use that particular mixture of respect forms which in his opinion suits the case best" (p.453). "In the area between Ngoko and Krama [i.e. in Madya] the speaker of Javanese has a set of possibilities by which he can regulate the measure of respect which he needs when criteria for the use of respect forms such as age and social position are in conflict" (pp.458-9).

Referring to what he calls the Madyô-ngoko respect level,[43] Soepomo (1968:60) says that "a few Ngoko words may be substituted for either Madyô or Krômô ones, but which words will occur in Ngoko cannot be predicted. The lower the status of the addressee, the more frequent the Ngoko words will be". And referring to what he calls the Bôsô-antyô respect level, he says that it uses Krômô Inggél words to refer to the addressee and "Ngoko words elsewhere, except for occasional Krômô words, the occurrence of which cannot be predicted. The higher the status of the addressee, the more frequently the Krômô words will occur" (Soepomo 1968:60).

A complete stratificational analysis of the Javanese system of levels of respect will therefore require both an eclectic portion of the kind described in this dissertation and a notational device for describing probabilistic disjunction, which device perhaps must be used in both the realization portion and the eclectic portion of the model of the language. However, the main outlines of an appropriate eclectic portion

[43]Uhlenbeck and Soepomo do not use quite the same terminology for the levels of respect.

will be given here, relying on the data given and the analyses made by Soepomo (1968 and 1969) and by Uhlenbeck (1970).

2. The Data.

Uhlenbeck (1970:442) remarks that much of the confusion in the linguistic description of Javanese has arisen from the fact that the terms "krômô", "madyô", and "ngoko" have been used for describing both the status of individual linguistic forms (word stems and affixes) and the status of entire sentences or utterances.[44] These two uses of these terms frequently do not coincide. Thus, to use the terms as Soepomo and Uhlenbeck use them, a Ngoko sentence may very well contain only Ngoko forms, but a Madyô or Krômô sentence would have to be carefully contrived to contain only Madyô or Krômô forms. An ordinary Madyô or Krômô sentence is simply one which contains certain words or affixes which function as markers to show the level of respect which it conveys (Uhlenbeck 1970:442).

Almost all the markers of this respect system are word stems. The affirmative imperative, described by Soepomo (1968:61-2), is the only grammatical construction which differs according to the level of respect; it will not be discussed here. The many terms of address and first and second person pronouns that are used in Javanese will also not be discussed here; although they are used for showing respect, they are really manifestations of a general Javanese practice of making references by means of flowery paraphrases (Soepomo 1968:55), and the distinctions

[44] A stratificational analysis can presumably avoid such confusion by assigning different, though related labels to different levels within the eclectic portion.

among many of these pronouns and terms of address do not readily correlate with other distinctions in the language.

Javanese has, however, three affixes which have alternative forms for different levels of respect. They are listed in Table III.23., with the classification which Soepomo (1968:58) gives for them, and they will be described in this stratificational analysis.

Some concepts (to use Soepomo's term) that are expressible in the Javanese language are each expressed only by single words, while other concepts may be expressed by two, three, four, or five words each. In the latter cases, "the content of each of the Javanese words is the same. The only difference in meaning between them lies in the degree of formality and respect expressed by them" (Soepomo 1968:58). Examples of some concepts expressed by such groups of alternative words, taken from

Table III.23.

Javanese affixes with alternative forms for different levels of respect.

	Ngoko	Krômô	gloss
(1)	di-	dipon-	'(passive)'
(2)	-é	-ipon	'(determinative)'
(3)	-(a)ké	-aken	'(causative)'

Soepomo (1968), Soepomo (1969), and Uhlenbeck (1970), are given in Tables III.24., III.25., III.26., and III.27. The words in these tables are marked as Ngoko, Madyô, Krômô, Krômô Inggél, or Krômô Andap, according to descriptions which Soepomo and Uhlenbeck give for them.

Krômô Inggél words are used for referring to a highly respected person, or to his actions or his possessions (Soepomo 1968:58). "The Krama Inggil words are all related to the human person. There are Krama Inggil words for the human body and for virtually all its parts, for nearly all its vital functions, . . . for birth, death, and common illnesses, . . . for nearly all items of Javanese male and female apparel and for the things a person carries with him or uses daily, . . . for nearly all kinsfolk, . . . and finally . . . for the most common and general human activities such as bathing, sleeping, sitting, . . ." (Uhlenbeck 1970:449). Krômô Andap words are used for referring to any person's actions toward a highly respected person (Soepomo 1968:58). Most of them describe actions that must have a recipient as well as an agent, such as giving, taking, lending, and borrowing (Soepomo 1968:68). There are about 850 distinctively Krômô words, about 35 distinctively Madyô words, about 260 distinctively Krômô Inggél words, and about 20 distinctively Krômô Andap words. For those instances in which a concept must be expressed in a level of respect for which it does not have a distinctive word, Soepomo (1968:63) gives some general rules that help to specify which levels of respect will use the same word; however, those general rules have exceptions.[45]

[45]See, for example, Soepomo's (1969:166) comment about the use of Ngoko rather than Krômô for Madyô.

Table III.24.

A Javanese concept expressed by five different words.

gloss:	'to tell or ask to do something'
Ngoko:	akôn
Madyô:	kèn
Krômô:	kèngkèn
Krômô Inggél:	ḍawoh
Krômô Aṇḍap:	atur

Table III.25.

Some Javanese concepts expressed by four different words each.

	(1)	(2)	(3)
gloss:	'to say'	'to give'	'to arrive'
Ngoko:	kanḍa	wènèh	teka
Madyô:	tjrijos	sukô	dugi
Krômô:	tjrijos	sukô	ḍateng
Krômô Inggél:	ngendika	paréng	rawuh
Krômô Aṇḍap:	matur	tjaôs	

Table III.26.

Some Javanese concepts expressed by three different words each.

	(1)	(2)	(3)
gloss:	'here'	'to call'	'to think'
Ngoko:	iki	undang	kirô
Madyô:	niki	undang	kinten
Krômô:	menikô	undang	kinten
Krômô Inggél:		timbal	penggalih
Krômô Andap:		atur	

	(4)	(5)	(6)
gloss:	'to want'	'ill'	'to follow'
Ngoko:	arep	lara	mèlu
Madyô:	adjeng	sakit	tumut
Krômô:	badé	sakit	tumut
Krômô Inggél:	badé	gerah	tumut
Krômô Andap:			dèrèk

Table III.27.

Some Javanese concepts expressed by two different words each.

	(1)	(2)	(3)
gloss:	'only'	'child'	'just now'
Ngoko:	mung	anaq	mau
Madyô:	mung	anaq	wau
Krômô:	namung	anaq	wau
Krômô Inggél:	namung	putrô	wau
Krômô Andap:			

	(4)	(5)
gloss:	'knee'	'to invite'
Ngoko:	dengkul	ulem
Madyô:	dengkul	ulem
Krômô:	dengkul	ulem
Krômô Inggél:	djengku	ulem
Krômô Andap:		atur

Soepomo (1968:59-61) defines three main levels of respect for Javanese, each of which he divides into three sublevels, for a total of nine sublevels. He describes the social circumstances under which each of these nine sublevels is typically used, and he defines the form of each sublevel in three ways: according to its use of Krômô, Madyô, or Ngoko vocabulary; according to its use of Krômô or Ngoko affixes; and according to its use or non-use of Krômô Inggél and Krômô Andap vocabulary with respect to the addressee of the utterance.[46] His definitions are summarized in Table III.28. For certain aspects of certain sublevels--affixes in Wredô-krômô, word stems in Madyô-ngôkô, and word stems in Bôsô-antyô--Soepomo (1968:60) says that a speaker of Javanese may use two kinds of forms in a proportion which he is allowed to adjust to show even more finely the relative social distance between himself and the addressee.

Uhlenbeck (1970:452-3) lists only five speech styles for Javanese. However, he gives his list in conjunction with an emphatic statement that Krômô and Ngoko words can be used in various proportions in Madyô sentences. That emphasis may have led him to ignore the fact, which he mentions both before and after (pp.449,454), that Krômô Inggél words can be used in Madyô sentences to refer to the addressee; and a similar preoccupation may have led him to omit mention of proportioned variation among levels of words or affixes in the Krômô and Ngoko levels of respect. With these exceptions, Uhlenbeck's analysis of the levels of respect for Javanese sentences is compatible with Soepomo's.

[46] "The use of Krômô Inggél words for the addressee always implies the use of Krômô Andap to refer to the speaker and his actions toward the addressee" (Soepomo 1968:59fn).

Table III.28.

Levels and sublevels of respect, as given by Soepomo for Javanese, with their characteristics.

level of respect	sublevel of respect	vocabulary (word stems)	affixes	addressee treated as highly respected
Krômô	Muḍô-krômô	Krômô	Krômô	yes
	Kramantôrô	Krômô	Krômô	no
	Wreḍô-krômô	Krômô	Krômô or Ngoko	no
Madyô	Madyô-krômô	Madyô (Krômô if no Madyô word stem)	Ngoko	yes
	Madyantoro	Madyô (Krômô if no Madyô word stem)	Ngoko	no
	Madyô-ngôkô	Madyô (Krômô if no Madyô word stem) or Ngoko	Ngoko	no
Ngoko	Bôsô-antyô	Krômô or Ngoko	Ngoko	yes
	Antyô-bôsô	Ngoko	Ngoko	yes
	Ngoko-lugo	Ngoko	Ngoko	no

3. Categorical Parts of the Necessary Eclectic Portion.

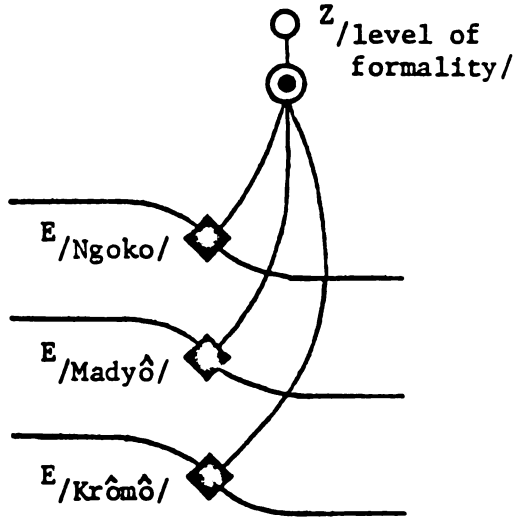
a. Outline of the presentation. There are large parts of the Javanese system of levels of respect which will require probabilistic analysis, using weighted inputs to determine proportioned outputs. However, the present analysis of the eclectic portion of Javanese can say which parts of it can be described categorically, can make a categorical analysis of those parts of it, and can suggest the kinds of probabilistic analysis that will be needed for the other parts of it.

b. Data requiring probabilistic analysis. Soepomo (1968:56-9,74-6) describes and gives examples of how the level of respect with which a sentence is spoken depends on the degree of formality which exists between the interlocutors and on the social status of the addressee. "The greater the degree of respect and formality in an utterance, the greater the politeness shown" (p.56). "The degree of formality in the relationship determines the selection of the main level: when one speaks to someone whom one considers distant, . . . Krômô will be used; when one speaks to someone whom one considers close, . . . Ngoko will be used; if the addressee is of intermediate distance Madyô will be used. The social status of the addressee determines whether or not Krômô Inggél words will be used in referring to him" (p.74). He admits, however, that "it is difficult to make generalized rules about the selection of the proper speech level, since the decision as to the degree of formality in a relationship is a subjective one. Three things, however, seem to be very important in determining to what extent a given addressee should be considered distant. These are 1) familiarity; 2) the type of kinship relationship involved within a family, and, outside of the family,

superiority in social standing; and 3) age" (p.75).

These statements suggest that the eclectic tactic pattern of Javanese should contain the span

(58)



They also suggest that all the parts of the eclectic portion which lie between these ECLECTIC DIAMOND nodes and the eclectic interface must operate in a probabilistic way. The chiloeclectic tactic pattern will presumably contain probabilistic spans of some sort dominated by some sort of nodes that may be labeled as ^{CZ}/familiarity/, ^{CZ}/kinship relation/, ^{CZ}/social superiority/, and ^{CZ}/age difference/. But the things which will be observed across the eclectic interface will be scalar values, not options; and the activation which runs along the line segments of the eclectic projection pattern to activate the chiloeclectads of such probabilistic spans will represent weighted values, not the categorical presence or absence of observable facts of human experience. The activation which runs downward from such chiloeclectads will also be weighted activation, and it will reach one or another of the eclectads shown in (58) according to the total amount of such activation which has

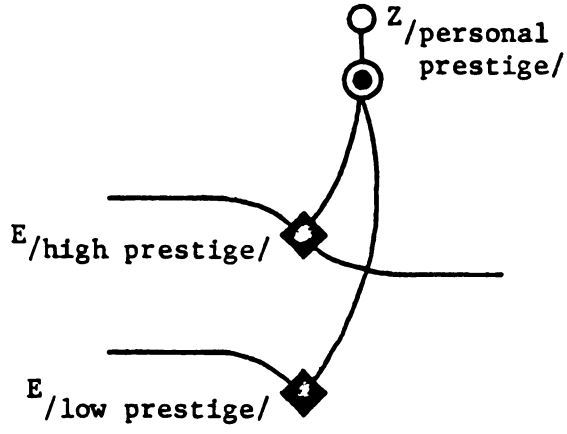
entered the chiloeclectic alternation pattern.

Moreover, Soepomo and Uhlenbeck both say that a speaker of Javanese, when using certain levels of respect, may use two kinds of forms, mixing them in a proportion that will more precisely indicate the social distance between himself and the person whom he is addressing. Soepomo describes this possibility for three sublevels of respect: Wredô-krômô, which is the same as Kramantôrô except that some Ngoko affixes may be used; Madyô-ngôkô, which is the same as Madyantoro except that some Ngoko word stems may be used; and Bôsô-antyô, which is the same as Antyô-bôsô except that some Krômô word stems may be used. Perhaps, the same weighted activation that runs through the chiloeclectic alternation pattern in order to activate one of the eclectads shown in (58) will also provide more or less activation for some sort of weightable eclectad; and that weightable eclectad will in turn control an increase in the proportion of Ngoko affixes, Ngoko word stems, or Krômô word stems that are activated during downward transduction of an utterance. However, the possibility of such a weightable eclectad will not be investigated further here.

c. <u>The analysis of Krômô Inggél forms.</u> Although Soepomo gives a rather full discussion of the use of Krômô Inggél, his statements are not entirely consistent with one another. Thus, he says that "one addresses a priyayi [i.e. a patrician] with Krômô Inggél words regardless of the main speech level being used. One does not use Krômô Inggél words in addressing a wông tjiléq [i.e. a plebeian]" (Soepomo 1968:74); but he also says that "within priyayi families Krômô Inggél is used in addressing older members. Among the wông tjiléq, the common folk, Krômô Inggél

words may be used in addressing an older person or a superior if the addressee is not a relative. Within wông tjiléq families, however, Krômô Inggél is not used" (p.59). It must be remembered, though, that Krômô Inggél words are used with reference to <u>any</u> highly respected person, not merely with reference to a highly respected addressee. It would seem, therefore, that a person who is speaking Javanese must evaluate every person to whom he refers in his utterance and must decide whether that person is to be classified as highly respected. To make this classification in the eclectic sector, every person referred to in an utterance would have to be associated with a separate span of the eclectic tactic pattern having the structure

(59)



and the use of such spans in an eclectic portion would cause two serious difficulties: a special notational device would be needed for relating each such span to the semological representation of the person with which it is associated, and the number of zygads in the eclectic portion of Javanese would no longer be fixed, but would increase along with the number of persons known by the speaker or referred to in his utterances.

A person's status as highly respected therefore seems to be something which should be handled, not in the eclectic portion at all, but

in the semology of the realization portion. Such a status should be the realization of certain facts which are perceived about him across the semantic interface of the language; it should appear within the semology as one of his semological attributes; and it should be available for realization in the lexemic stratal system whenever he is referred to. But whether a person's highly respected status comes from perceptions at the semantic interface or at the eclectic interface, it must be represented in the semology, since it conditions the realizations of things which are related to him, of actions for which he is the actor, and even (for Krômô Andap words) of actions of which he is the recipient.

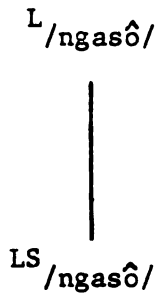
d. The network for categorical alternation. All of the categorical alternations within the eclectic portion of Javanese are to be found in its eclectic reversible sign pattern, between the ECLECTIC DIAMOND nodes labeled as eclectads and its eclectic disjunction clusters. An analysis of categorical alternations will omit those three sublevels of respect described by Soepomo--Wredô-krômô, Madyô-ngôkô, and Bôsô-antyô--in which the speaker uses a proportioned alternation between two kinds of forms. The present analysis will therefore cover the other six sublevels or kinds of respect described by Soepomo. The use of one or another of these kinds of respect is conditioned in two ways: by the activation of exactly one of the three eclectads dominated by ^{Z}/level of formality/, viz. ^{E}/Ngoko/, ^{E}/Madyô/, and ^{E}/Krômô/ (abbreviated in the following diagrams as ^{E}/N/, ^{E}/M/, and ^{E}/K/); and by the activation or non-activation of conditions in the semology which require the use of Krômô Inggél or Krômô Andap forms. Although the latter conditions are not, strictly speaking, part of the eclectic portion, the disjunctions which they

condition are so intimately joined to the eclectic disjunction clusters that they cannot conveniently be separated.

Because the level of respect has no effect on the grammatical construction of Javanese sentences (except for the affirmative imperative, which will not be discussed here), the same lexotactics can be used for the entire language. The "concepts" to which Soepomo refers will therefore be treated here as lexemes, and his "words" or "affixes", which belong to individual levels of respect, will be treated as alternative lexemic signs realizing those lexemes. (The Ngoko "word" for each "concept" will be written in the symbol for the lexeme.)

Almost all of the lexemes of Javanese have realizations that are unaffected by the level of respect of the sentence; for example, ^{L}/ngasô/ 'to rest' is always simply realized by ^{LS}/ngasô/ according to the trivial formula

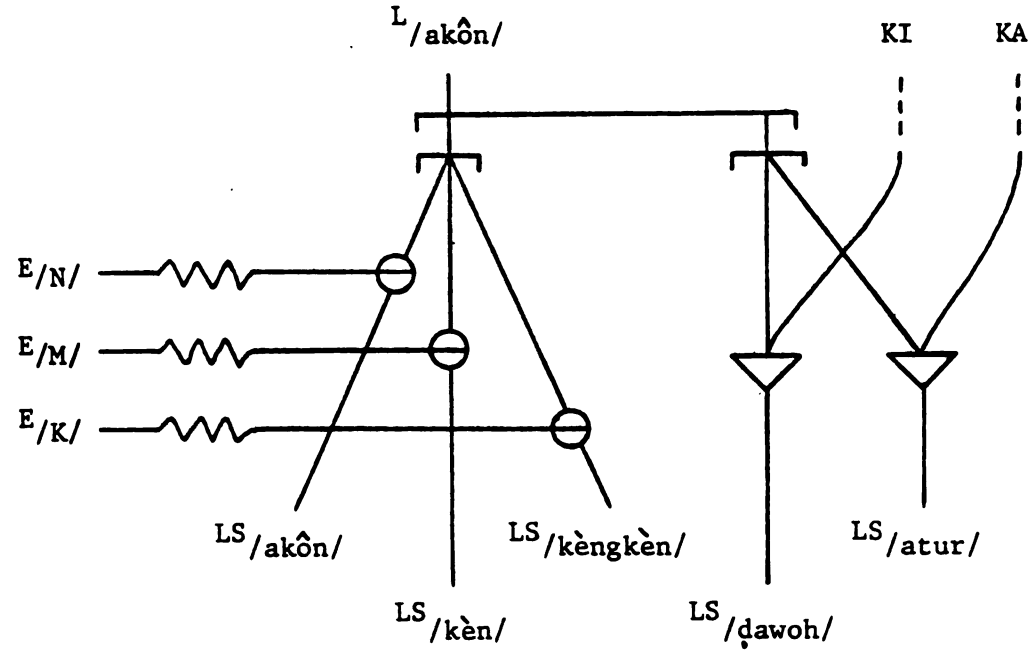
(60)



which has no GATE node and therefore produces no activation within the eclectic portion.

There is at least one Javanese lexeme, for which the data is given in Figure III.24., which can be realized by any of five lexemic signs, according to the formula

(61)

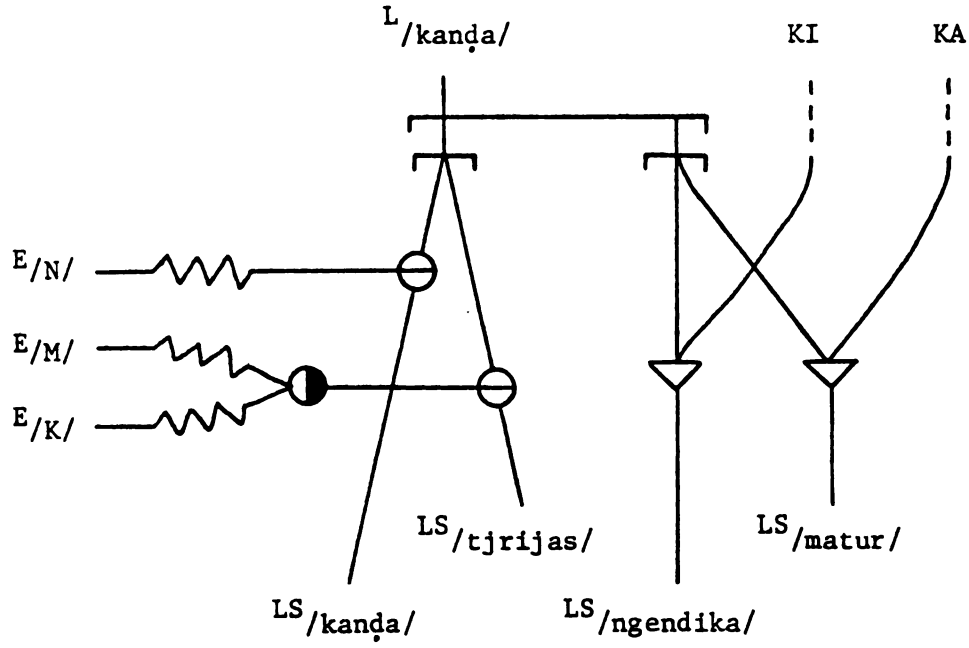


In this network, the upward line segments labeled "KI" and "KA" are joined to whatever constructions in the semology condition the choice of Krômô Inggél and Krômô Anḍap words, respectively. The downward node immediately below ^{L}/akôn/ is an ORDERED OR node because the occurrence of a Krômô Inggél or Krômô Anḍap word precludes realization through the eclectic disjunction cluster. During downward transduction, if either "KI" or "KA" is activated, ^{L}/akôn/ will be realized by ^{LS}/ḍawoh/ or ^{LS}/atur/, accordingly, regardless of which GATE node is opened. Only if ^{L}/akôn/ is activated and "KI" and "KA" are not will the activation run downward to ^{LS}/akôn/, ^{LS}/kèn/, or ^{LS}/kèngkèn/, depending on which eclectad is activated and which GATE node is opened. During upward transduction, if any of the lexemic signs is activated, activation will run upward to ^{L}/akôn/. But if either ^{LS}/ḍawoh/ or ^{LS}/atur/ is activated, activation will also run upward to "KI" and "KA", accordingly, but no activation will be produced within the eclectic portion. If any of the other three lexemic signs in the network fragment is activated, an

activation will be produced in the eclectic portion, running to the appropriate eclectad.

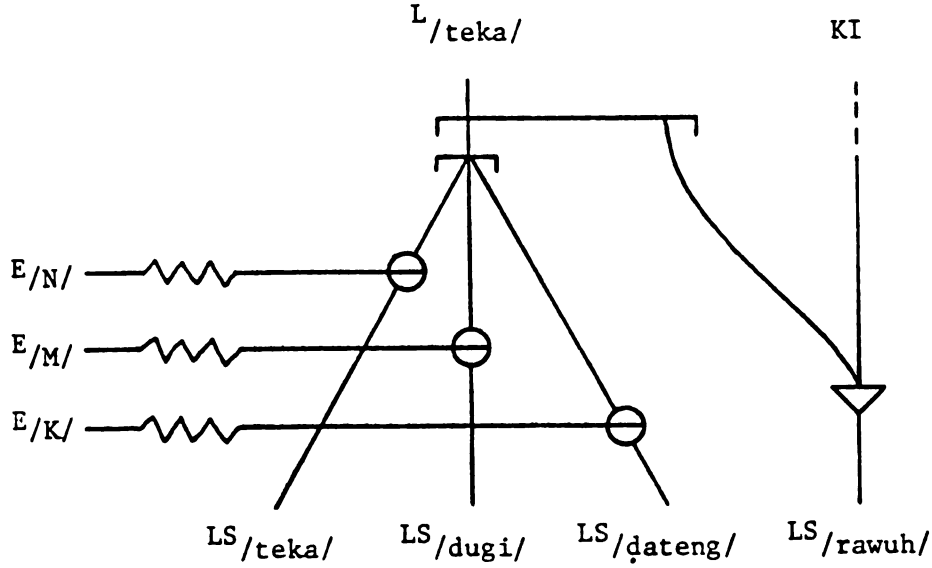
Other lexemes of Javanese are realized according to many kinds of formulas more complex than that for ^{L}/ngasô/ and less complex than that for ^{L}/akôn/. Some, such as ^{L}/kaṇḍa/ (Table III.25.(1)), can be realized by any of four lexemic signs because two levels of respect share the same words for their meanings.

(62)



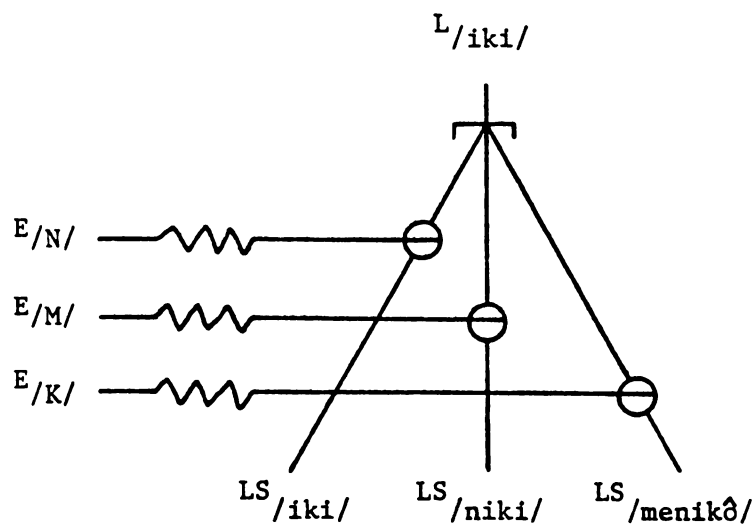
Others, such as ^{L}/teka/ (Table III.25.(3)), realize meanings that apparently do not allow a Krômô Aṇḍap word.

(63)



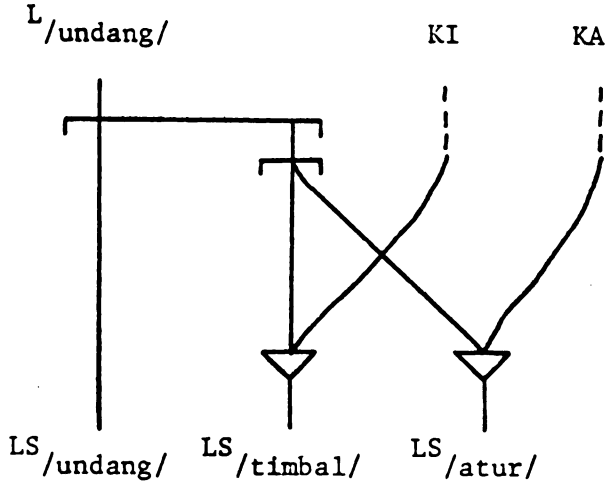
The lexemes which can be realized by any of three lexemic signs have several kinds of realization formulas. L/iki/ (Table III.26.(1)) is never realized by a Krômô Inggél or Krômô Andap word.

(64)



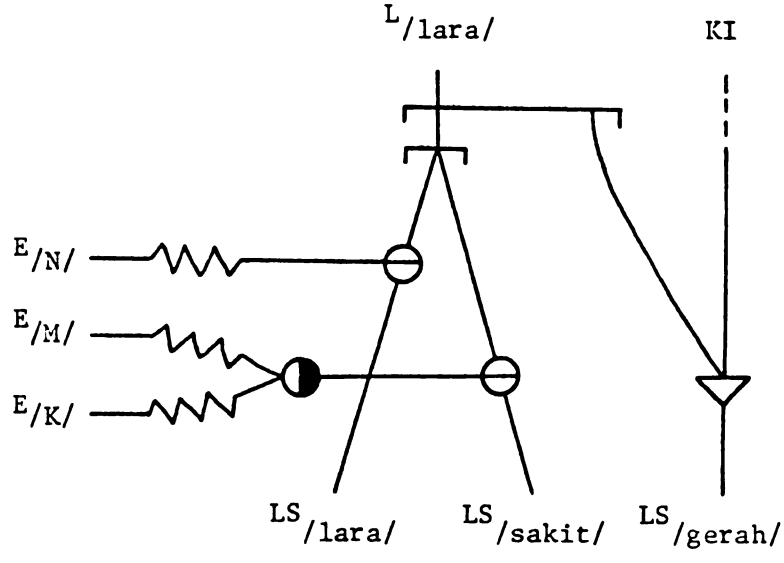
On the other hand, L/undang/ (Table III.26.(2)) has a realization formula without an eclectic disjunction cluster.

(65)



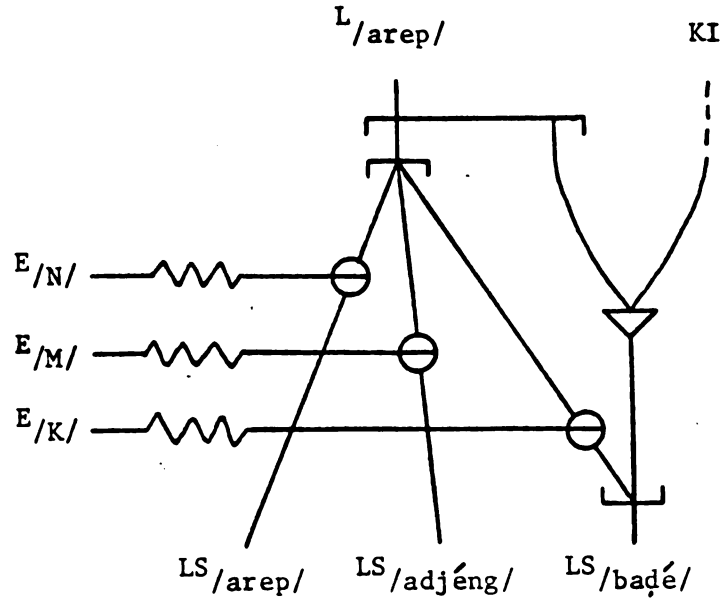
L/lara/ (Table III.26.(5)) has a realization formula like (62), except that it has no Krômô Andap word.

(66)



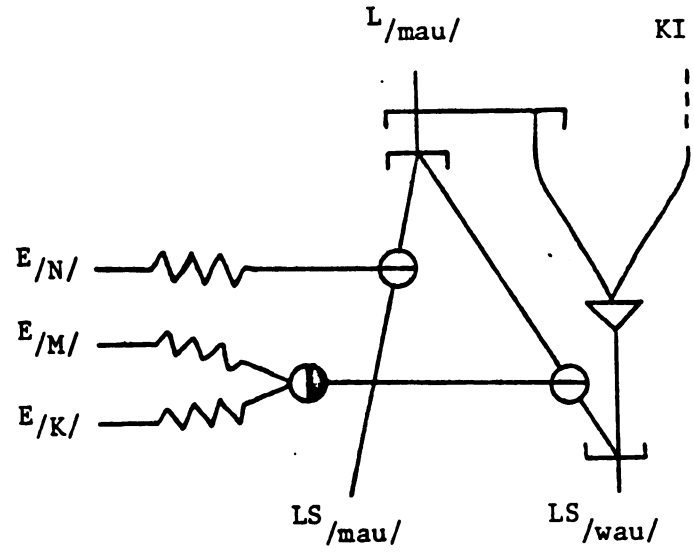
The formula for L/arep/ (Table III.26.(4)) has an ambiguous lexemic sign which may be transduced upward either through or not through the eclectic disjunction cluster

(67)



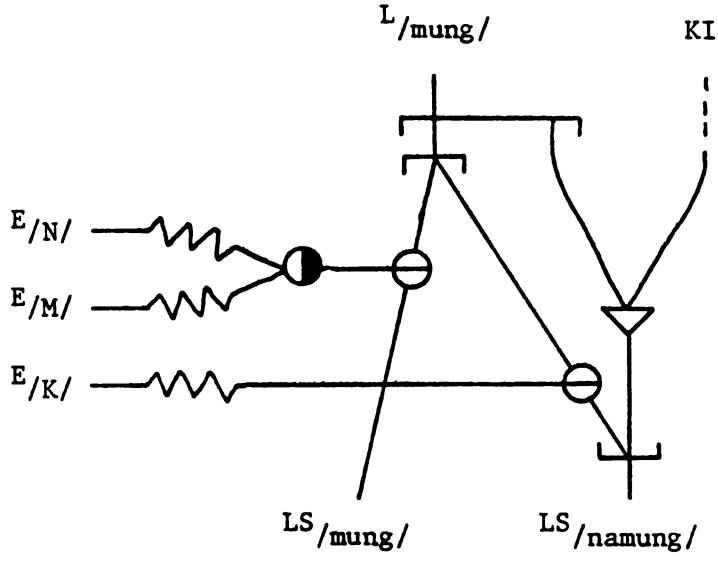
The lexemes which can be realized by either of two lexemic signs also have many different networks in their realization formulas. Some, such as ^{L}/anaq/ and ^{L}/dengkul/ (Table III.27.(2),(4)) require no eclectic disjunction clusters, and have formulas like (65) except that their meanings apparently do not allow Krômô Andap words. The realization of ^{L}/mau/ (Table III.27.(3)) follows the general rule given by Soepomo (1968:63) that a lexeme which can be realized by only two lexemic signs should be realized by the same lexemic sign for Krômô, Madyô, and Krômô Inggél.

(68)



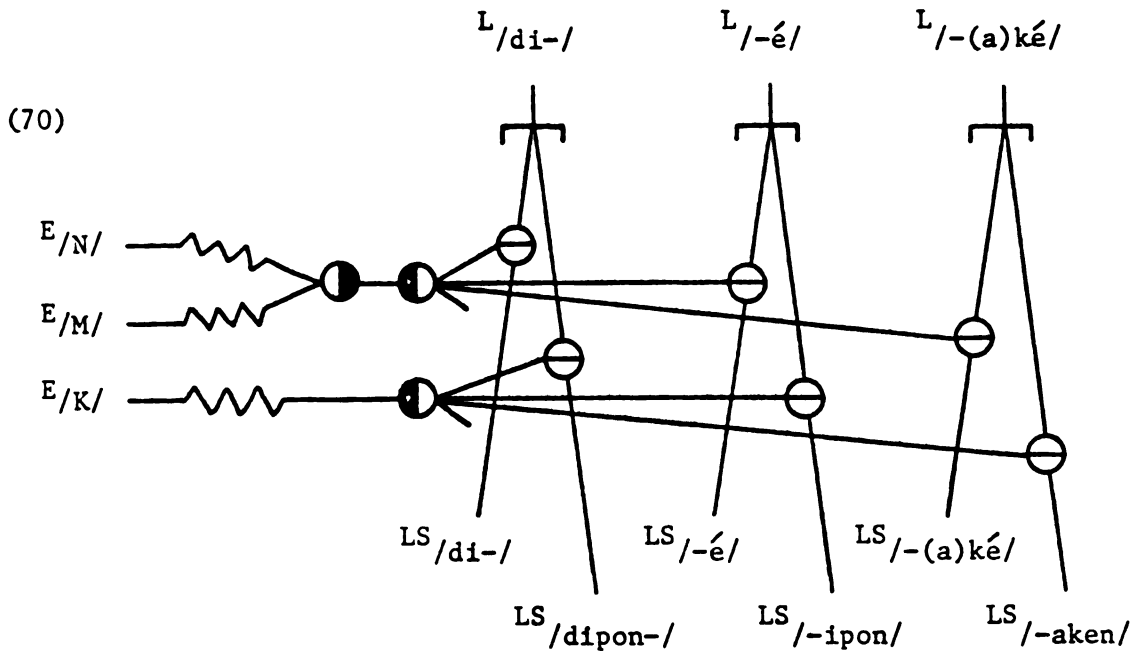
However, L/mung/ (Table III.27.(1)) is an exception to that general rule

(69)



as are the three affixes which vary according to the level of respect for which they are used (Table III.23.).

(70)



The network fragments in (64), (62), (68), (60), and part of (70) are combined in Figure III.20., which shows all of the possible kinds of conditioning that can occur in the lexemic alternation pattern of Javanese,[47] both by the three eclectads ^{E}/Ngoko/, ^{E}/Madyô/, and ^{E}/Krômô/, and by the semological constructions which condition the use of Krômô Inggél and Krômô Andap words.

[47]Soepomo (1968:64-6) notes that some corresponding Ngoko and Krômô words are phonologically similar, and he gives examples of nine kinds of such similarity; but he says that "the exact rules for the formulation of the predictable Krômô forms are quite complicated and further research will need to be done before they can be formulated adequately" (pp.64-5). All of these alternations have therefore been treated as suppletions, and these eclectic disjunction clusters have all been placed in the lexemic alternation pattern.

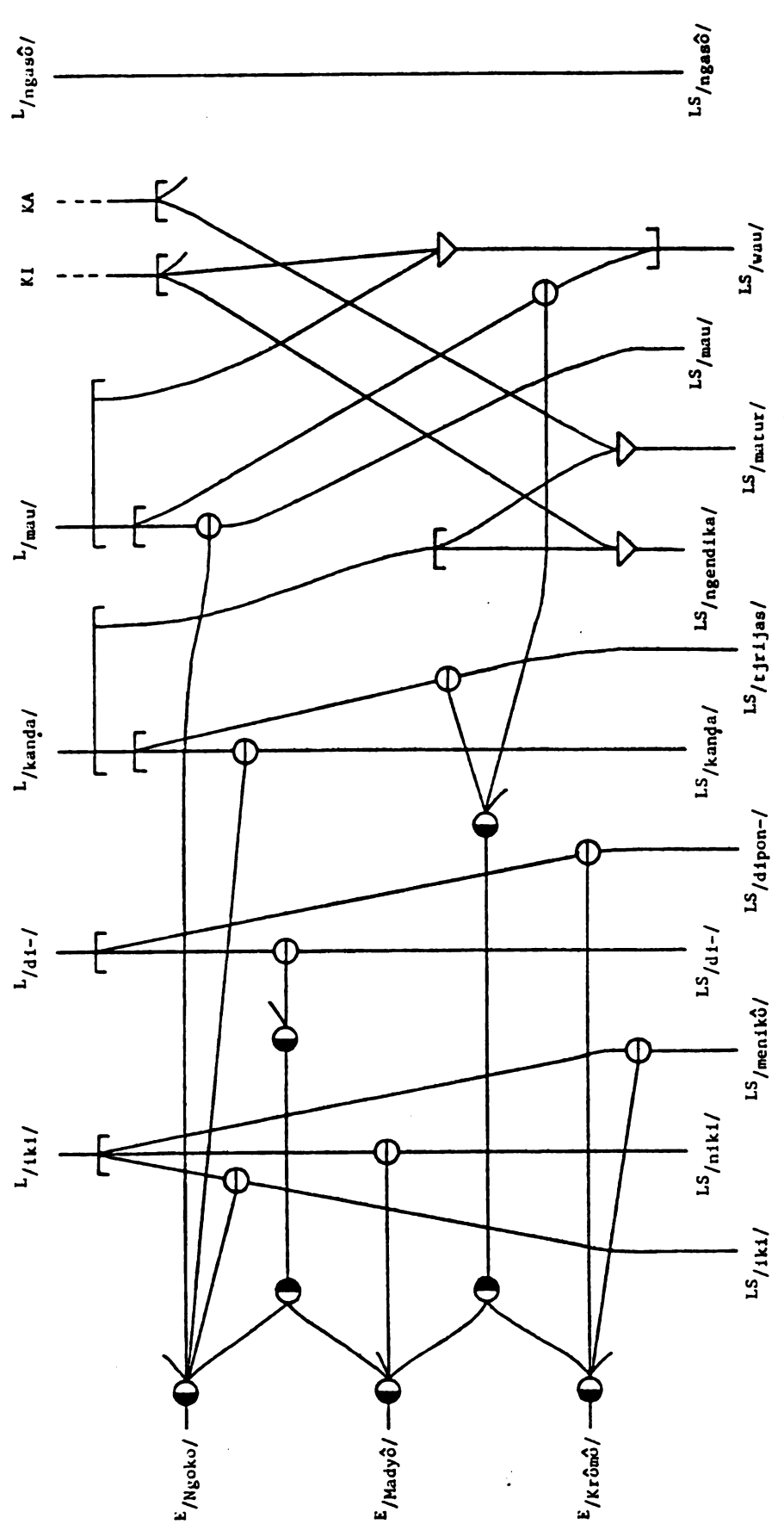


Figure III.20.

Examples of the possible connections within the eclectic reversible sign pattern of Javanese.

CHAPTER IV. CONCLUSIONS.

A. Extension of the Domain of Linguistic Competence.

This dissertation has shown that linguistic alternations which are both categorical and extra-linguistically conditioned can be modeled with the same precision as categorical, intra-linguistically-conditioned alternations. It thereby extends the domain of linguistic competence to include all linguistic phenomena discussed in Chapter I, to the extent that they exhibit any categorical alternation, whether such alternation is conditioned from inside or outside language.

B. Prospects for Future Research.

1. A List of Unanswered Questions.

In addition to presenting a formal model for the eclectic portion of a language, this dissertation has raised or agitated at least three general questions about the proper organization and content of a stratificational model of language. The fact that certain parts of the eclectic portion perform differently during upward and downward transduction raises again the question of how far a stratificational model should be expected to use the same network for transduction in both directions. The classification of linguistic phenomena which is made in Chapter I suggests that a stratificational model could handle all kinds of linguistic phenomena if it had, in addition to an eclectic portion, a notational device for handling probabilistic alternation. This dissertation therefore implies

that the theoretical questions involved in the analysis of such alternation should be investigated, and that such a notation should be developed. Some questions about the performance of an eclectic portion have had to be avoided in this dissertation because they involve relationships which exist, across the linguistic interfaces, between the form and substance of a language. The need for such avoidance implies that a complete model of language will require a theory and a model of such relationships, and of how the interfacial processes perform in both directions across the interfaces of language.

This dissertation will not further belabor the need for a stratificational theory of probabilistic alternation. However, it will conclude with some remarks about matters related to the interfacial processes and the bidirectional unity of the linguistic network.

2. Interfacial Processes and the Adjoining Linguistic Networks.

Hjelmslev's distinction between form, substance, and purport is a basic assumption of stratificational linguistic theory, and the schematic diagrams in Figures II.1. and II.2. include several substances and the interfaces between them and the form of language. However, the interfacial processes, which project the form of each language across the interfaces to form those substances, have merely been assumed in this dissertation; the only linguistic descriptions actually given here have been descriptions of linguistic form. The ways that the interfacial processes of languages function remain to be investigated; and those processes will have to be understood before the other problems which involve the interfaces of language can be satisfactorily dealt with.

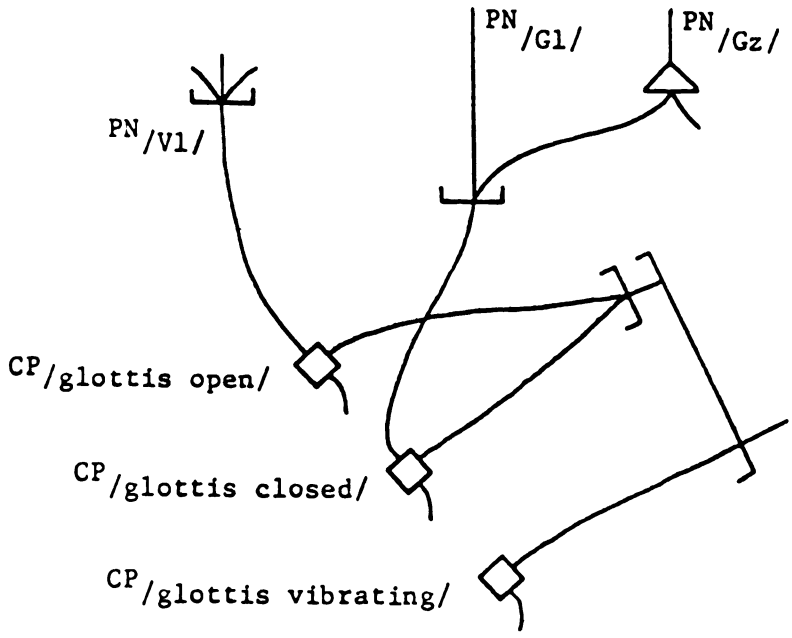
This model of language has assumed that the interfacial processes

of each language originate within the form of that language and project part of that form across its interfaces, thereby forming linguistic substances within the purports onto which that form is projected. However, this one-way projection of linguistic form across the interfaces must be part of linguistic competence. In ideal performance, there must be interfacial processes for both decoding and encoding, operating across the linguistic interfaces in both directions; and these processes may very well not be simple converses of each other. As Lyons (1969:110) says, speaking of the processes for the phonic interface, "the factors identified by acoustic analysis are not always relatable in a very straightforward manner to the factors traditionally regarded as criterial in the distinction of different speech-sounds by the articulatory phonetician".

Even though a more adequate linguistic model may have separate interfacial processes for decoding and encoding a certain part of an utterance, those processes must somewhere by joined to the same line segment or node within the linguistic network, or else the speaker and the hearer of the utterance would not be using the same language. Future research will have to devise a notation which can show the connections of such decoding and encoding processes to the rest of the linguistic network.

Future research will also have to determine how much of the linguistic model near the interfaces must have two forms, one to be used during decoding and one to be used during encoding. For example, the description of Yana given in Chapter III has a network fragment ((31), repeated here for convenience)

(1)



which has chilophonemes that are intended to correspond as closely as possible to the articulatory movements used for decoding utterances and producing speech sounds. However, if the chilophonemes shown in (1) do not correspond to any audible features of those same speech sounds, those chilophonemes will be usable only for encoding, and another set of chilophonemes will be needed for decoding those sounds.

3. The "Meaning" of Eclectic Incoherence.

The eclectic performance model described here for upward transduction, which uses the network shown in Figure II.5., is able to show whether an utterance is eclectically inconsistent with itself. However, this model says nothing about what is to be done with an utterance after it has been identified as eclectically self-inconsistent. Further development of this part of the performance model must wait until theoretical ideas have been better developed about the functioning of the interfacial processes. According to the performance model which is described here,

an utterance is known to be eclectically inconsistent with itself when a CONSISTENCY COUNTER finds that a certain probatory activation is inconsistent with all of the probatory activations which it has previously accepted for the same utterance. This is compatible with the "principle of presumed eclectic consistency" (which has been assumed to guide upward transduction through a certain kind of network) according to which the hearer or reader of an utterance continues to assume that the utterance represents the same eclectads until he is forced to notice a change in those eclectads.

It may be that, in a more adequate model, the CONSISTENCY COUNTER's rejection of a probatory activation will be the thing which forces the hearer or reader of an utterance to notice that the eclectads which that utterance represents have changed. It may also be that, in a more adequate model, an utterance will be divided into "domains of eclectic self-consistency", with the end of each such domain signaled by the need to notice a change in the eclectads. And, in a more adequate model, it may be that a CONSISTENCY COUNTER which rejects a probatory activation will then be reset as it was when transduction of the utterance began, and that the probatory activation rejected for the old domain of eclectic self-consistency will be accepted as the first probatory activation for a new domain, which will continue until a CONSISTENCY COUNTER again rejects a probatory activation.

However, such a model cannot be constructed without a better idea of how the interfacial processes function. The fact that the utterance is eclectically incoherent, the different sets of eclectads which it represents within its several domains of eclectic self-consistency, and the differences between those several sets of eclectads are all

themselves facts of human experience. It remains to be determined just how those facts are to be projected onto and represented in the experience of the hearer or reader of the utterance.

4. Choices between the Semantic and Eclectic Interfaces.

The linguistic model shown in Figure II.5. has an eclectic substance and a semantic substance which are both projected onto the same purport, viz. human experience. Such a projection of two substances onto one purport should cause no difficulties. A purport is not changed in any way by any of the substances which are projected onto it, even though every language produces its own, unique substance when its form is projected onto a given purport (Hjelmslev 1961:50-4,76-7). Two substances projected onto the same purport by two forms within different portions of the same language should cause no more difficulty than two substances projected onto the same purport by two forms within two different languages. If this were not so, linguists could not talk about phonology or write about graphonomy. Chafe (1962) has noted that every utterance about phonology must (in the terminology used here) project both a phonic substance and a semantic substance onto that part of human experience which consists of sounds produced by the human vocal tract. In order to speak about speech-sounds, we must speak speech-sounds.

In like manner, the semantic substance and the eclectic substance of the same language may both be projected onto a single part of human experience during the production of an utterance. Thus, in order to utter the Javanese sentence[1]

[1]This sentence is from Uhlenbeck (1970:449).

(2) Mangga, wa, pinarak mriki. 'Please, uncle, sit down here.'

a certain part of human experience (envisioned as a certain human being whom the speaker knows to be his uncle) is perceived twice, across both the semantic and the eclectic interfaces. Across the semantic interface, this human being is perceived by some semological form which is eventually realized by the word wa 'uncle'; the same semological form will require that the Krômô Inggél word pinarak be used as the realization of the concept 'sit down'. Across the eclectic interface, the same human being is perceived by some eclectic form which will help to activate the eclectad ^{E}/Madyô/.[2]

The question whether a certain part of human experience should belong to the semantic substance or to the eclectic substance of a certain language will cause no problem if it is assumed that the stratal systems of a semology are organized like all the other stratal systems of a language. Human experience which can be described most economically by realization through an ordinary stratal system will be handled by the semantic substance; human experience which can be described most economically by a reversible sign pattern and a device for checking the consistency of an utterance will be handled by the eclectic substance. Further investigation of this matter will have to wait for clearer theoretical ideas about the functioning of the interfacial processes and about the organization of the semology.

[2]Madyô-krômô, i.e. Madyô with Krômô Inggél for the addressee, is an appropriate level of respect for a young person to use in addressing an older member of his own family (Soepomo 1968:60).

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