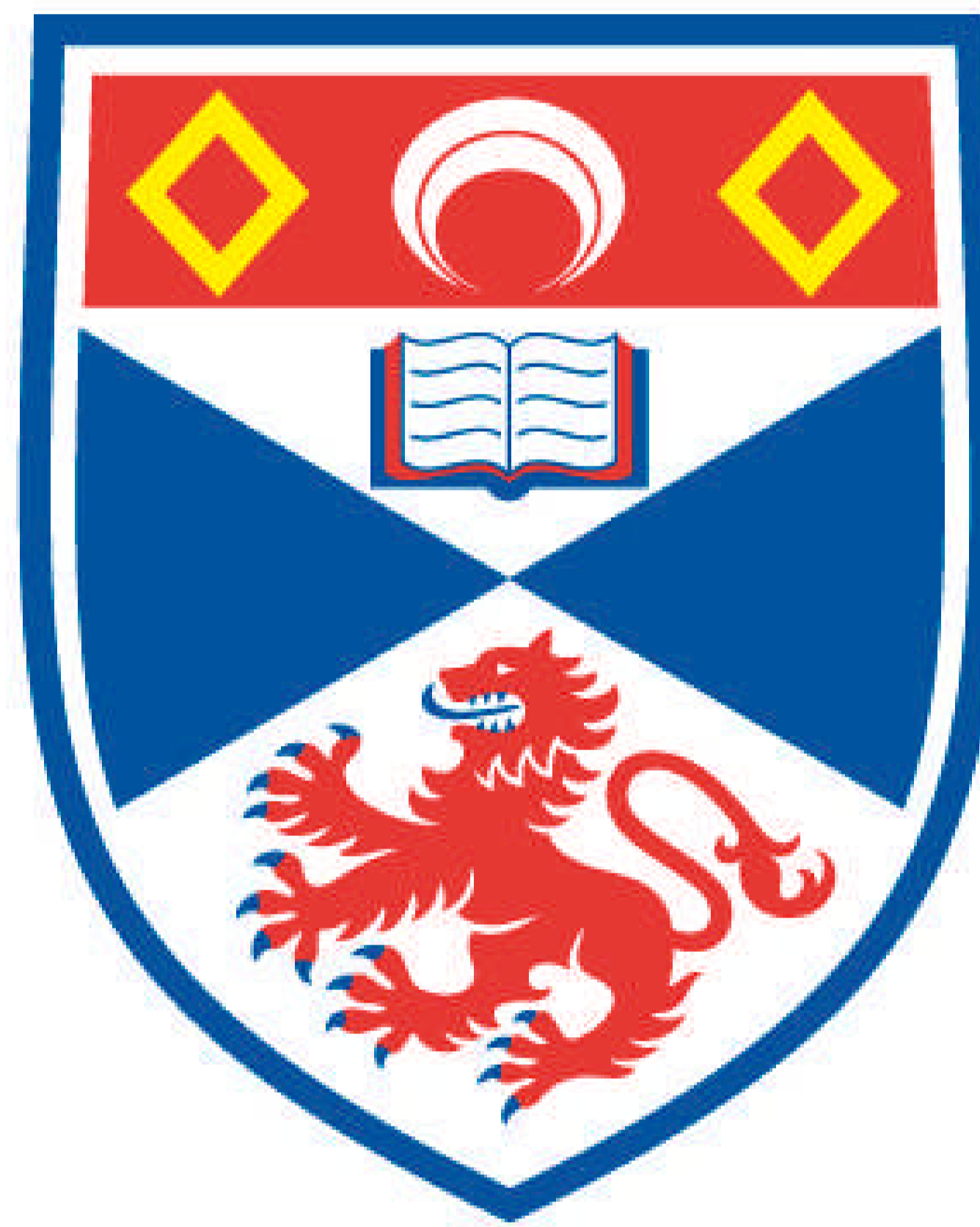


**THE PHONEMATICS, PHONOTACTICS AND PARA-
PHONOTACTICS OF SOUTHERN STANDARD BRITISH
ENGLISH**

Fawzi El-Shakfeh

**A Thesis Submitted for the Degree of PhD
at the
University of St Andrews**



1987

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THE PHONEMATICS, PHONOTACTICS AND PARA-PHONOTACTICS
OF SOUTHERN STANDARD BRITISH ENGLISH

By

Fawzi El-Shakfeh

A Thesis submitted for the Degree of Doctor of
Philosophy in the University of St. Andrews

March, 1987



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The Phonematics, Phonotactics And Para-Phonotactics
Of Southern Standard British English

By: Fawzi El-Shakfeh

ABSTRACT

As the title indicates, this thesis is concerned with a thorough investigation of the "phonematic", "phonotactic" and "para-phonotactic" sub-systems of Southern Standard British English from the view-point of the theory of Axiomatic Functionalism.

Like a sonata, this work is divided into three PARTS, and each PART is divided into a number of Chapters. Some of the Chapters are further divided into yet smaller Sections for simplicity reasons.

PART I, which comprises eight relatively short Chapters, prepares the theoretical background to the actual descriptive account in PARTS II and III. The Axiomatic Functionalist (henceforth A.F.) views with respect to notions like "phoneme", "distinctive features", "position", "the relationship between phonology and phonetics", to mention but a few, are evaluated in Chapters 2, 3, 4 and 7 and briefly compared with analogous ideas deployed and propagated by other linguistic schools of thought.

The status of the "phonological" sub-discipline and the "para-phonotactic" sub-system in the overall structure of the theory of A.F. is discussed in Chapters 1 and 8, respectively.

In Chapter 5, however, the significance of the A.F. principle of "functionality" and the relevance of the general concepts of "semiotic economy" and "availability of alternative choice" are highlighted and underlined.

While Chapter 6 attempts to shed more light on the A.F. conception of "neutralization" and "archiphoneme", Chapter 7 considers the importance of the notions "distributional unit" and "archiposition" and explains what is meant by the concept of "self-containedness" with reference to phonotactic structures. On the basis of the discussion of the latter concept, three basic types of phonotagm are subsequently established, i.e. "wholly attested", "partly attested" and "potential" phonotagms.

The "Supplement" to Chapter 6 is specifically concerned with outlining our view with respect to the A.F. ontological distinctions and relationships which hold between "linguistic theory", "linguistic description" and "phenomena", and their significance for the recognition of "neutralization" and the establishment of "archiphonemes".

The theoretical concept of "functional amalgamation" (which is assumed to be specific to A.F.) is briefly considered in Chapter 7 and critically re-evaluated in Chapter 6 of PART II.

Against the foregoing theoretical background in PART I, the investigation of the "phonematic" and "phonotactic" subsystems of the phonology of Southern Standard British English is performed in PART II. Due to the diversity of the phenomena, PART II is divided into seven Chapters of varying length.

Chapter 1, for instance, deals with identifying the total number of consonant phonemes in the language and their distinctive features. In the process of the descriptive act in this Chapter, 20 consonant phonemes and 5 sets of distinctive features are functionally identified and established. Following this, the established phonemes and their distinctive features are grafted onto a newly established model called a "Lattice". An "Extended" version of the established basic "Phonematic Lattice" sums up the particulars of previous arguments in the Chapter and illustrates how this specific type of model can account not only for the relationships which hold between the phonemes and their distinctive features, but also for those which hold between the phonemes and features, on the one hand, and the archiphonemes, on the other.

The set of all the established consonantal archiphonemes in the system and the neutralization-rules which govern their generation are exhaustively considered in Chapter 2 of PART II (where 9 neutralization-rules are formulated to account for the generation of 8 archiphonemes).

The vocalic system of the language under consideration - inclusive of the vowels, semi-vowels, archiphonemes and their distinctive features - is discussed in Chapter 3 of PART II. This system is taken to consist of as few as 6 basic nuclear phonemes, 2 sets of distinctive features and 3 postulated archiphonemes. The relationships which hold between the basic nuclear phonemes and their distinctive features, as well as between these and the established archiphonemes, are mapped out in a number of specifically constructed "Phonematic

Lattices". The intrinsic identity and distinctive function of each nuclear phoneme and archiphoneme in the system is demonstrated in terms of the set of oppositions into which the element in question is capable of entering. The consistency and adequacy of the much-buffeted terms "diphthong", "monophthong" and "triphthong" - which appear in most descriptive accounts of the vocalic system of Standard English - are critically examined in the same Chapter.

In the "Supplement" to Chapter 3, we discuss and refute the consistency of the A.F. view which postulates a commutation in the nuclear position between a vocalic element and "zero".

Since each of the established phonemes and archiphonemes in Standard English is noted to demonstrate specific distributional potentials within attested phonological forms, Chapter 4 negotiates the possibility of establishing a single "distributional unit" for the purpose of accounting for the distribution of elements in major-type phonotactic contexts. The pros and cons of earlier A.F. methods of representing distributional units are discussed and dispensed with in favour of a simpler, more illuminating and more adequate representational device. The Mulderian concept of "semi-clusters" in the system is also criticised and rejected.

However, in order to facilitate the checking procedure - and at the same time determine the adequacy of the established model in Chapter 4, a "Supplement" containing the different types of post-nuclear phoneme-combination in the system has been added.

Chapter 5 of PART II is devoted to establishing the intrinsic identity and distinctive function of each consonant phoneme and archiphoneme in Standard English. The exact positional and archipositional occurrences of each phoneme and archiphoneme in the established distributional model and its commonest types of realization are included in two kinds of statement, i.e. "statements of distribution" and "statements of realization".

On further investigation of the different possible types of phonotactic construction in Chapter 6, it emerges that a number of subsidiary types of phonotactic structure require establishment in order to accommodate those phenomena in the language which are a priori excluded from occurring in the major-type distributional unit. Since the A.F. concepts of "upper" and "lower" limits of distinctive function and the phenomenon of "under articulation" are noted to play a crucial role in identifying the nature of all non-major type phenomena, they are specifically singled out for discussion. On the basis of the particulars of the arguments in the Chapter, a coherent "Methodology" is developed for distinguishing between "major"-type phonotagms and "minor"-type phonotagms in the system. The "Methodology" contains "Two General Hypotheses" and "Seven Syllabification Criteria". As part of this "Methodology", six (empirically tested) parameters are used in conjunction with the "Two General Hypotheses" for the classification of all types of phonotagm in Standard English in one single taxonomic grid. However, before Chapter 6 is brought to a close, three types of problem

related to structural ambiguity are briefly outlined and resolved.

In view of the conclusions which have been obtained in Chapter 6, the arguments in Chapter 7 concentrate particularly on establishing two types of "minor" underlying base-line structure in the system. These minor-type structures - which underlie all non-major phonotagms - are subsequently identified as "Minor Onset" structures and "Minor Coda" structures. A more detailed investigation of all minor-type phonotagms in Standard English has led to the postulation of two versions of the "Minor Onset" underlying structure and another two versions of the "Minor Coda" underlying structure in the system.

Obviously, the identification and establishment of "major" and "minor" types of phonotactic base-line structure in Standard English is only made possible by the manipulation of criteria which are in essence partly phonotactic and partly para-phonotactic. In consequence, the arguments, hypotheses and conclusions which are obtained in Chapters 4, 6 and 7 of PART II may be viewed as being also relevant to the discussion of the para-phonotactic phenomena in the language under description.

PART III of this work is devoted to discussing the para-phonotactic phenomena in Standard English and consists of two Chapters.

Chapter 1 of PART III opens by re-considering the consistency and adequacy of a number of widely accepted theoretical notions in A.F., as well as in other linguistic schools. The list

includes, among other things, the concepts of "prominence", "accent", "juxtaposition", "contrastive para-cenotactic feature", "distinctive para-cenotactic feature", "base" and "para-phonotactic unit". After proposing alternative definitions for the quoted notions, there follows a discussion of the phonological significance and function of the phenomenon of "Accentual Prominence" in the system, correlating this phenomenon (on the realizational level) with a number of empirical parameters, notably "intensity", "loudness" and "segmental length". Within each of these parameters, three levels of contrast are internally identified and established; thus, "intense", "semi-intense" and "lax"; "loud", "semi-loud" and "soft": "long", "semi-long" and "short", respectively. These three levels and their internal sub-levels are then correlated with three basic categories of phonological accent in the language, as well as with eight internal distinctions within these three basic categories; thus, "primary accent of the first degree" (/P¹/), "primary accent of the second degree" (/P²/) and "primary accent of the third degree" (/P³/); "medial accent of the first degree" (/M¹/), "medial accent of the second degree" (/M²/) and "medial accent of the third degree" (/M³/); "weak accent of the first degree" (/W¹/) and "weak accent of the second degree" (/W²/). (The reason why there is no "weak accent of the third degree" in the system is properly explained in the course of the arguments). On the basis of these results, a phonological hierarchy of "accentual prominence" is consequently established. The nature and function of each postulated basic level of accent in the system is rigorously defined in the Chapter.

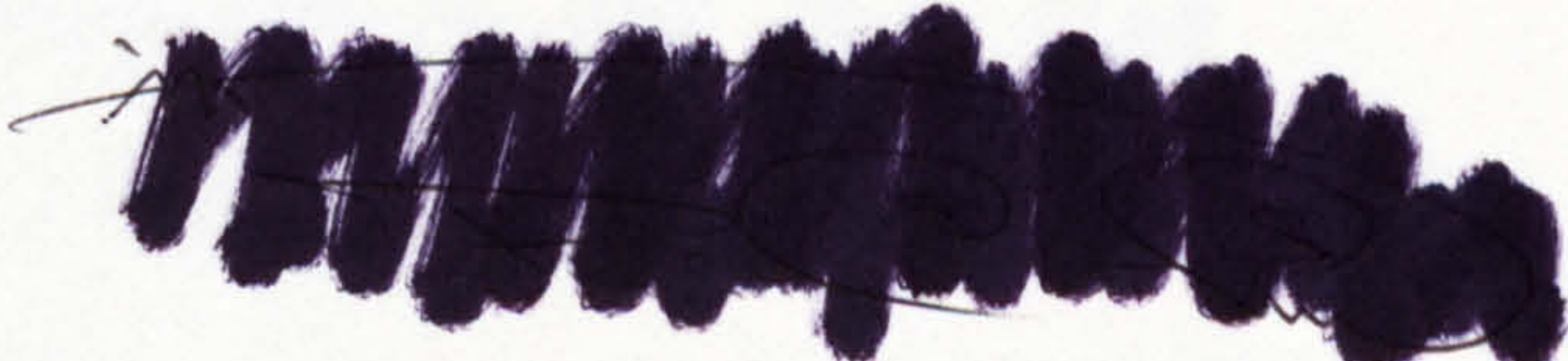
The influence of the phenomena of "under" and "over" articulation on the neutral realization of certain levels and degrees of "accentual prominence" is accounted for at the end of the Chapter.

Chapter 2 of PART III bases itself on the finding of the preceding Chapter and demonstrates how the established levels and degrees of accentual prominence conjoin to co-occur over and above "simple" and (internally juxtaposed) "complex" base-line structures. The concept of "accentual prominence pattern" is consequently introduced and defined before the gradient nature of all complex para-phonotactic units (and their realizational manifestations, as well) is demonstrated by means of two specifically selected instances from the language. The "Accentual Prominence Patterns" which correlate with "simple" and "complex" bases (up to three juxtaposed phonotagms in each base) are classified at the end of the Chapter to add further corroboration to the consistency and adequacy of the proposed system of "accentual prominence" in Standard English.

DECLARATIONS


- A) I, Fawzi El-Shakfeh, hereby declare that this thesis, the body of which is approximately 200,000 words in length, has been written by me, that it is the record of work carried out by me, and that it has not been submitted in any previous application for a higher degree.

Date: March 16, 1987


Fawzi El-Shakfeh

- B) I was admitted as a research student under Ordinance No. 12 in October, 1978, and subsequently, in April, 1979, as a candidate for the Degree of Doctor of Philosophy with effect from October, 1978; the higher study for which this is a record was carried out in the University of St. Andrews between 1978 and 1987.

Date: March 16, 1987


Fawzi El-Shakfeh

CERTIFICATE

I HEREBY CERTIFY that Mr. FAWZI EL-SHAKFEH has fulfilled the conditions of the Resolution and Regulations appropriate to the degree of Doctor of Philosophy of the University of St. Andrews and that he is qualified to submit this thesis in application for that degree.

Date: March 16, 1987

Supervisor



Dr. Sandor G.J. Hervey

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ACKNOWLEDGEMENTS

I would like to express my sincere thanks to my supervisor and friend Dr. S.G.J. Hervey for his frequent discussions, thoughtful comments and criticisms throughout the long preparation of this work.

I consider myself truly privileged to be able to acknowledge the direct and/or indirect influence of other people on the development of this work, be it through their teaching or rendering advice or services, through their reading or listening, or through their genuine efforts to relieve me (and my family) of physical disorders and financial and psychological pressures. In particular, I would like to single out Professor and Mrs. J.W.F. Mulder, Dr. and Mrs. S.G.J. Hervey, Dr. and Mrs. M.Y. Suleiman, Dr. D. Roberts, Professor M. Kemp, Dr. K.M. MacIver, the Secretaries of the Faculty of Arts, St. Leonard's College and the General Office of the University of St. Andrews; Mr. A. Gilchrist (our kind and most generous landlord), Mr. and Mrs. J. Ireland, Mr. and Mrs. W.B. Morton, Mrs. R. Fusco, Dr. and Mrs. D. Milner, Dr. and Mrs. Y.S. Maat (of Tishreen University, Syria), Dr. S. Hadj Mohammad (of Damascus University, Syria) and Mr. M. Lamb (of the New University of Ulster, Coleraine, N. Ireland); Drs. I. Cochrane, E. Orr, J. Bell, A.V. Davidson, J. Gibson and Mrs. J. Cunningham (of the Health Centre, St. Andrews); Professor H. Pilch (of Germany), Professor E. Uhlenbeck (of The Netherlands), Professor D. Bolinger (of the U.S.A.),

Professor M. Mahmoudian (of Switzerland) and Professor A. Martinet (of France); Mr. C. Stol, Mrs. J. Guatzo, Ms. M.Th. Meloni (of Luxembourg) and Mr. I. Trabulsi (of France); Dr. and Mrs. S. Sitrak (of Iraq), Mr. and Mrs. F. Araik (of Saudi Arabia), Mrs. F. Al-Shiraida (of Iraq), Mr. and Mrs. H. Ayoubi (of Lebanon), Dr. and Mrs. U. (Hasan) Ahmed (of Syria), Miss Alice Done (of Lincs., England) and last but not least the teachers of Greyfriars Primary School, St. Andrews, and my informants who are too numerous to be individually mentioned.

I am also particularly aware of the enormous debt to my father, my mother, my sister, my brothers, and my brothers-and sisters-in-law, for their constant encouragement throughout the period of this research, as well as for their financial assistance over the past few years.

I would also like to address a word of gratitude to my wife EBTISAM and my two young children SANDRA and FAYEZ for their love, patience and unfailing support and tolerance over so long a period of intensive research.

My thanks are due as well to Mrs. E. Kerr and Miss K. Porter for helping in typing the final draft of this thesis.

The initial period of the research of which this thesis is the culmination was made possible by a joint scholarship from Tishreen University, Syria, and The British Council.

I humbly dedicate this work to my two children SANDRA and FAYEZ, to the memory of my late uncle, NAFI^Q ASWAD, and to all those who willingly spend their lives in pursuit of new human knowledge for the sake of improving themselves and their societies.

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FOREWORD

The interest in studying language as a system designated for communication is probably as old as the history of man on earth. Over the centuries, scholars have either made careful observations about language or attempted to produce detailed descriptive accounts of their own or other people's languages. But like many other spheres of human investigation, the study of language has always been sensitive to intellectual changes and vicissitudes. It should not therefore be surprising to discover that each one of the numerous linguistic theories which have developed over the decades (and especially during the past 90 years or so) claims to offer new and profound insights into the nature of the linguistic study of language. Whether or not there are any grains of truth in such assumptions is a different matter which does not concern us here. Suffice it to point out that whenever these linguistic approaches are used for the description of a specific homogeneous set of phenomena, the resultant descriptive accounts which are based on these linguistic approaches are observed to be intrinsically different, notably unrelated and analytically incompatible. It is against such a background, and within such a context, that the present research into the "phonematic", "phonotactic" and "para-phonotactic" sub-systems of Southern Standard British English should be evaluated and considered. However, since it is theoretically and practically impossible for any descriptive act to commence from a vacuum, the point of view which the theory of Axiomatic Functionalism offers in this respect is the one

which has been adopted and consequently used throughout the descriptive process. Finally, the term "Southern Standard British English" is used in this work with reference to the "refined" language of the Queen and the Royal Family, the House of Lords, the educated classes, the inhabitants of the Midlands and the Inverness area, and BBC announcers, broadcasters and news readers.

PART I

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CHAPTER 1.Phonology as a Sub-System of Language:
An Axiomatic Functionalist Conception.

A major feature of the originality of F. de Saussure (1974) lies in his ability to foresee, though not to formulate, a general science of semiology, where language is seen as "a special system within the mass of semiological data".

Saussure's advice passed unheeded even by the majority of the many linguists who took his ideas as their starting point for creating and developing their own theories. Only a very few who took it seriously were able to advance in the direction towards establishing a comprehensive semiotic theory.

A. Martinet's¹ (1969) definition of the term "language" was the breakthrough which later enabled J.W.F. Mulder (1968 et al) to reformulate and reinterpret this notion by creating a genuine overall semiotic theory which embraces all systems of communication - "of which human natural language is but one species"²; thus creating a theory which complies with Saussure's advice to locate the theory of language, i.e. linguistics, strictly within an overall theory of semiotics.

For Martinet, language, as a social instrument with the prime function of communication, is characterized by its "double articulation". Every utterance, on the level of the first articulation, is analysable into a succession of units each of which is endowed with a vocal form and a meaning, i.e.

monemes. The vocal form of these units can be further analysed into a series of distinctive units, i.e. phonemes, each of which is capable of distinguishing at least one form from another.

One point that is unsatisfactory about such a view of language is the fact that the two levels are not kept consistently separate from one another. They tend to merge via the articulation of the significans directly into elements of pure form, i.e. phonemes. Furthermore, Martinet's conception of the double articulation amounts to a simple duality of structure, where articulation (which is explained but not defined) is a mere structuring by means of discrete constituents on both levels.

Charles F. Hockett's (1961 and elsewhere) approximation to the problem is not basically different (in general outline) from Martinet's. Hockett suggests that two levels (actually he calls them strata) of analysis are sufficient to tackle all types of linguistic element. On the phonological level (stratum) of analysis he deals with distinctive features, phonemes, syllables, etc. The grammatical level of his theory is interested in studying the morphemes (as atomic units), words, sentences, etc. The latter level is said to be "mapped into" the "phonological level".

Set against Martinet's naive realistic conception of "articulation" is Mulder's narrower and more precisely defined theoretical notion. "Articulation" is defined as "set of

ordering relations between constituents in combination", or "a potential for ordering of constituents", and "phonotactics and syntax", which can be interpreted to mean "ordered complexity". The notion "ordering" implies that the relation between the constituent elements of a complex can not be termed an "articulation" unless the complex in question is analysed into functionally ordered constituents, i.e. asymmetrically organized constituents, e.g. phonemes as constituent elements of phonotagms.

As the two articulations proper manifest the same type of constructional relation between constituents, but do so on two ontologically different levels, we shall restrict our discussion to the phonological articulation proper (which tacitly applies to the grammatical articulation proper). The phonological articulation proper, phonotactics, deals with the atomic formal elements, phonemes, in terms of their "tactic" (ordering) combinability into self-contained phonotagms. This may be understood to mean that, on this level of analysis, we are dealing with complex ordered phonological constructions. A construction (combination) is said to be ordered (tactic) if the nature of the arrangement of the constituent elements is, in itself, separately relevant to communicative potential; in other words, functional. Changing the relevant organization of the elements in a combination, e.g. by permutation, entails a change in the communicative potential, e.g. /tarsK/, /arsKT/, /karsT/, /kartS/, ?/sarkT/, ?/tarkS/, ?/tSark/, \mathbb{X} /tKars/, \mathbb{X} /kTars/, \mathbb{X} /kTSar/, which result in a list of forms. Though not all permutations need to be well-formed, one can generally say that some of them are well-formed and complete in English

(with different communicative potential), others (with question marks) are potential forms, and the last three asterisked ad hoc forms are ill-formed and, therefore, precluded by the phonological rules of the language. These last three forms are not normally cited in the description. As most of the notions in this Chapter will be thoroughly investigated whenever necessary on the following pages, we see no reason to capitalize on them in this brief introductory Chapter.

In order to avoid giving any illogical relevance to either of the articulations over the other, Mulder prefers to talk about a "grammatical articulation" and a "phonological articulation", where both articulations are logically and ontologically different and independent of one another and are distinguished by the nature of the elements into which a given complex is articulated.

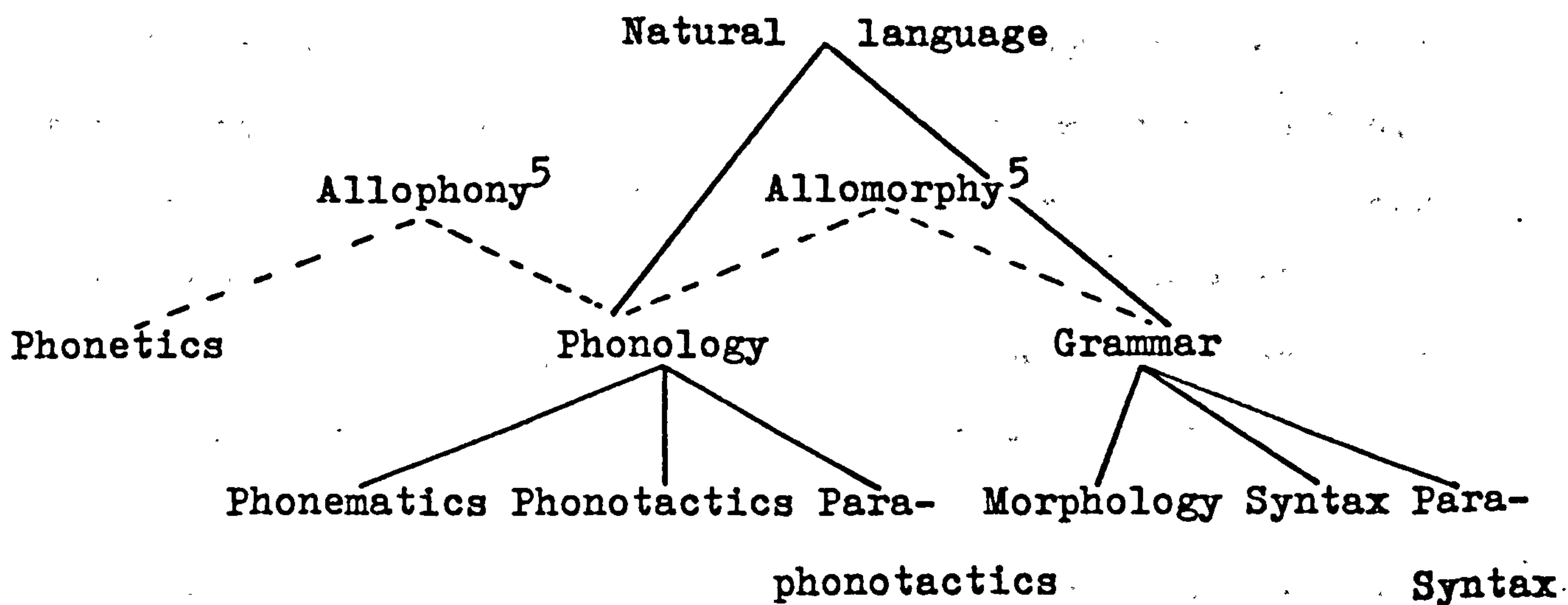
This leads us to examine the definition of the notion "language" in Axiomatic Functionalism (henceforth referred to as A.F.)

"Language"³ is defined in A.F. as "semiotic system with double articulation".

But a human natural language does not only have a phonology containing both a phonematics and a phonotactics, and a grammar containing both a morphology and a syntax; it also incorporates a para-phonotactic (see PART III, Chapter 1) and a para-syntactic system⁴. Both sub-systems of phonematics and morphology serve to provide the basic elements

to the two articulations proper on both levels via their interlocks, phonematics with phonotactics, and morphology with syntax. It is true that in the definition of the notion "articulation", as we have seen, this fact is being stressed. But, the definition of the notion "proper language", specifically, includes not only the two sub-systems in question, but also two para-tactic levels. Therefore, concerning all human natural languages, what appears in Martinet's conception as a two-tier-structure system, is in the theory of A.F. a six-tier-structure system. All we can say is that, for any human natural spoken language, hitherto encountered, all six types of sub-system have to be recognized if we are interested in having an adequate and comprehensive description.

The relation between the different types of sub-system can be represented in the following way:-



Mulder has recently, to the knowledge of the author, been thinking of adding two new (simple) sub-systems to the two articulations, the first to accommodate the "distinctive

features" on the phonological level, and the second to accommodate the "monemes" on the grammatical level. The discussion of the theoretical consequences of such a step is beyond the immediate scope of this work, simply because the idea itself has not yet crystallized in the initiator's mind. Furthermore, since phonematics can already be said to contain an inventory of distinctive features, and morphology an inventory of monemes, the addition of two separate inventories would seem to be unnecessary.

While "phonematics" is defined as a "complex unordered phonological system", "phonotactics", on the other hand, means "complex ordered phonological system". The notion "phonology", in natural language, stands for "phonematics, phonotactics and para-phonotactics" or "complex system of figurae", and "phonological system" for "system of figurae". This by implication means that "phonology" in A.F. refers to the study of the "phonematics" and the "phonotactics" of the formal part of a given language, together with "allophony", which is the realizational level connecting phonology with phonetics. This implies that "allophony" does not deal with combinations of any sort. We can understand the functional role of phonology, in this respect, as the economical construction of purely distinctive complex phonological forms of distinctive, but in themselves meaningless, components (phonological forms of figurae). This entails that within phonology we are dealing with two different and discrete sub-systems, the first of which, phonematics, is a complex system without ordering relations of any sort between its elements; while the other, phonotactics,

exemplifies a complex system with ordering relations between its entities. Alongside with this theoretical division, the two sub-systems are connected, in the sense of "one system providing the basic elements of the other system". In other words, the output of phonematics, i.e. phonemes, is the input of phonotactics. Phonematics is interested in dealing with the ultimate distinctive elements that can never be analysed into further distinctive components. This would imply, not only the functional analysability of minimal phonotactic components into their ultimate phonematic components, i.e. distinctive features, but also the converse of that operation, i.e. the economical construction of phonemes out of the component distinctive features. (See Chapter 5 for further discussion of linguistic economy). By applying the functional principle (see Chapter 5) to the type of relation between elements in this sub-system, it will, immediately, be clear that no matter how we arrange the constituent ultimate elements, the resultant minimal phonotactic component will never be affected. This means that distinctive features combine "simultaneously" to form a given phoneme. The way sounds are produced with all the mechanism implied in such an operation does not directly concern us here; its details are a matter for phonetics to deal with. The relation that holds between phonology and phonetics is discussed in Chapter 4.

Phonotactics, on the other hand, is interested in studying the economical construction of self-contained phonotagms by combination and permutation of phonemes. Unlike the "simultaneity"-type of relation in phonematics, the nature

of combinations and types of structure on this level of analysis indicate that ordering (i.e. asymmetrical) relations can be established. In other words, we are dealing with a "complex ordered phonological system".

Having arrived at such a conclusion, we can safely maintain that "language has a syntagmatic and a paradigmatic aspect"⁶. In other words, syntagmatic relations signify relations of functional ordering between elements within complexes, and the paradigmatic aspect refers to the type of relations between elements that can be substituted for one another in equivalent contexts in a paradigm. (For further information, see Chapter 5).

Notes to Chapter 1.

- 1- See also A. Martinet's Phonology as Functional Phonetics.
- 2- J.W.F. Mulder and S.G.J. Hervey, "Language as a System of Systems".
- 3- The definitions in this Chapter come from "Postulates for Axiomatic Functionalism", by J.W.F. Mulder, unless otherwise stated.
- 4- For an extensive discussion of all other possible (or potentially possible) types of semiotic act, the reader is referred to Mulder and Hervey's "Language as a System of Systems".
- 5- The auxiliary disciplines of "allophony" and "allomorphy" are to be considered as realizational levels, rather than sub-systems; the first belongs to phonology, especially when we start dealing with "distinctive function", and the second belongs to grammar for similar considerations.
- 6- J.W.F. Mulder, Sets and Relations in Phonology.

CHAPTER 2The Notion "Phoneme"

We can not claim, in this Chapter, to give an extensive coverage of the various definitions proposed by various phonological theories. Nevertheless, we feel that it would be helpful to give the reader a few representative samples of different phonological approaches towards the notion "phoneme" and its nature. The definitions are deliberately chosen and arranged to show, in brief, the development of the notion in question, and the pros and cons of each suggested definition or explanation, until we finally come to discuss the way the notion "phoneme" is conceived in Axiomatic Functionalism.

The wrangling over the definition of the term "phoneme" can be dated as far back as the second half of the 19th century, when Jan Baudouin de Courtenay¹ attempted the formulation of a theory of phonemes and phonetic alternations. He maintained that the role of sounds in the mechanism of a language does not coincide with their physical nature, and that this non-coincidence obliges one to distinguish "phonemes" from "speech sounds". His definition of the phoneme is as "a mental reality", as "the intention of the speaker or the impression of the hearer, or both", or as "a sound imagined or intended, opposed to the emitted sound as a 'psychophonetic' to the 'physiophonetic' fact", or as "a psychic equivalent of the speech sound". The psychological overtones in the definitions caused the radical failing of his theory, on the grounds, to quote

Twaddell², that "we have no right to guess about the linguistic workings of an inaccessible 'mind'", and that "the linguistic processes of the 'mind' as such are quite simply unobservable".

Though Henry Sweet (1877) and Paul Passy³ (1925 and elsewhere) were both aware of the significance of the idea of the "phoneme" and the phonemic principle in studying and teaching languages, neither employed the term explicitly. Sweet's "broad" and "narrow" types of transcription may correspond roughly to what can be called "phonological" and "allophonic" representations, respectively.

Passy, on the other hand, advocated "having a separate letter for each distinctive sound; that is, for each sound which, being used instead of another, can change the meaning of word".

In spite of his great contribution to the cause of Linguistics as a scientific study of languages and (crudely) of other semiotic systems, F. de Saussure's (1974) definition of the term "phoneme" was still under the spell of psychology. His definition of the term runs as follows "a phoneme is the sum of the auditory impressions and articulatory movements, the unit heard and the unit spoken, each conditioning the other".

E. Sapir⁴ (1933) and J. Vachek⁵ (1966) pronounced similar tendencies and viewed the phoneme psychologically; where Sapir had to give negative evidence of the real mental existence of a phoneme, and Vachek refers to the "linguistic consciousness" which is of similar nature to N. Chomsky's⁶ (1957 and 1968) "intuition of the native speaker".

Larry M. Hyman (1975), a phonologist working within the paradigm of transformational linguistics, does not hesitate to expound that "it is appropriate to think of (the phonological level) as approximating the mental representations speakers have of the sounds of words in their language".

Even an advocate of the phoneme as a "phonetic reality" like D. Jones⁷ (1950 and 1957) basically took a stand in favour of the psychological treatment of the phoneme; he writes "it is perfectly justifiable to take into account 'mind', 'feeling', 'impression', 'notion', 'picturing' and other undefinable psychological terms in investigating the nature of the phoneme".

The view of considering the "phoneme" as a psychological unit was challenged by other phonologists. Their reaction to such attitudes can be summed up in the view expressed by N.S. Trubetzkoy (1969 et al) "reference to psychology must be avoided in defining the phoneme" since the latter is "a linguistic concept and not a psychological concept", and that "any reference to 'linguistic consciousness' must be ignored in defining the phoneme". Nevertheless, Trubetzkoy's definitions of the phoneme (in 1929 and elsewhere) suffered from the same flaw. This applies to some definitions proposed by the followers of the Prague School, such as J. Vachek and V. Mathesius (see the references in footnotes 5 and 11).

Daniel Jones' (1931 and 1957) acquaintance with Baudouin de Courtenay's ideas helped to introduce him to a world entirely different from his own. His fascination with de Courtenay's concept of the "phoneme" was primarily responsible for his

adoption of a mentalistic approach to the phoneme. Upon finding such an approach untenable in language teaching, he abandoned it in favour of a "more easily comprehensible" solution, i.e. the "physical phoneme". In his own words "I found it in the end impossible to escape the conclusion that the physical view of the phoneme is better suited to the ends of ordinary teaching of spoken languages". His definition of the phoneme as a "family of sounds in a given language which are related in character and are used in such a way that no one member ever occurs in a word in the same phonetic context as any other member"⁸, or as "a phoneme is a group of sounds consisting of an important sound of the language, together with others which take its place in particular sound-groups (sequences)". A serious discussion of the above proposed definitions would show their theoretical inadequacy for the study of phonetic relations within a language, because the "phoneme" is entirely based on its relation to the phonetic variants. In the words of J. Vachek⁹ (1932) "the phoneme of Professor Jones is a unit the establishment of which was due to purposes of phonetic transcription, not to the study of language as a functioning system". Jones never attempted to deny such charges; in fact, he confirmed them throughout his work. Despite his genuine efforts to grasp the ideas of the "phoneme" and "theory of phonemes", he never had the intention of considering them anything more than an integral part of phonetics.

H.A. Gleason's (1969) definition of the term "phoneme" is not radically different from that propounded by D. Jones. His phoneme is "a minimum feature of the expression system of a

spoken language by which one thing that may be said is distinguished from any other thing which might have been said", and "a phoneme is a class of sounds which: 1) the sounds must be phonetically similar, and 2) the sounds must show certain characteristic pattern of distribution in the language or dialect under consideration". The phoneme for Gleason serves the purpose of labelling and grouping a number of phonetic elements. It is a feature of the actual speech-sounds.

J.F. Wallwork's (1971) definition of the phoneme belongs to the same category. His phoneme, then, "is the smallest unit of sound by means of which a change of meaning can be affected in any one language".

R.H. Robins (1971), who is aware of the difficulty implied in attempting to define the phoneme, offers an explanation which would look like a definition; for him "sounds are grouped into a single class or phoneme if they can be shown to be phonetically similar (containing some sort of articulatory feature in common) and in complementary distribution (not occurring in the same environment and so not distinctive)".

L. Bloomfield¹⁰ (1973 et al) expressed his dissatisfaction with the mentalistic treatment of the phoneme proposed by Saussure and Sapir. His approach to the phoneme is fundamentally in the structuralist mould current at his time. To him, the phoneme is conceived as a physical distinctive sound. It is a "minimum same of vocal features"; in other words, a sound or part of a sound which, whenever it occurs, distinguishes meaning, e.g. English /b/, the normal word-accent in English, the tones of Chinese. Elsewhere, the phonemes

are "the smallest units which make a difference in meaning" on the basis of the role each phoneme plays in the "structural pattern of speech forms".

Bloomfield distinguishes between "distinctive" and "non-distinctive" acoustic features. While the first serve to differentiate meaning, and therefore essential to communication, the latter are indifferent, and therefore inessential to communication. The criterion for the distinction between the types of features lies entirely in "the habit of the speaker". Later, he defines the phoneme as "a minimum unit of distinctive sound-feature"; these distinctive features occur in lumps or bundles, each one of which we call a phoneme. The phonemes, then, are "not sounds, but merely features of sounds". But "the 'phoneme features' are 'present' in the sound waves". If a phoneme is viewed as a combination of distinctive features, it can hardly be defined as "a minimum same of distinctive features". The defining characteristic of Bloomfield's phonemes is their ability to differentiate meaning, i.e. they are not vacuous elements on the formal level. Though he failed to submit a satisfactory definition to the phoneme, he was not far away from recognizing its abstract nature. In his words "the phoneme is an abstraction obtained from series of utterances".

C.F. Hockett¹¹ (1955), like Bloomfield and Jones, hesitated between the two extremes, the functionalist, or rather the abstract view of the phoneme, and the physical concrete reality of its existence.

Though H.E. Palmer (1931) attempted to produce a phoneme

theory based on "abstract sounds", his final result was not much different from Jones' conclusions. For him, the "phoneme" has an existential claim; it is not an empty, ^{non-}physical, non-existing fictitious notion. Phonemes are based on concrete sounds which have been "abstracted" or "picked out". Palmer's aim was, like Jones', the establishment of conventions for the graphic recording of languages.

The view of regarding the phonemes as fundamentally independent of the phonetic features associated with them is the determining characteristic of the Prague School linguistics.

The phoneme, for Trubetzkoy¹², can be defined "purely and solely on the basis of its function in the system of language", and "the phoneme is a member of such (distinctive phonological) opposition that can not be analysed into still smaller distinctive (phonological) units". (Compare later on in the Chapter with notions of similar nature employed in A.P. to see the difference). Therefore, phonemes are defined in terms of oppositions in a phonological system. Their function in the system is, (compare with Bloomfield), to differentiate "lexical meaning" in a given language. His phonological units (phonemes) can not be further analysed or represented as sequences of still smaller successive components. None of the "acoustic atoms" can be considered a phonological unit since all of them always occur in "unison" never in isolation. Accordingly, the phoneme is the "smallest distinctive unit of a given language", and "the sum of the phonologically relevant properties of a sound", they are those "phonological units that can not be analysed into still smaller successive distinctive units". Consequently, the phoneme is not a sound or a group

of sounds, but rather an abstraction, an element which belongs to the phonological level of the theory.

W.F. Twaddell's (1935) somewhat cumbersome conclusions agree, though roughly, with Trubetzkoy's findings. Twaddell's "micro-phoneme" is the "term of any minimum phonological difference among forms", and "the sum of all similarly ordered terms (micro-phonemes) of similar minimum phonological differences among forms" is called a "macro-phoneme". Both are opposition members that can not be analysed into smaller constituents. Twaddell's contribution, in this respect, consists of freeing the concept "phoneme" from both the psychological and the physical prejudices that have disfigured the nature of its identity. His rejection of the Cercle Linguistique de Prague definitions of the phoneme is based on their "subjective mentalistic definition of units and a somewhat truculent denial of the relevance of phonetic analysis". Twaddell's understanding of Saussure helped him in assigning negative values to the notion phoneme, for him "it is a negative, relational, differential abstraction". It is a term of recurrent differential relations which comprise the system of "la langue", while the differentiated articulatory complex is a fraction of "la parole". This is, in fact, what makes Twaddell different from the Prague School linguists and from many others whose phonemes are positive auditive entities, in some cases possessing inherent potencies of utilizing distinctiveness, while Twaddell's phonemes, as we have seen, are negative relational entities. Following Saussure¹³, phonemes would have to be defined by starting from differences not similarities; in other words, by following the implications

of his statement: "Dans la langue il n'y a que des différences sans termes positifs".

Within the field of diachronic phonology, A. Martinet's (1955 et al) achievements are considerable. (A general outline of his contribution is given in Eli Fischer-Jørgensen (1975)). The definition of the phoneme is what we shall be discussing in Martinet. The utterance, for him, is totally analysable into a succession of distinctive units, i.e. phonemes, of limited number in the language (*italics mine*)¹⁴. This unit (the phoneme) is conceived by Martinet as "an articulatory habit", a conception which, in spite of his caution and advanced ideas, renders his phonemes as "realistic" notions. The phoneme, for Martinet, is defined as "un ensemble de traits pertinents qui se réalisent simultanément"; a definition which maintains that a phoneme is a bundle of distinctive features between which no syntagmatic relations can be established. "Simultaneity", for him, derives its meaning from the Prague School emphasis upon paradigmatic procedures, the establishment of which is performed by applying the commutation test¹⁵. Martinet's awareness, that the strict application of his conception of the notion "phoneme" is bound to create many difficulties¹⁶, prompts him to devise three criteria, though none of them is of a syntagmatic nature, to deal with the problem, i.e. 1- commutability, 2- correlation in the system, and 3- phonetic similarity. The shortcomings of such a solution lie in the fact that Martinet has to rely positively on phonetic criteria in the establishment of his minimum syntagmatic components in a phonological description on the

phonological level. His notion "simultaneity" suffers from the same phonetic consideration which affects his criteria. Yet, his definition of the phoneme loses much of its significance if the phonemes in question can not be considered minimum atomic elements between which syntagmatic relations can be established. Martinet's "un ensemble de traits" are the phonemes; between these phonemes, according to him, no syntagmatic relation can be established. But the "atomic" elements in a paradigmatic sense are the distinctive features of phonemes, not the phonemes per se. Between phonemes, not between distinctive features, syntagmatic relation can, in fact, be established.

J.W.F. Mulder¹⁷ (1968), a European functionalist and former disciple of E.M. Uhlenbeck and A. Martinet, was not wholly satisfied with the existing affairs in the functional camp. He finally dedicated his efforts to the creation and formulation of a rigorous axiomatic hypothetic^o-deductive theory which he called Axiomatic Functionalism.

The "phoneme", for Mulder, is a notion which plays a dual role in phonology. It is a "simultaneous bundle of distinctive features not extending over more than one position in a chain" when considered from the phonematic, i.e. paradigmatic, point of view, and a "minimum phonotactic element" from the phonotactic, i.e. syntagmatic, point of view. The notion "paradigmatic" is defined as "the oppositional or distinctive aspect of semiotic entities", and the type of relation that holds between such entities is called "paradigmatic relation"

and defined as "relation of opposition between members of a set". "Syntagmatic", on the other hand, is defined as "the ordering aspect of semiotic entities", these entities in conjunction with their relative positions in the distributional unit can establish "syntagmatic relations" between themselves (as syntagmemes). "Syntagmatic relations" is defined as "ordering relations between semiotic entities in combination", (compare with Martinet). An element, a phoneme for example, can be analysed into its ultimate distinctive features between which no ordering relations can be established, i.e. the different possible arrangements of the distinctive features of a given phoneme do not affect our final identification of the phoneme in question; in other words, ordering of constituents on this level of analysis can never be manipulated to produce different phonemes/elements. These features combine simultaneously to form the syntagmatic components of the system, i.e. phonemes. Between these bundles of features, i.e. phonemes, one can establish syntagmatic relations within the framework of an established distributional unit. (See Chapter 7 for the discussion of the distributional unit).

Unlike the phoneme-theories proposed by most other schools in linguistics, the phoneme in A.F. is an abstract notion which derives its existence from the theory it belongs to. In other words, it will be strategically more appropriate and consistent with the hypothetico-deductive nature of the theory to consider the "phoneme" a theoretical concept.

Notes to Chapter 2.

- 1- Z.M. Arend, "Baudouin de Courtenay and the Phoneme^m Idea".
R. Jakobson, Selected Writings.
E. Stankiewicz, (Editor), A Baudouin de Courtenay Anthology.
See also Twaddell (1935), Larry M. Hayman (1975) and
Eli Fischer-Jørgensen (1975).
- 2- W.F. Twaddell, "On defining the phoneme".
- 3- See especially Passy's "Nouveaux signes" and "Sur l'é moyen",
as well as Passy and Jones' Principles of the International
Association.
- 4- See also "Sound patterns in language", by E. Sapir.
- 5- See also Vachek's A Prague School Reader in Linguistics
as well as Trubetzkoy's Principles.
- 6- See also Chomsky and Halle's The Sound Pattern of English.
- 7- Reference should also be made to Jones' The Phoneme: Its
Nature and Use and "On phonemes".
- 8- The reader is also referred to Jones' "The theory of
phonemes and its importance in practical linguistics".
See also the references in footnote 7.
- 9- J. Vachek, English Studies. See also Vachek (1968) and

Trubetzkoy (1969).

- 10- Bloomfield's "A Set of Postulates for the Science of Language" and "On Recent Work in General Linguistics" are also relevant in this context.
- 11- Further reference should be made to Hockett's publications in 1951 and 1958.
- 12- N.S. Trubetzkoy, Principles of Phonology.
- 13- F. de Saussure, Course in General Linguistics.
- 14- Logically speaking, the utterance can not be analysed into phonemes. To be more precise, it is the allomorph of the phonological form of the expression which is analysable into phonemes.
- 15- A. Martinet, Phonology as Functional Phonetics.
 " " , Elements of General Linguistics.
 " " , A Functional view of language.
- 16- J.W.F. Mulder, Sets and Relations in Phonology. See also S.G.J. Hervey's "Mulder's Axiomatic Linguistics".
- 17- Ibid.

CHAPTER 3.

Distinctive Features.

Our intention, in the following pages, is to treat a notion which is basically related to the notion "phoneme" (discussed in Chapter 2). Like the "phoneme", the notion "distinctive feature(s)" has always been a controvertial one.

N.S. Trubetzkoy (1969) distinguishes, from the very outset, between "two studies of sound" which rely on two different methods of investigation. The first of these, "phonetics", deals with sounds as concrete physical phenomena pertaining to the act of speech, and the other, "phonology", studies the sounds pertaining to the system of language. The "phoneme", for Trubetzkoy, is a concept which belongs to a language system. The atomic elements on the phonological level (as we have seen in Chapter 2) are the phonemes which are not susceptible to further analysis, on that level, into smaller component units. The "acoustic (phonetic) atoms", (acoustic-articulatory properties), can never be considered "phonological units" since they always occur in "unison", never in isolation. Therefore, b, in its entirety is a phonological unit that can not be analysed into "successive components", (this is in fact Trubetzkoy's example). Accordingly, the phoneme is the "smallest distinctive unit of a given language", (see Chapter 2 for Trubetzkoy's other definitions). This does not prevent each phoneme from

having a "phonemic content" which should be determined, defined, and classified. This "phonemic content" indicates "all phonological distinctive properties of a phoneme", i.e. properties which enable a phoneme to be distinguished from all the other phonemes in the inventory. The determination of the phoneme-content "presupposes its prior classification in the system of distinctive oppositions existing in a given language". He goes on to say that "the definition of the content of a phoneme", (not the analysability of the phoneme), "depends on what oppositions this phoneme takes in a given phonemic system". Trubetzkoy establishes two types of opposition: "bilateral" and "multilateral". The latter of these was rejected by Jakobson who only accepted the "bilateral (binary) oppositions", (my italics).

The classification of the phonemes and their phonemic-content requires some reliance on phonetics, but "the phonetic concepts with which the phonologist operates appear, of necessity, somewhat schematized and simplified". Thus, actually "very little remains of phonetics". The role that Trubetzkoy assigns to these distinctive features is to supply the classificational dimensions which would allow the segmental units to be arranged in the system.

In short, Trubetzkoy's interest lies in setting up a comprehensive taxonomy of the phonetic properties of the distinctive contrasts employed by languages. This would refute J. Lyons' (1972) statement that "according to

Trubetzkoy ... the phoneme is further analysable into distinctive features".

Some of Trubetzkoy's, and other early Prague School linguists', ideas in this respect were carried over and developed by his associate (and co-founder of the Cercle du Prague) R. Jakobson¹ (and his associates M. Halle and C.G.M. Fant). The development of their distinctive-feature theory has passed through three stages. The first of these is an attempt to "discover" and establish a restricted and presumably universal inventory of the inherent distinctive features which would account for the analysability of the phonological entities of all languages. In other words, Jakobson's contention is that each language in the world draws the relevant features that characterise its phonemes from this universal inventory. The second phase is to establish the phonetic realizational substance of these distinctive features, primarily in terms of acoustic categories; though the distinction between acoustic and articulatory terminology is considered unimportant by Jakobson. The final phase is the analysis of all phonetic contrasts by means of binary features, i.e. in terms of "minuses" to indicate negative values, and "pluses" to indicate positive values.

Overlooking for the sake of the argument the psycho-physical overtones which underlie the whole approach, Jakobson and Halle's distinctive features are the ultimate distinctive entities of languages, since it is not possible to analyse

them into yet smaller linguistic components. These indivisible distinctive features combine into "simultaneous concurrent bundles", where each bundle of these features "forms" a phoneme. The converse of this operation is explicitly and implicitly possible, in the sense that the phonemes, by virtue of being bundles of features, may be broken down into "the inherent distinctive features which are the ultimate discrete signals". Unlike Trubetzkoy's classificatory features, these relevant distinctive properties are no longer considered as classificational dimensions, but as components of phonemes, and accordingly, as minimal linguistic units.

"The basic fallacy lies", as E.C. Fudge² (1973) puts it, "in the assumption [made by Jakobson and others including Fant, Halle, and Chomsky] that there is a universal phonetic framework: by this we do not mean that 'any universal framework' is as good as the other, but that 'universal phonetic framework' is not a meaningful expression". Fudge advocates having "one universal framework for each aspect of phonetics", (my italics).

N. Chomsky and M. Halle (1968), who were inspired by the Jakobsonian approach, based themselves, with some modification, on the works of Jakobson and his associates. Chomsky and Halle distinguish between features at the phonological level, which are described as classificatory, and features at the phonetic level, where a set of universal phonetic scales for

the final phonetic characterization are treated. Both levels are described in terms of the same set of features; in other words, the phonetic features are in some way parallel to the phonological ones, so that the mappings between the two levels are not arbitrary. The distinctive feature, in phonology, is viewed not only as the minimal unit, but also as the only phonic unit which is regarded as having any linguistic status. Thus, the description of the phonological and phonetic levels together with the rules connecting them is formulated by means of distinctive features. They assume, following Jakobson, the existence of a set of universal phonetic features. The phonological features of a specific language will, by necessity, be a sub-set of the universal set of phonetic features inventory, which, according to R.L. Cheng³ (1966), is "debatable". They also assume that the set of phonological features must be isomorphic with the set of phonetic features. Consequently, the phonological features for Jakobson, Halle, and Chomsky are no more than features derived from the universal phonetic list. While Jakobson "discovers" and establishes nine to thirteen inherent distinctive features (depending on the different modifications to his distinctive features theory), Chomsky and his followers establish a set of twenty-two features in order to avoid complicating their rules. While Jakobson's features are treated from the acoustic point of view, Chomsky's features are described primarily in articulatory terms.

It is not clear whether the Jakobsonian or Chomskyan

proposed inventories are of open or restricted nature, i.e. whether the number of the elements in each inventory is final and, therefore, limited, or whether the inventories are open-ended and, therefore, expandable. If they are to be considered hypothetical open inventories, (which in principle implies that they have existential claim), then the addition of one or more distinctive features to the inventories will logically cause their collapse. The hypothetical restricted nature of the inventories, on the other hand, can very easily be refuted by the addition of one or more features to the inventories, in the sense that the hypothetical completeness of the sets in each of the inventories is being violated. At their best, the use of inventories of closed sets of features constitutes a procrustean bed which tends to produce false conformity by butchering and destroying the language to fit in the pre-conceived moulds which are thought to be immunised from refutation.

By virtue of utilizing an Axiomatic linguistic theory, we believe that the setting up of distinctive features inventories represents a hypothetical descriptive act which has to be carried out separately for each language. The distinctive identity of any distinctive feature (and for that respect of any other element) in a language hinges on its overall distinctive function in that specific language. Therefore, the distinctive function of any element is language-specific which is not isomorphic with the functions of an apparently similar element in any other language.

S.A. Schane⁴ (1973), in an attempt to avoid inconsistencies resulting from such an epistemologically incoherent approach, proposes a list of five conditions for an appropriate set of distinctive features, among these requirements we can mention:--

- 1- The features must have their foundation in phonetics, and
- 2- they must be adequate for characterizing important phonetic differences between languages, etc.

L.M. Hyman⁵ (1975), who adopts a similar attitude towards the distinctive features, maintains that "phonological segments group themselves into phonologically definable classes", and that "it is important to recognize that the phonetic features are ultimately responsible for the way phonological systems function".

L. Bloomfield⁶ (1973) and most of his successors rejected the distinctive feature analysis proposed by some of the Prague School linguists. Bloomfield maintains that "the features of sound in any utterance ... are the gross acoustic features of this utterance. Part of the gross acoustic features are indifferent (non-distinctive), and only a part are connected with meanings and essential to communication (distinctive)". It is evident that "meaning" is his criterion for deciding whether a unit is phonological or not. Distinctive features occur in "lumps or bundles" and they are

present in the "sound-waves", but "it would be useless to try to produce the distinctive features in a pure state".

Obviously, Bloomfield is interested in the phonemes as the smallest units on the phonological level, and not in the distinctive features that form these minimum segmental phonemes, simply because, in his view, these components of phonemes are of purely phonetic nature. Though he proposes a phoneme-table with features indicated to account for the consonants of American English (Chicago) p.129, he warns the reader to ignore "all non-distinctive features" on the grounds that they are "irrelevant to the structure of the language".

B. Bloch and G.L. Trager (1942), too, took a similar stand and divided all phonetic differences observable in the language into "distinctive differences or contrasts" the role of which is to distinguish meaning, and "non-distinctive differences" which are not used for such an end, and therefore, irrelevant to phonology.

A. Martinet's (1955 and elsewhere) definition of the phoneme mentioned in Chapter 2 gives us the clue to the nature of that concept. Being a "simultaneous bundle of distinctive features" implies that a phoneme is, in fact, a combination of several relevant features. The identification of these relevant features requires the comparison of the phonetic nature of a given segment with all other segments which are in opposition to it. The final relevant features together with the segmental units distinguished by them can be arranged

in classes, e.g. nasal /m, n, ŋ/, apical /t, d, n/, etc. What is implied in each label is, as Martinet puts it, "the proportionality in the relationship" of one element to all the other elements. In order to show this proportionality of the relationships denoted by the labels which refer to the relevant features, the segmental units should be tabulated in accordance with the corresponding labels we attached to the features. Accordingly, each phoneme in a given language will be distinguished from the rest of the phonemes in the inventory in terms of the special combination of features that it manifests. The fact remains that,

- 1- on the level of the 2nd articulation, there is no place for these distinctive features, as the atomic elements, for Martinet, are the discrete units, i.e. the phonemes, and
- 2- the type of analysis that Martinet applies for the establishment of distinctive features is not entirely free from positive and direct phonetic considerations which constitute sufficient as well as necessary criteria for his analysis.

This finally leads us to consider the status of "distinctive features" in the theory of Axiomatic Functionalism.

It is recommended to take Mulder's (1968 et al) definition of the phoneme for our starting point. The notion "phoneme", (as we have seen in Chapter 2), is a "simultaneous bundle of one or more distinctive features not extending over more than one position in a chain". The establishment of the phonemes,

by commutation in equivalent contexts, logically implies the establishment of the identity of their distinctive features, as well. This in fact demonstrates a clear-cut case of a relation of interdependence between two types of entity. As a notion belonging to the theory, "distinctive feature" is defined as "minimum phonematic entity", which in a wider sense can be taken to stand for "any feature or complex of features that is separately relevant to the purport of the whole of which it is a part". Consequently, the notion "distinctive feature(s)" is a model, which by implication, refers to these structures, i.e. distinctive features, as instances of such a notion. Logically speaking, these models in the description are not, what the inductivists consider, concrete physical structures that can be found in speech, but, as the theory conceives them, they are structures that apply to isolatable sections of speech.

Accordingly, a complex phoneme, which, by definition, is a phonematic complex, can be further analysed into its constituent less complex entities which are not further analysable into yet smaller components. Between these distinctive components one can not propose a case of "contrast" in a functional sense, simply because "contrast" implies syntagmatic relations which can never be established between "features" of minimal syntagmatic constituents. We should not forget that the definition of the "phoneme" does not specify that all phonemes should be complex entities; in fact, it dictates that a phoneme is a bundle of "one or

more" features standing in one position in a chain, which tautologically implies that in our description of a language we, at times, encounter an element which can not be analysed into more than one feature, yet it is opposed to all the other elements in the inventory, e.g. /l/ and /h/, in English, can not be analysed into more than one functional feature each, i.e. /l-ness/ and /h-ness/, respectively.

We have already seen from Chapter 2 that the ultimate elements on the phonematic level are the "distinctive features" which combine "simultaneously" to form the discrete formal atomic elements of a language. We are also fully aware that "simultaneity" indicates "symmetrical relations". Consequently, the establishment of the functionality (and by implication the identity) of the "distinctive features" always requires paradigmatic operations. The notion "paradigm" is defined as "sets of entities in functional opposition in a given context, within a chain", and each item in the paradigm is called a "paradigmeme" which is defined as "a member of a set of entities in functional opposition in a given context within a chain", i.e. "member of a paradigm". Having established the distinctive features of a given language in sub-systems, the resultant paradigmatic functional features have to be generalized to account for the phonemes as classes, not as individual elements, by attaching labels to them which would imply generalizing their respective realizations. The labels which are used as descriptive expressions of distinctive qualities can be manipulated for classificatory

purposes, (see further below). According to Mulder (1968), these labels "serve as generalizations of the relevant features of the phonemes which can be established in the sub-systems. Though the names of the distinctive features are chosen with reference to the overall system, they have their roots in the paradigmatic sets and ultimately in the sets which I have called phonematic paradigms"⁷.

The identity of the distinctive features of any phoneme can not be established unless we are able to assign the features in question to their respective phonemes in the system. The only way to test the correctness of our hypotheses is by applying a so-called Cartesian table (see PART II, Chapter 1) where the phonemes can be projected and classified in rows and columns representing so-called "series" and "orders" based on the labels we have attached to the features. If each phoneme is correlated with at least one other phoneme in a row and at least one other phoneme in a column, we can, with caution, consider our results to be temporarily satisfactory. In the same way, it is important to ensure that the analysis complies with the requirement of "phonetic adequacy" which implies, among other things, the plausibility of the analysis with respect to actual or potential correlations and/or proportionalities, (see Mulder, 1974 and 1975). The final step in the analysis is to examine the consistency of our operation and its results; this is usually done by arranging the phonemes and their respective distinctive features in an overall table showing

their various intersections. Establishing the identity and distinctive function of the phonemes is yet another precautionary measure which ensures that our analysis is free from contradictions or inconsistencies.

Finally, both "phonemes" and "distinctive features" can be considered as n-tuples in the Cartesian multiplication table, where an n-tuple is defined as "any term which results from a Cartesian multiplication", (see Mulder, 1968, for an exhaustive treatment of this algebraic notion).

Notes to Chapter 3.

- 1- R. Jakobson, C.G.M. Fant and M. Halle, Preliminaries to Speech Analysis: The Features and their Correlates.
R. Jakobson and M. Halle, Fundamentals of Language, and
R. Jakobson and M. Halle, "Phonology in relation to phonetics".
- 2- See also E.C. Fudge, "Phonological structure and "expressiveness"", "Phonology and phonetics" and "The nature of phonological primes".
- 3- See also R.L. Cheng, "Mandarin phonological structure".
- 4- Reference should also be made to S.A. Schane's "On the non-uniqueness of phonological representations" and "The phoneme revisited".
- 5- The reader is also advised to consult L. Hyman's "How concrete is phonology?".
- 6- Bloomfield's "A Set of Postulates for the Science of Language".
- 7- J.W.F. Mulder, Sets and Relations in Phonology.

CHAPTER 4.Phonology and Phonetics.

The main objective of this Chapter is to give the reader a relatively unbiased insight into the phonology:phonetics relationship as conceived by some linguistic theories. The emphasis on the A.F. point of view, in this respect, is justified by the fact that the present work lies entirely within the domain of that approach.

F. de Saussure (1974) viewed Phonetics and Phonology as two distinct disciplines which should not be fused together under the same title. Phonetics is "a basic part of the science of language" (p. 33) and the prime object of diachronic (historical) linguistics. It analyses events and changes and moves through time. Phonology, on the other hand, is "only an auxiliary discipline and belongs exclusively to speaking" (p. 33). It is outside time, because the articulatory mechanism never changes. Its role is the static (synchronic) description of the sounds of a language-state. The two disciplines are not "opposites" but interdependent, in the sense that language is necessary if speaking is to be intelligible, and speaking is necessary for the establishment of language. This relationship can be summed up in one sentence:- "It is speaking what causes language to evolve" (p. 19).

In spite of this, Saussure never explicitly advocated the

disentanglement of the two studies as separate disciplines. This was due, perhaps, to his preoccupation with the establishment of a distinction between the descriptive and the historical study of sound.

However, Saussure's langue:parole dichotomy provided other structuralists with the necessary theoretical background for developing this dichotomy to its logical conclusions.

Trubetzkoy's (1969) views on this issue are significant. He sharply distinguishes between two types of sound-study, the first, i.e. phonetics, is directed toward the act of speech, i.e. a purely phenomenalist study of speech sounds, and the second, i.e. phonology, is directed toward the linguistic function of the same sounds in the language system. Phonetics, which belongs to the realm of natural physical science, is defined as the "science concerned with the material aspect (of sounds) of human speech", therefore, it should not concern itself with the lexical meaning of the sound complexes it studies. Phonology, on the other hand, is the discipline which belongs to the humanities, considers only "that aspect of sound which fulfills a specific function in the system of language"¹. Despite their autonomous status as two independent types of study, some form of contact is recommendable, but it should always be kept within recognized limits. These theoretical limits were not always adhered to by Trubetzkoy who, in Principles, uses phonetic criteria for the establishment of units on the phonological level.

Despite the fact that Baudouin de Courtenay² (1972) referred to two types of sound study which may roughly correspond to "phonetics" and "phonology" (in their widest meanings), his proposals for such a dichotomy were met with little concern.

Henry Sweet (1877), Otto Jespersen (1922 et al) and D. Jones (1932 et al) each implicitly recognized the difference between the two approaches to the treatment of sound, yet failed to establish them as two distinct types of study on the basis of meaning distinguishing/non-distinguishing phonic properties.

Set against the Prague School phonetic:phonology dichotomy is L. Bloomfield's (1973) three-fold distinction. He distinguishes between phonetics, practical phonetics, and phonology. Phonetics is involved in studying the speech event without reference to meaning; it unravels the gross acoustic characteristic features of phonemes. Practical phonetics is a skill, not a science, which enables the phonetician to recognize the phonemic units in his language and how they are produced. Finally, phonology defines the phonemes by their role in the structure of speech-forms. To achieve this, phonology involves the consideration of meaning. While the distinction between the first two types is never made explicit, the domain of phonology is left without any demarcation to its borders. The overlapping spheres of interest of the three types of study and the vagueness of Bloomfield's terminology result in a statement that "the study of significant speech-sounds is phonology

or practical phonetics", (italics mine), or that "practical phonetics and phonology presuppose a knowledge of meaning".

K.L. Pike's (1971) distinction between phonetics and phonology is sharper than Bloomfield's and less ambiguous. Phonetics, or rather practical phonetics, establishes a technique for the description of the nature and formation of all sounds in terms of the movements of the vocal organs. Phonemics, or rather practical phonemics, provides a satisfactory technique for processing the rough phonetic data and discovering the significant (pertinent) units of sound. It also tries to find out how these units are structurally organized in a given language. The two studies are not considered separate domains of scientific study, rather two levels in a hierarchy where phonemics is entirely based on phonetics. Pike's well known dictum summarizes the whole approach:- "Phonetics gathers raw material, phonemics cooks it".

Despite his immense contribution to the establishment of linguistics as an exact science, L. Hjelmslev³ (1947) misinterpreted Saussure's expressed intentions regarding the phonetics:phonology dichotomy. He maintained that Saussure did not mean to discard phonetics altogether, he simply meant it to be "subordinate to the study of the relational system", in other words, Saussure assigned to phonetics the "modest role of an ancillary science".

It should be noted that, contrary to what Hjelmslev

maintains, Saussure assigned to phonology, not to phonetics, the role of an "auxiliary discipline". (See beginning of this Chapter).

Hjelmslev (1961) establishes four strata in his theory, namely, those of content substance and content form, expression substance and expression form, which correspond roughly to semantics, grammar, phonetics and phonology, respectively. As we are interested for the moment only in the relationship between phonetics and phonology, we shall restrict ourselves to the discussion of that relationship.

Linguistics, according to Hjelmslev, must become a discipline "whose science of the expression is not a phonetics ...". Consequently, any description of categories of the expression should be carried out on a purely non-phonetic basis, i.e. by stating relations between the relevant units under consideration. The non-linguistic analysis of the inherent nature of the "non-linguistic stuff", i.e. essence or substance of the units concerned, has to be carried out independently of the form which is the only subject of linguistic description. This phonetic analysis of the "non-linguistic stuff" and the statements that follow will have to proceed on similar structural analytical lines. Consequently, the phonetic analysis of this stuff, which Hjelmslev calls purport or substance, leads to a "form" which is essentially of the same sort as the "linguistic form", though of a non-linguistic nature. The final product of the analysis will be a non-linguistic hierarchy which is

considered to "manifest" the linguistic hierarchy or "schema". Hjelmslev hopes that a physical (phonetic) theory "in itself would never speak of substance, or matter, if not in a critical sense".

This boils down to saying that "linguistics describes the relational pattern of language without knowing what the relata are, and that phonetics ... tells what these relata are, but only by means of describing the relations between their parts and parts of their parts", in other words "linguistics is a metalanguage of the first degree, whereas phonetics ... is a metalanguage of the second degree".

Hjelmslev, therefore, establishes a sharp distinction between the system and the way it manifests itself in actual speech, each of which is independent of the other, and each belongs to a different domain of study. This does not mean that Hjelmslev denies "phonetics" a place within linguistics; he only implies that phonetic phenomena belong to a different plane of linguistic analysis. In other words, "sounds", in their capacity as substance, can never be made the basis of a scientific description of a language, simply because they do not form part of language.

While Trubetzkoy and other Prague School linguists concentrated on Saussure's "langue:parole" dichotomy, assigning phonetics and phonology to langue and parole, respectively, Hjelmslev, on the other hand, concentrated his attention on Saussure's idea of language as a "system of values", and

elaborated on it throughout his theory.

A. Martinet's⁴ (1955) reaction to Trubetzkoy's theoretical distinction between phonetics and phonology, and to Hjelmslev's exclusion of phonetics, i.e. substance, from the linguistic treatment of the system, was complete dissatisfaction. Martinet carefully distinguishes between phonetics which studies "language-sounds as physical facts to be classed as such", and linguistics (or functional phonetics) which deals with the "classification of the phonic value for the maintenance of mutual understanding".

Despite this theoretical division into two domains of language-study, where each one has its own methods of identifying its relevant components, we find, in practice, that the borderline between the two areas has not been precisely drawn and the two areas are left to gradually merge into one another. Take as examples Martinet's classification of the phonemes of English, or his notion "simultaneity" in the definition of the phoneme, or even his rules for the treatment of whether a consonantal cluster is one or two elements. His description of phonology (in 1955) as "functional phonetics" is fully consistent with his actual practice, not with his theoretical division.

Finally, we come to the discussion of the phonetics: phonology relationship in the theory of A.F. whose main priority has always been to be as clearly and as rigorously logical as possible.

It has been noted in Chapter 1 that J.W.F. Mulder's⁵ (1968 et al) interest was not only to formulate a linguistic theory for the description of the phonologies and grammars of natural languages, but to create an overall semiotic theory for the description of all types of system of communication. Therefore, in such an approach we should not find any difficulty in maintaining the distinctions or indicating the relations between the different disciplines. While the doctrine of the "double articulation" takes care of delimiting the domains of phonology and grammar, respectively, it is the "functional principle" that determines the distinction between the fields of phonetics and phonology. The "functional principle", which pervades the theory as a whole, dictates that any feature has to be "separately relevant to the purport of the whole of which it is a part", disqualifies phonetics from being included within the boundaries of the linguistic theory proper. This is due to the fact that phonetics, as a science, deals with sounds as physical entities, describing how they are perceived or emitted, a process which involves studying the speech apparatus participating in the formation of these sounds according to their articulatory/acoustic properties. Being of an entirely physical nature, phonetics is usually levelled with the physical sciences, rather than with linguistics proper. This does not render phonetics in any way redundant to linguistics; on the contrary, it constitutes an important auxiliary discipline which helps us to formulate our statements of realization. These statements allow us to project our phonologically established elements onto

their respective phonetic perspectives to establish a phonetic realizational value for each one of them. In other words, these statements help to actualize and assign a phonetic counter-domain to each phonological element in the system; otherwise, our phonological description of a language remains vacuous with no material adequacy, whatsoever, to test its validity. Therefore, phonetics is linked to phonology by an intermediary realizational level called "allophony" (or "functional phonetics" in A.F. terminology) which fully belongs to phonology, rather than to phonetics. (See the diagram given in Chapter 1).

Notes to Chapter 4.

- 1- In the "Projet de terminologie phonologique standardisée", Trubetzkoy offers the following definitions:-

Phonologie: Partie de la linguistique traitant de phénomènes phoniques au point de vue de leur fonction dans la langue.

Phonétique: Discipline auxiliaire de la linguistique traitant de phénomènes physiques du langage abstraction faite de leurs fonctions dans la langue.
- 2- E. Stankiewicz, (editor), A Baudouin de Courtenay Anthology.
- 3- See also, Paul L. Garvin, "Review of Prolegomena to a Theory of Language", F.J. Whitfield, "Glossematics" and H. Spang-Hanssen "Glossematics".
- 4- See also, A. Martinet's A Functional View of Language.
- 5- See especially Mulder's Sets and Relations in Phonology and his "Postulates of Axiomatic Functionalism".
Reference should also be made to Mulder and Hervey's "Language as a System of Systems" and to Hervey's "Mulder's Axiomatic Linguistics".

CHAPTER 5.The Principles of "Functionality" and
"Availability of Alternative Choice"
and the Conception of "Semiotic Economy".The Functional Principle:-

One of the most distinctive characteristics of A.F. is its insistence and reliance on what has come to be known as the "Functional Principle". Due to the vital role this principle plays in the theory as a whole, it was included in the first of the six basic axioms of the theory of A.F. According to the first axiom "all features in semiotic sets are functional", where a "semiotic system or set" is defined as a "self-contained system of conventions for communication" (my italics), and "functional" stands for "separately relevant to the purport of the whole of which it is a part"¹. This can be reinterpreted to mean: that nothing can be considered or established as a significant element belonging to a semiotic system, unless the element in question has shown itself to be, at the appropriate level of analysis, separately relevant (functional) to the system under consideration, i.e. it has complied with the requirement of the functional principle. By doing so, the functional principle not only takes care of limiting the scope of the theory, but does so by determining what may or may not be considered worthy of treatment and, therefore, relevant or irrelevant to the description. The conception and formulation of the definition of the notion "functional"

immediately relates it to the principle of "availability of alternative choices" (see further below) which implies "opposition" in equivalent contexts; in other words, the functionality of all and every element in a system must be demonstrated with respect to communicative potential by opposing each element in at least one context to some other element belonging to the same level of analysis, or to zero. Unless the functional presence and absence of the element in question (which is a matter of alternative choice) can be manipulated, the element can never be shown to represent any significance to communication, and, therefore, does not qualify as part of the system. In English, for example, the formal distinction between "a" and "an" which is functional from the phonological point of view, is not grammatically functional. As realizations of the so-called "indefinite article", they are contextual variants ("different forms of the same expression" the choice between which is automatically determined by context) and, consequently, the difference between the two, on the grammatical level, is not in itself significant to communication. The same argument applies to the different forms of the verb "to be" and the verb "to have" in English. The application of the same principle to the establishment and description of the consonantal phonemes of Southern English precludes, for instance, the glottal stop [ʔ] from being established as a separate phoneme in the inventory.

Linguistic Economy: Introductory:-

The reader will no doubt be aware of the importance

functionalist linguists attach to the notion of the "double articulation". Among functionalists, it is possible to trace differences of opinion concerning the type and nature of elements on each level of analysis. These differences, which were alluded to in general outline in previous Chapters, do not concern us here, as we are mainly interested in explaining what is meant by "structural" or "linguistic economy" and the "principle of choice", the latter of which can be reinterpreted, in the light of the A.F. theory and practice, to mean the "principle of availability of alternative choices".

As geologists and archaeologists have, relatively, similar views on the layering nature of geological formations or archaeological digs, so do functionalist linguists with respect to the layering or compartmental nature of the linguistic structure of languages. According to them, every meaningful act of human linguistic communication (utterance²) of "experience" (Martinet³) can be broken down or analysed on the level of the first layer (first articulation in Martinet, grammar or plerology in A.F.⁴) into a succession of meaningful constituents (signa); (ibid). Each of these discrete constituent signa is viewed as a conjunction of a particular expression and a particular content, none of which can be analysed on that level into smaller units each with a certain form and a correlated content (Martinet, 1969 and Mulder, 1968). These isolable signa, as self-contained units of form and content, may recur infinitely in other contexts to convey

different experiences or utterances, thus economizing on the number of simple basic elements in the inventory. In a sentence like "I love Sandra", for example, each of the units "I", "love" and "Sandra", may occur again in other sentences to communicate different experiences, e.g. "Sandra gave her brother a bottle of milk", "My baby loves his food", or "My wife and I visited Mrs Thatcher, our next-door neighbour", etc. It is obvious that from a basic limited number of such units we can create an infinite number of more or less original "sentences"⁵.

The economy of the first articulation corresponds to another autonomous (though complementary) type of economy which manifests itself on the level of the second layer (articulation, phonology or cenology in A.F.⁶) where (only) the phonological form of the expression of any of the units of the first layer can itself be analysed into a number of purely formal distinctive constituent elements. Each one of these elements may participate in the formation of other distinctive formal structures that, on the level of the first layer (articulation), may serve to convey different messages, e.g. the phonological form of "pit" /pit/ is analysed into three formal components, i.e. /p/, /i/ and /t/, where each can recur as a constituent in other constructions, e.g. /p/ in /pak/ "pack", /i/ in /sin/ "sin", and /t/ in /tork/ "talk", respectively. The number of these discrete phonological elements, i.e. phonemes, in each language is limited to a restricted closed set. These discrete formal entities enable us to keep distinct the forms of units of the

first articulation.

On the phonological level of analysis in A.F. we can establish a supplementary type of economy which we can justifiably call "phonematic economy". A language which utilizes a closed set of functional distinctive features comprised of two harmonious articulations of "orders" and "series", corresponding roughly to points of articulation and manner (mode) of articulation on the realizational level, and allows each "order" to combine simultaneously with members of a "series" (though in certain restricted ways) to form the phonemes of the language, is more economical than another language whose features do not demonstrate the capability of intersecting with one another. This means, that while the speakers of language (A) will economize on the number of articulations which they have to keep distinct and, consequently, will be able to distinguish between a larger number of phonemes in their language by means of a limited number of articulations, the users of language (B) will have to keep separate, presumably, an equal or a larger set of distinctive features (or points and modes of articulation) to account for a lesser number of phonotactic elements. In a language like English, for instance, we can account for the twenty consonantal phonemes and the eight consonantal archiphonemes by means of as few as twelve functional distinctive features. The vocalic system of the same language can be exhausted by using five distinctive features to account for the six vocalic phonemes and the three vocalic archiphonemes.

The importance of the economy achieved by the second articulation, according to Martinet, lies in the fact that it establishes the "form of the significans independent of the value of the significatum and thus confers greater stability on the linguistic form"⁷. By excluding meaning in the analysis of the significans into elements of pure form, we are, in fact, preventing "meaning" from exerting any pressure on the analysability and identification of its form. This ensures that a formal element preserves its identity wherever and whenever it occurs regardless of the meanings of the combinations. Any variation or distortion to the realization of a specific phoneme in the proximity of other formal elements can be dealt with on the realizational level "allophony" only and not on any other level, as the adequacy of a phonological description can not be judged in the light of the semantic import of the message conveyed.

Semiotic Economy in A.F.:-

The deductive classification of functional types of semiotic system (including language) proposed by Mulder⁸, Mulder and Hervey⁹, and Hervey¹⁰ in the process of the development of the theory of A.F. is entirely based on the manipulation of one "integrated A.F. theory of semiotic acts" which is the logical outcome of the amalgamation of three mutually complementary sub-theories, i.e.:-

- 1- Systemology ("theory of semiotic systems"; Mulder, 1980)
- 2- Semiotics ("theory of indices"; Mulder, 1980)

3- Ontology ("signum-theory"; Mulder, 1980)

On applying these three sub-theories to the description of semiotic acts, we can roughly pick up and recognize five subsequent notions of particular importance, they are:-

- 1- The definition of the notion "semiotic system" as a "system of conventions for communication", which delimits the scope of the approach.
- 2- A potential for internal deployment of functional elements (i.e. analysability and/or combinability of elements).
- 3- Types of relation holding between functional constituents in combination (i.e. simultaneity versus articulation).
- 4- The principle of functional relevance.
- 5- Degree of economy.

These criteria are partly (not wholly) embodied in Axiom B, whereby:-

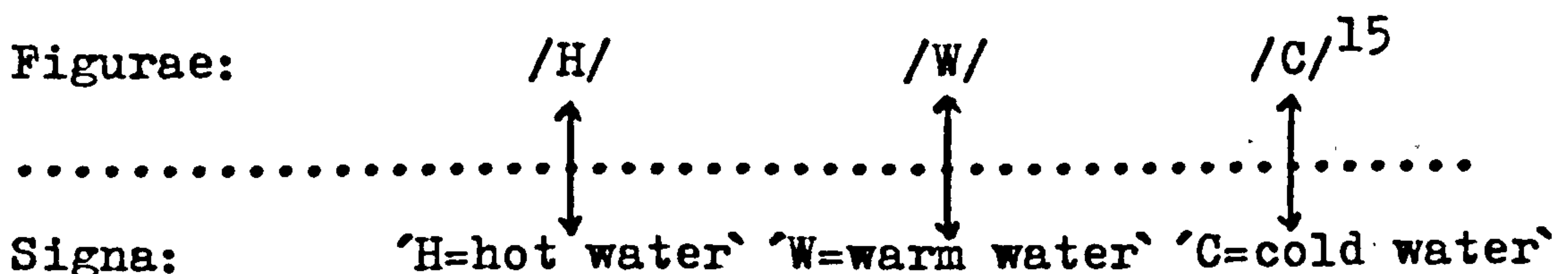
"Semiotic systems contain simple, or complex unordered, or complex ordered signa and figurae"¹¹ (my italics).

This advanced conception of the different types of semiotic system embodied in Axiom B makes it possible to foresee that all systems of communication in general, and every one of them in particular, must manipulate two mutually complementary (though autonomous) levels of entity: figurae¹² and signa¹³. These two levels represent two subsystems co-existing together

within the same semiotic system, but, as it is obvious from Axiom B, neither of them can, by itself, constitute a semiotic system in its own right. With this restriction in mind, we can assert that all semiotic systems are "compound", in the sense that each system, no matter how simple it may be, manifests two levels of inventory, a cenological level, as well as a plerological level. Even where there is perfect and complete isomorphism between the inventory of figurae and that of signa, the two inventories remain ontologically distinct.

The simplest possible type of system, conceived by Axiom B, is a system which does not display any inherent potential for combinability or/and analysability of/into semiotic elements. A system characterized as such contains a limited set of figurae, where each member of the set corresponds to and is isomorphic with a specific signum in the correlated finite set of signa of the system. This lack of discrepancy between the two inventories is a corollary of a zero-degree of economy on both levels of analysis.

For the above reasons, a system of this type is formally labelled as an unproductive and uneconomical "simple semiotic system"¹⁴. Hervey's (1982) example of the simple semiotic system currently in use on shower attachments in bathrooms provide us with an instance of such a system:-



The unproductive nature of this system and its lack of economy can be expressed (after Hervey, 1982) as a ratio of 3:3 on the cenological level, and 3:3 on the plerological level. Each numerical ratio represents the number of elements in the basic inventory and the number of elements in the overall inventory on each level of analysis.

It is only when we set out to examine systems of a complex nature that "semiotic economy" starts to materialize in varying degrees.

A "complex semiotic system"¹⁶, tautologically, is a system which contains two types of functional elements:-

- a- Simple elements which do not render themselves to functional analysis, and
- b- Complex elements which are combinations of simple elements.

Though this sui generis quality of "combinability" is the backbone and the intrinsic characteristic of complex systems in general, we should not overlook the theoretical fact imposed by the logical deductive classification of semiotic systems that the notion "complex" is a neutral concept with respect to the distinction between "complexity on one level" and "double complexity" which is the distinguishing mark of "doubly complex systems".

An exhaustive description of a "complex semiotic system" can be arrived at by categorizing the elements on both levels of analysis in two separate inventories, if the number of the

permissible combinations is ostensibly restricted. Otherwise, the describer is obliged to formulate a set of rules or generalized statements indicating the conventions of combinability of the basic simple elements to form the complex entities of the system.

This type of system can be termed, regardless of its degree of economy which may be extremely low or extremely high, a productive and, therefore, economical semiotic system.

As it is not feasible to discuss "combinations" or "complexes" without referring to the type of constructional relation that holds between the constituents in combinations, we shall proceed to establish two significant types of relation, i.e. "simultaneity" and "ordering" relations. On the bases of these additional features, two fundamentally different complex semiotic systems can be logically acknowledged:-

- 1- Complex unordered system.
- 2- Complex ordered system.

A "complex unordered system"¹⁷ is endowed with the same qualities characterizing complex semiotic systems in general, except for the added specification of absence of ordering relations. The combinations, in such a system, do not display any latent potential for functional ordering of their constituents; in other words, all the constructional relations between the constituents in complexes are relations

of simultaneity, to be understood as: Relations of mere constructional togetherness.

We can imagine with Hervey (1982) the existence of a hypothetical system of three basic simple entities (signa in his example): 'a = hop', 'b = skip', and 'c = jump', which can simultaneously combine to form unordered complexes with only one convention restricting each element (signa) to one functional occurrence (maximum) in each construction. The possible result, which can be termed the "overall inventory" of the system, will inevitably be:-

'a = hop', 'b = skip', 'c = jump'
 'ab/ba = hop and/or skip'
 'ac/ca = hop and/or jump'
 'bc/cb = skip and/or jump'
 'abc/acb/cab, etc. = hop and/or skip and/or jump'

i.e. 7 entities, where ab and ba, etc. are equivalent unordered (simultaneous) bundles of entities. The 3:7 economy ratio of this system is indicative of the relative "richness" of the system (compared with simple systems) which is based on the discrepancy between its set of simple elements and its set of the possible and permissible combinations of its simple elements. If these simple elements (in the above example) can combine to form functionally ordered complexes, the potential output of entities will rise to 15.

The elements in a "complex ordered system"¹⁸, in contradistinction to those manifested by a complex unordered system, are characterized by their potentiality for structuring into orderable complexes, i.e. constructionally asymmetrical complexes. A complex ordered semiotic system can either be cenologically complex, e.g. the system of the Morse Code (Mulder and Hervey, 1975), or ^{be}plerologically complex, e.g. the system of Arabic Number Writing (Hervey, 1982, and Mulder and Hervey, 1975), or both.

In a hypothetical ordered system of 32 basic entities (Mulder's An Advanced Course in Descriptive Linguistics, forthcoming) with no limitation on the maximum occurrence of its entities in any one combination, the potential economical overall output and the richness of the system becomes incalculable and may reach infinity, whereas in an ordered system with restrictions on the occurrence of items, (only one maximum occurrence in the chain), the possible output can be calculated, though not without great difficulty.

As the theory of A.F. is an all-embracing theory for the description and classification of the different types of communication act, it does not fall short of hypothesizing the possibility of encountering "doubly complex systems".

A "doubly complex unordered system" is theoretically conceived as a system with two complex unordered subsystems:-

- 1- A complex unordered cenological subsystem which is composed of simple formal elements combining simultaneously to form unordered combinations of figurae, and
- 2- A complex unordered plerological subsystem composed of an inventory of simple signa combining together to form simultaneous bundles of signa.

The only connection between the two inventories lies in the fact that the first subsystem contributes the formal elements to the other subsystem which utilizes them in stating the forms of its signa.

The "doubly complex ordered system", on the other end of the spectrum, is a system which is entirely composed of a complex orderable cenological subsystem and a complex orderable plerological subsystem, i.e. two articulations. Each subsystem contains simple elements (figurae or signa) orderable into complex figurae or signa without containing any unordered complexes on either of its two levels. Since we may equate "articulation" with "potential for ordering", a system with such features complies with and fulfills the minimum requirement set down by the definition of the notion "language" as a "semiotic system with a double articulation".

As the discussion from now on centres on examining the different possible combinations of the systems and subsystems hitherto discussed, I see no necessity for reiteration.

The reader is therefore simply invited to reconsider the arguments in the previous Chapters as well as the published literature on the subject by Mulder and Hervey (mentioned in the sequence of the discussion), where the two authors finally and logically lead to the identification of the optimal type of semiotic "system of systems" exemplified by "natural language".

Summing up, we can say that systems manipulating the symmetrical principle of construction are higher in the hierarchy of economy than simple systems, but are economically inferior to the ordered systems which employ the asymmetrical convention of construction. Ordered systems with no structural restrictions on the occurrence of the items are more productive than those with restrictions on the repetition of elements in a construction. It remains to be said that "natural language", which manifests all those features (in their totality), can be said to offer the richest and most economically practical means of communication.

The Principle of Availability of Alternative Choices:-

Closely connected with the notion of "semiotic economy", is the principle of the "availability of alternative choice". According to Mulder (1968):-

"Something is functional if it conveys information, and something can convey information if it involves a choice on the part of the speaker",

i.e. only if it could as well be otherwise. Sequential order, for instance, is only relevant if the order in question could equally well be different. Linear sequence in the realization of simultaneous bundles of distinctive features is, for example, not a matter of alternative choice, simply because the relative physical position of each feature with respect to the other features in the same bundle is functionally irrelevant and does not convey any information. We can, in fact, maintain that on this level of analysis bundles of distinctive features do not include "symmetric order" in their structure because sequential order is a realizational phenomenon rather than a matter of deliberate "choice" on the part of the speaker. It is absolutely clear that the users of a language do not go through the process of consciously picking up certain distinctive features which they see as combinable to produce the discrete phonological segments of the system every time they utter a sentence or intend to communicate. However, every member in a linguistic community has a particular functional choice, depending on the availability of alternative oppositions in his language, of using one element instead of another on the basis of the information he intends to convey, i.e. the choice between /b/, /l/, /f/, or /m/, in an equivalent context such as /-eik/ will submit the following forms:-

/beik/ "bake", /leik/ "lake", /feik/ "fake", and
/meik/ "make",

respectively, to choose from. The phonemes, as such,

serve to distinguish one form from the other because they themselves are specific choices recognized to be so by the speakers of any one language.

The reader is recommended to consult an interesting and most illuminating discussion of G.K. Zipf's (1949 et al) "principle of least effort" which is intimately related to the two notions of "economy" and "availability of alternative choices". The discussion of Zipf's principle can be found in Mulder (1968), Martinet (1962 and 1969) and J. Lyons (1972). L. Prieto's (1966) notions of the different types of economy with all their ramifications, and Hervey's (1982) contribution towards a logical deductive classification (and understanding) of semiotic systems, are two indispensable references to those interested in developing the argument beyond the limitation of this Chapter.

Notes to Chapter 5.

1- J.W.F. Mulder, Sets and Relations in Phonology.

2- J.W.F. Mulder and S.G.J. Hervey, "Postulates for A.F.",
whereby,

"Grammatical entity" for "signum in a semiotic system
that has a grammar".

"Plerematic system" for "system of signa". This may be
a simple or a complex system.

"Grammar" for "complex system of signa", (alternative
definition to Def. 2a^{3a}).

"Proper grammar" for "system constituted by the
interlocking of one morphology and one syntax".

"Utterance" for "member of a sign (as a class) such that
it is a model for a single realization (in actual)
communication) of that signum". See also Axiom F and
Def.s 1a and 1b in the "Postulates".

"Signum" for "the conjunction of a particular expression
and a particular content, which mutually imply one
another".

3- A. Martinet, Elements of General Linguistics and
A Functional View of Language.

4- See the reference in footnote 2.

5- "Sentence" for "signum such that it is a self-contained
vehicle for conveying messages". See also Def. 20 in

the "Postulates" for alternative definitions.

- 6- "Cenology" for "cenematics or cenotactics or both",
(my italics). For further information, see Def.s $2b^{1b}$,
 $2b^{1c}$, $2b^{1e}$, $3a$, $3c^{2a}$, in the "Postulates".

"Cenological system" for "system of figurae". This is
not necessarily a cenology, i.e. it may be a simple system
(see below and compare with the definition of "plerematic
system", above).

- 7- See the reference in footnote 3.

- 8- See the reference in footnote 1.

- 9- See the reference in footnote 2, as well as "Language as
a System of Systems".

- 10- S.G.J. Hervey, Semiotic Perspectives.

- 11- See the reference in footnote 2.

- 12- "Figurae" for "semiotic entity which has only form".

See also Def. $8a^2$ in the "Postulates".

- 13- "Sign or symbol" for "semiotic entity with both form and
information-value", simply called "signum" or "plerematic
entity".

"Sign" for "signum with wholly fixed conventional
information-value". See also Def. 24 in the "Postulates"

and its application in "Language as a System of Systems".

- 14- "Simple system" for "system without combinations of elements". See also "Language as a System of Systems".
- 15- We have reservations on the use of slant lines by the author to indicate the cenological status of formal semiotic elements. The use of slant lines has always been restricted to signify and accommodate phonemes (and combinations of phonemes) in natural spoken languages. The < >-type of brackets, for example, is normally associated, in graphology, with any graphological element (or clusters of graphological elements). See in this respect William Haas, Phono-Graphic Translation; Gwendoline Soutar, "Written 'Language' as a Semiotic System"; Fawzi El-Shakfeh, A Graphological Description of of the Consonantal Writing System of Arabic, (M. Litt. Thesis). It is therefore most appropriate to establish the convention of using a different type of brackets to enclose and refer to formal elements not belonging to a spoken or a written system.
- 16- "Complex system" for "system with combinations of elements". See also "Language as a System of Systems".
- 17- "Unordered system" for " complex system without ordering relations between elements". See also Def. 6b in the "Postulates". The reader is advised to consult the the references referred to in footnotes 1, 9 and 10.

18- "Ordered system" for "complex system with ordering relations between elements". See also Def. 6a in the "Postulates" and the discussion of ordered system in the references listed under footnotes 1, 9 and 10.

CHAPTER 6."Neutralization" and "Archiphoneme".

Apart from Trubetzkoy, Hjelmslev and Martinet, J.W.F. Mulder (1968) is a linguist who has most effectively and thoroughly investigated the notions of "neutralization" and "archiphoneme" in his theoretical approach, (see the Supplement to this Chapter).

In order to arrive at logical conclusions and to achieve simplicity and clarity of vision, Mulder resorts to the manipulation of relation-theory, set-theory, and other devices borrowed from mathematical logic and algebra. By doing so, Mulder has not only successfully avoided any reference to the extralinguistic considerations of "feeling", "perception", "psychological reaction" and "intuition"¹ of the members of the speech community (which are characteristic of Trubetzkoy's (1968) and Martinet's (1969 et al) treatments) towards the phenomena of "neutralization" and "archiphoneme", but he has also managed to relate these theoretical concepts to their phonetic substance without indulging in sheer theorization (which is a tendency in Hjelmslev (1961)), and without relying too heavily and directly on the phonetic facts (like Trubetzkoy and Martinet).

On the other hand, compared with the Glossematic and the Stratificational approaches, Mulder is emphatically against allowing the notion of "neutralization" to operate on any level other than the phonological.

According to him (1968, p.59), "neutralization belongs ^{to} phonology and not to grammar". (It should be noted in this context that nowhere in his printed literature does Mulder elaborate on this or give any further reasons for such a restriction, which is questionable).

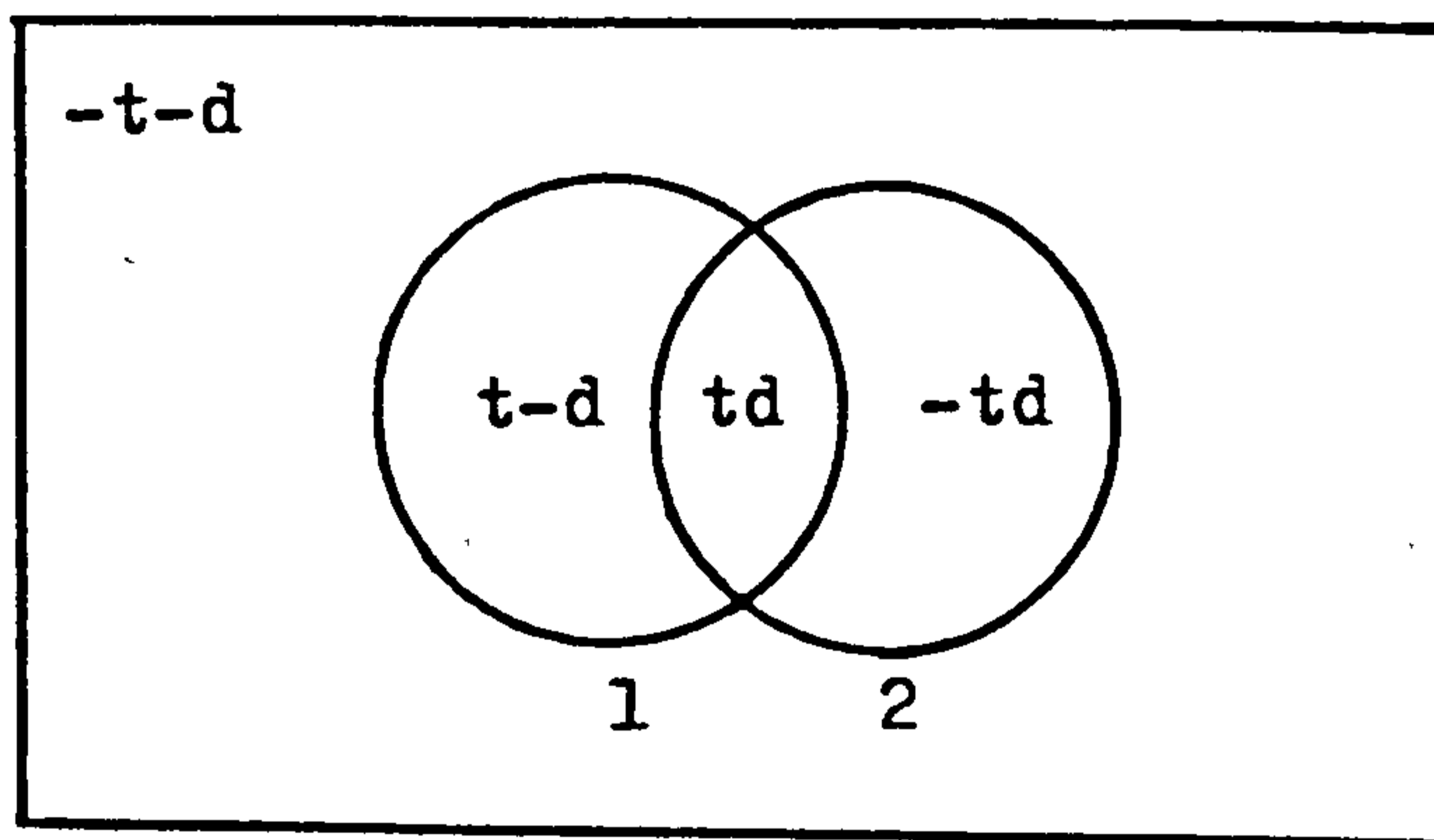
However, the concept of "archiphoneme" as a theoretical paradigmatic entity is formally defined by Mulder (1968) as a "simultaneous bundle of distinctive features in a phonological sub-system, which bundle is common to two or more phonemes in another sub-system and consequently in the over-all system". In 1974, Mulder defined the concept as "a self-contained simultaneous bundle of distinctive features common to two or more phonemes in a phonological sub-system"².

In view of this, the value of the notion "archiphoneme" is all the features common to the phonemes participating in the operation of neutralization. Since an "archiphoneme" is an element which results from the regular suspension of distinctive function (or paradigmatic opposition) between two or more phonological elements, and since this archiphoneme can enter into paradigmatic oppositions with other phonological elements in the system, the notion "archiphoneme" can be considered to be equivalent to a "phoneme" in certain sub-systems. This special type of "phoneme" does not only presuppose two or more phonemes in the overall system, but it also represents (and is represented by) these respective phonemes in the overall system.

Logically speaking, the terms which participate in the operation of neutralization properly include (collectively and separately) the product of the operation. As it is acceptable in mathematical logic for the product of two terms to be logically contained in the sum of its terms as well as in each of its terms, it follows that an archiphoneme (as a product) is a proper sub-set of each of its terms and of both of them.

By following Mulder's footsteps (1968), we can demonstrate in simple terms the validity of this basic argumentation.

Let the rectangle in the subsequent diagram represent the set of all S.E. phonemes other than /t/ and /d/, and let it be understood that circle 1 represents class "t", and circle 2 represents class "d"; thus, we have:-



The product of "-t" and "-d" is everything which is neither /t/ nor /d/ in the universe of S.E. discourse. The product of "t" and "-d" is everything which is /t/ but not /d/, i.e. the distinctive feature /fortis/, and the product of "-t" and "d"

is everything that is /d/ but not /t/, i.e. the distinctive feature /lenis/. The product "td", which refers to the intersection of classes "t" and "d", designates everything which /t/ and /d/ have in common, i.e. the features /apical, occlusive/. In other words, the distinguishing characteristics of /lenisness/ and /fortisness/, which are responsible for keeping the two phonemes apart (e.g. "ten" vs. "den"), can and should be neutralized when any of them is preceded, for instance, by elements like /s/, /p/, or /g/ in examples like "steal", "kept", and "rigged", respectively.

Though the above contexts of neutralization can be generalized to cover correlations or classes, rather than single phonemes, we have decided (for simplicity reasons) to postpone launching our generalizations to a later stage in this work.

With further reference to the above diagram, a distinction should be maintained between the two algebraic concepts of "sum" and "product".

The "sum" of the two classes "t" and "d" in the diagram means "either t or d or both t and d", i.e. $(t-d) + (td) + (-td)$. Bearing in mind that (td) is the product of the intersection of classes "t" and "d", we come to the conclusion that:-

class "t" is equal to:- $(t-d) + (td)$
 and, class "d" is equal to:- $(td) + (-td)$.

In consequence, the product (td), which represents the intersection or the overlapping between classes "t" and "d", is in fact contained (in terms of its distinctive features and distinctive function) in the sum of its terms as well as in each of its terms. This "product", which results from the neutralization of opposition between two or more terms (or from the intersection of two or more classes), can be linguistically identified as an "archiphoneme".

The product (td), for instance, in the above diagram happens to refer to an established archiphoneme in S.E., i.e. archiphoneme /T/, (see PART II, Chapter 2). This archiphoneme results from the systemic suspension of opposition between /t/ and /d/ in the context of a neighbouring (preceding) phoneme belonging to the correlation /lenis:fortis/, e.g. "begged", "kissed", "kept", "stake", etc. The value of this archiphoneme is all the features common to /t/ and /d/ in their totality, i.e. the features /apical/, /occlusive/, as well as the neutralized features /lenis:fortis/. In accordance with the algebraic formulae above, the value of archiphoneme /T/ is equal to $t-(-d)$, i.e. the negation of the negated term, (see Mulder, 1968, p.100).

However, since the phonemes above share between them a set of distinctive features, the operation of neutralization can be said to be directly applicable to these distinctive features (a point which is relatively isomorphic with Martinet's postulation in 1936). Nevertheless, we know from Chapter 3 that these distinctive features always occur in

bundles, never separately, i.e. they are bound elements. Consequently, the whole operation of neutralization logically amounts to an indirect suspension of opposition between the phonemes themselves (which is reminiscent of Trubetzkoy). This in fact boils down to saying that any two (or more) phonemes in the system (irrespective of whether they stand in an "exclusive relation" or a "bilateral opposition", or not) which share a common feature-base (of one or more distinctive features) and are distinguished from one another solely by means of some other distinctive feature (or features) exhibit a potential case of neutralization.

While this logical interpretation reconciles Trubetzkoy's and Martinet's views concerning the domain of the operation of neutralization, it avoids their pitfalls and their arbitrary conclusion.

In order to regulate and systematize the operation of "neutralization", Mulder (1968) postulates three requirements for the establishment of "archiphonemes" in any one language³, namely:-

- 1- There should be, in one of the established sub-systems, two or more potentially opposed phonemes having a set of distinctive features in common. A requirement which we can reinterpret to mean that neutralizable candidates should manifest among themselves systemic proportionality of relationship.
- 2- The elements involved in the neutralization should be distinct in at least one context.

- 3- The context of neutralization must be specifically identified whereby the elements participating in the operation of neutralization can never be found to be opposed to one another. The context can be indicated in terms of single phonemes, correlation of phonemes, dimensions, positions, or otherwise.

These three requirements can be supplemented by a fourth condition the function of which is to facilitate the identification of the neutralizable candidates. This condition runs as follows:-

- 4- The decision as to which elements are to be neutralized in a specific archiphoneme should be based on and governed by their distributional characteristics as well as by the conventions governing their combinability/exclusiveness in the language concerned.

Furthermore, the established archiphonemes require some representational convention to highlight their special status in the system. It is here that Mulder (1968) adheres to the Praguean method of using capital-letter notation to represent archiphonemes. Mulder's only justification for not using any other method is attributed to the fact (as he puts it) that "archiphonemes are conventionally written by capital letters", (my italics), (Mulder, 1968, p.25).

Though the choice of any one specific label, rather than another, for the establishment of a convention is always viewed as involving a good deal of motivated arbitrariness

and therefore requires no further theoretical justification, we find certain linguistic quarters questioning the validity of such motivated arbitrariness. Objections of this nature have been raised, to mention but a few, by Martinet, Akamatsu, and Davidsen-Nielsen (see further below).

Since the established archiphonemes in this work will be represented by capital-letter notation, it is worth pointing out in a casual manner (without involving ourselves in extensive theorization) that our reasons for representing archiphonemes by means of capital letters can be attributed to the following three interrelated factors:-

- 1- Simplicity of representation.
- 2- Economy of representation.
- 3- Practicality and appropriateness of representation.

In order to clarify our point, we invite the reader to weigh the pros and cons of the following representational devices.

Let us presume that we are asked to render the two S.E. examples "link" and "scrambles" into their corresponding phonological forms, we shall represent them as:-

/liNK/ and /sKraNblS/, (see PART II in this work).

However, according to Akamatsu (1981), Davidsen-Nielsen (1978), Martinet (1969), etc., the phonological representations of the two examples under consideration must undoubtedly be something resembling the following, (on the assumption that they accept the validity of our established archiphonemes):-

Akamatsu will write:- //li/n-m-ŋ/ /k-g///

and, //s/k-g/ra/n-m-ŋ/bl/s-z///.

Davidson-Nielsen will write:- /li <n/m/ŋ> <k/g> /

and, /s <k/g> ra <n/m/ŋ> bl <s/z> /.

Martinet will write:- //li /n/m/ŋ/ /k/g/ //

and, //s /k/g/ ra /n/m/ŋ/ bl /s/z/ //.

These proposals are especially attractive when we deal with monophonotagmic short forms containing at most one archiphoneme each and a limited number of other constituent elements. On the other hand, one can very easily figure out that such representational devices are not only impractical, inappropriate and uneconomical to operate with, but they are also clumsy and unnecessarily confusing when it comes to dealing with monophonotagmic (or even worse with polyphonotagmic) forms containing more than one archiphoneme at any one time (as it is the case with our two examples above).

We believe that the Praguean and the A.F. convention of representing archiphonemes by means of capital letters is practically more economical, more convenient, more appropriate, and simpler than all the other suggested representational proposals.

Two Further Notions:-

Before we bring this Chapter to a close, it is worth pointing out that in the interest of submitting a simple, coherent and precise account of the phenomenon of "neutralization" in S.E.,

we shall need to introduce and deploy two new theoretical concepts neither of which, to our knowledge, is separately endowed with any theoretical status in A.F.. These are "neutralization-context" and "neutralization-case".

Despite the fact that the former term (rather than notion) is well-explained and elaborated on by Mulder (1968) in his discussion of the theoretical concept of "neutralization", no attempt has been made to define it in a rigorous theoretical manner. In this sense, we are at variance with the common belief which maintains that "obvious" notions need not be defined in the theory. This is undeniably true of linguistic theories which are intrinsically based on "traditional grammar", but not true of theories which follow an axiomatic hypothetico-deductive method of inference. We are of the opinion that all terms or notions in a scientifically constructed linguistic theory, irrespective of their degree of "clarity" or "obviousness", should be rigorously defined if we are interested in consolidating the scientific nature of the theory in question. On the other hand, the theoretical significance of the second concept has never been contemplated or raised by the theory of A.F. though it follows logically from the definitions of "neutralization" and "archiphoneme", as well as from Mulder's subsequent explanation of the undefined (primitive) term "context".

In consequence, our newly proposed concepts may be defined as:-

"Neutralization-context" for "an element (or elements), a position, or a combination of both, whose presence in a form (or a unit) is a necessary condition for neutralizing the oppositional potential of a preceding and/or succeeding entity (or entities)".

and, "Neutralization-case" for "the unique interrelationship between a neutralization-context and a neutralized element".

Notes to Chapter 6.

- 1- Though "intuition" in such a context is a virtue of linguistic statements, it can not be logically used as positive evidence in favour of neutralizing certain elements rather than others since "intuition", on account of its nature, does not lead to the argument but it is derived from its consequences. According to Mulder (1968, p.197) "it is often the case that intuitively for the native speaker the similarity between phonemes of neutralizable oppositions is greater than that between any other two phonemes, but this fact cannot be used as an argument for the establishment of "neutralization", because it may derive from the neutralization itself".
- 2- Actually, Mulder's subsequent definitions of the notion "archiphoneme" in 1974 and 1980 run as follows: "a self-contained simultaneous bundle of distinctive features common to one or more phonemes in a phonological sub-system". We wonder how can such a common ground of features be established if the minimum requirement is theoretically reduced to at least one (!) phoneme only. It is equally absurd to talk about features common to one phoneme and a zero since a zero has no distinctive features whatsoever, and subsequently it is not a phoneme in the system. We in this work consider the earlier definition of the notion "archiphoneme" in 1968 to be tenable and theoretically valid, and the latter ones in 1974 and 1980 to be

tentatively acceptable on condition that the minimum requirement is altered from "one" to "at least two" phonemes.

3- In order to guarantee the correct understanding and applicability of the notion "neutralization" and to free it from all ambiguity, Mulder (1968, p.197) furnishes us with a list of six directive guidelines capable of sustaining the definitive differential between the three superficially similar phenomena of "neutralization", "defective distribution" (restricted distribution) and "accidental gaps". These points run as follows:-

- 1: Paradigms are always restricted. That is to say, no paradigmatic class contains all the phonemes of the overall inventory.
- 2: Restriction can be accidental, i.e. there may be accidental gaps in the pattern, or it can be significant.
- 3: Something is accidental, unless it has been made part of the theory. No theory should include statements which are not simpler or more general than the corresponding statements of fact (i.e. the protocols).
- 4: Significant restrictions to paradigms are due either to significant features of distribution or to neutralization.
- 5: "Distribution" as well as "neutralization" has a clearly defined determining context. Ergo,

if no well-defined determining context can be established, non-occurrence of an item in a certain paradigm cannot be shown to be significant.

6: Significant restrictions to paradigms pertain to "neutralization", if and only if the three conditions (for the establishment of archiphonemes) apply, which conditions can be deduced from the definitions of the notion "archiphoneme". In all other cases these restrictions pertain to "distribution".

Supplement to Chapter 6.

The difference between the theories which stipulate provisions for the accommodation of the notions "neutralization" and "archiphoneme", and the linguistic trends which are reluctant to provide such stipulations, can be attributed among other things to two intimately related factors:-

- 1- Insistence on paradigmatic oppositions as opposed to syntagmatic relations in establishing and determining the value and identity of linguistic units.
- 2- The type of relationship holding between the theoretical apparatus and the linguistic phenomena which is ultimately based on the "point of view" of the approach.

Though the first factor has been properly dealt with by observers of linguistic trends, the importance of the second factor to the two notions above has rarely been raised or discussed by the same surveyors of linguistic approaches. However, since the first of these two reasons has been dealt with properly in many places in the present work, we shall presently devote ourselves to the discussion of the second of the two factors.

It has been alluded to in a preceding Chapter that the descriptive models which a linguist establishes for any one specific semiotic system, and the descriptive solutions which he proposes for certain problems, are not independent of the

theoretical point of view with which he approaches the phenomena. Though the discussion of the full implications of such a statement lies beyond the immediate scope of the present work, it is worthwhile pointing out that an A.F. linguist always views the relationship between the theoretical backbone and the facts, which fundamentally belong to two different and logically unrelated spheres of existence, to be indirectly achieved via the linguistic description, (Mulder, 1980). In other words, it is only through the "linguistic description" that the "theory" and the "facts" come in touch with each other.

Logically then, the "description" not only acknowledges the prior presence of two independent spheres of existence, i.e. that of a "theory" and the other of the "facts", but it is also directly answerable to both of them, in the sense that it should be consistent with the "theory" and adequately describing the "facts".

Consequently, a "linguistic description" can be considered as the new product resulting from this special and highly elaborate relationship between these two spheres of existence, i.e. "theory" and "facts". Such a relationship can be represented after Mulder (1975 and 1980) in the following simplified manner:-

Theory ← Linguistic Description → Facts

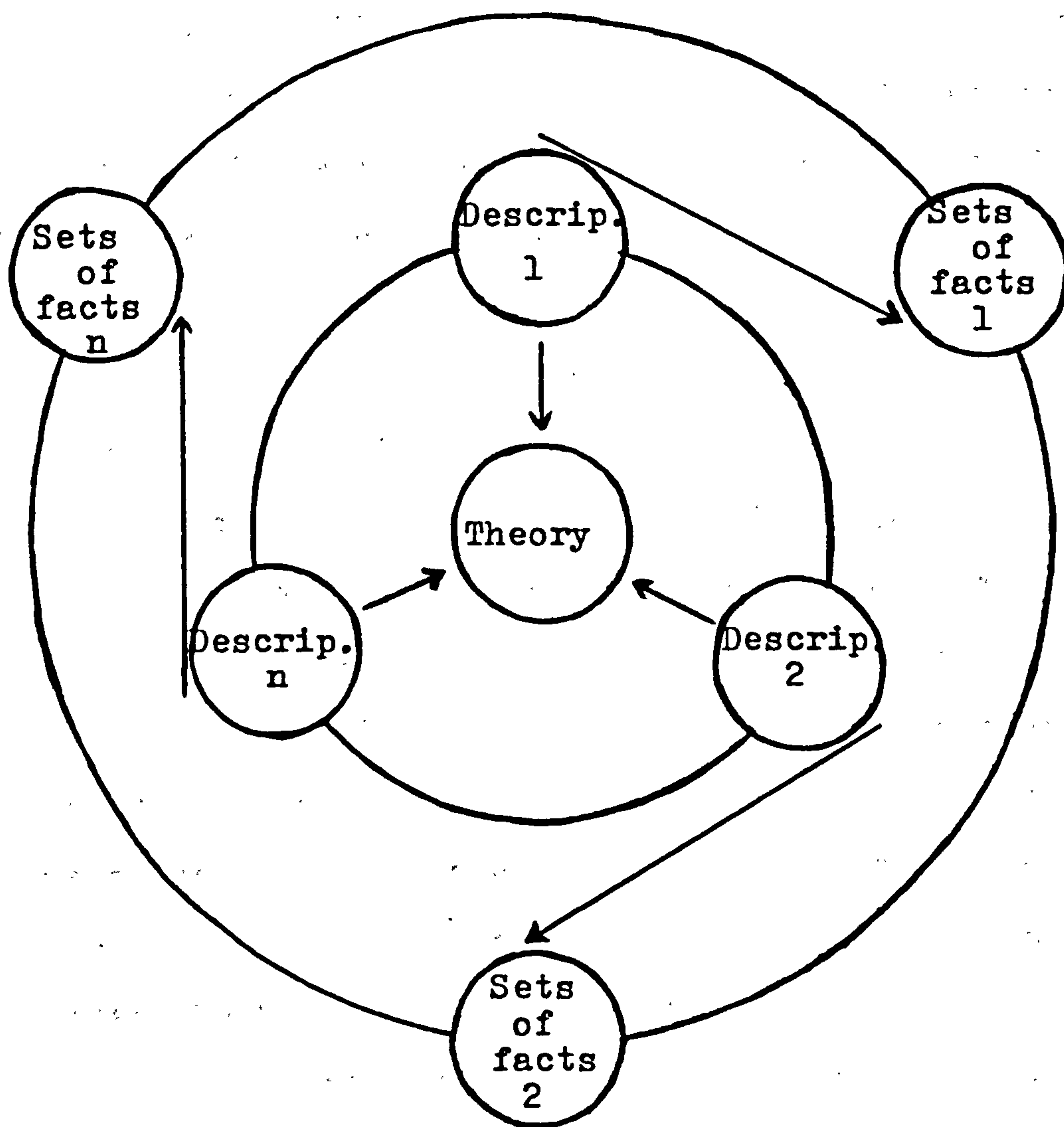
The logical implications of the arrows, which move away from the "description" towards the "theory" and the "facts", should be understood to mean "presuppose", "imply", and "answerable to".

The representational device (above) clearly indicates that if there is any possibility of a relationship between the "theory" and the "facts", it should be via an established "linguistic description", (that is if we are interested in getting consistent and adequate results).

Since any relationship that can be established between the "theory" and the "facts" must always be via a "linguistic description", and since there is in principle an infinite number of "fields of phenomena" or "sets of facts" requiring to be tackled and established in "descriptions", (that is by manipulating the same scientifically built "linguistic theory"), we are bound to arrive at the following conclusions:-

- a: There is a direct one-to-one relationship between each "set of facts" and the corresponding "descriptions", and vice versa.
- b: There is a direct one-to-many relationship between the "theory" and the "descriptions", and vice versa, (i.e. many-to-one).
- c: There is an indirect one-to-many relationship between the "theory" and the "sets of facts", and vice versa, (i.e. many-to-one).

These three types of relationship can be visually and most adequately represented by means of the following unconventional method of representation which demonstrates in more accurate terms the aforementioned types of relationship; thus we have:-



(The "n" in some circles refers to "infinity").

Suffice it to say in this context that with the exception of the European functionalist approaches and to a lesser extent some functionally-orientated American tendencies, this logical interpretation of the relationship between the three entities, i.e. theory, description, and facts, has hardly been seriously discussed or clarified. Even those who set out to promote a solution to this issue (with the exception of A.F.) have failed to maintain a consistent and decisive distinction between the constituents of this trichotomy. In consequence, they could not build up logically convincing argumentations in favour of their so-called scientifically established linguistic theories.

The situation is even less satisfactory with respect to some contemporary linguistic approaches which lay a pseudo-claim to scientificity and deductivity, e.g. the different phases of "Transformational Grammar" and many "Bloomfieldian" and "Neo-Bloomfieldian" tendencies. An objective critical appraisal to the latter type of linguistic approaches will bear out our contention that it is very difficult to draw a line of demarcation between the "theories" per se and the "descriptions" which are based on them, on the one hand, and between the "descriptions" and the "facts", on the other. In fact, the three entities merge to form one unidentifiable entity which makes it difficult to figure out which part of it belongs to the "theory", and which part belongs to the "description", etc.

In consequence, we can generally maintain that the drive towards keeping the three entities apart is in fact implicit

(though not explicit enough) in what can be identified as "European Functionalist Linguistic Circles" as strategically different from the main stream of "American Structuralism" which has failed to observe the relational distinctions between the three constituent entities.

Intuitively then, the application of such a numerous number of linguistic theories to one specific field of phenomenon is bound to yield numerous descriptions having very little in common, other than perhaps the section to be described. Instances of such a diversity have already been discussed in preceding Chapters.

It is exactly the presence or absence of this special and logical type of relationship (among other things) holding between the three entities (i.e. theory, description and facts) which distinguishes European Functionalist Linguistics from American Linguistics. This distinguishing factor constitutes one of the determining impetuses behind laying, or not laying, provisions for the establishment and incorporation of certain notions/models in the theory as well as in the description. (See also Mulder, 1975, and Rastall, 1983).

CHAPTER 7.Positions, Archipositions, and the
Self-Containedness and Types of Combination.Positions:-

The immediate purpose of the present Chapter is to discuss notions which, to the knowledge of the author, have never received the proper theoretical recognition from any theory other than A.F.

An objective consultation of the writings of some prominent structuralist, functionalist, and other linguists, in particular, A. Martinet¹, L. Hjelmslev², Z. Harris³, K. Pike⁴, W.A. Cook⁵, O'Connor and Trim⁶, and others (including followers and associates) will bear out my contention that the concept "position" has always been used informally to indicate "linear succession" or "sequential order", i.e. initial, medial, post-initial, pre-final, etc.

The use of the notion "position", among other things, by the Tagmemicists is no more than "expressing", but not "providing" insight into the relational characteristics of the language. At its best, the notion "position" amounts to the status of a device for expressing the decision arrived at intuitively, but definitely not a method for coming to solutions. Furthermore, the vagueness of the notion "position" in the aforementioned approach lies in the fact that the "structure" (broadly, set of positions) and the "fillers" (loosely, elements) are

never kept apart. This may be due to the fact that the distinction between theory and description is nowhere rigorously clarified or maintained either in theory or in practice.

The optimal aim of the Tagmemic approach is to help in attaining quick, direct and so-called scientific phonological analyses.

Similarly, Pike (1967 and elsewhere) does not hesitate to include meaning in a phonological description. His phonology, as we have shown earlier in Chapter 4, is similar in quality and nature to Martinet's "functional phonetics".

In view of the above, one can say that the Tagmemic theory is but a new endeavour the aim of which is to revitalize the declining Bloomfieldian trend in the States and elsewhere.

As conceived by the theory of A.F., the theoretical concept of "position" is not in essence a linear concept, but a functional notion aimed at the establishment of divisions within a chain (structure) "such that in every such division an entity, as an immediate constituent of the chain (structure), can stand and alternate (i.e. commute) with other entities, or with zero". "Positions" are also defined as "points on a chain corresponding to relata of direct tactic relations". The notion "chain (alternative terms: distributional unit, structure, phonotagm, or field of relations)"⁷ which is, in phonology, a unit of phonotactic distribution, is defined as a "self-contained (simultaneous) bundle of positions", which can be understood to mean a self-contained (and complete; see further below) phonotactic construction. The minimum

requirement of a chain (construction) is that it should contain two positions, and the maximum extension is determined for each language separately with reference to the maximum extension of its combinations.

Tautologically, ordering (syntagmatic) relations can be demonstrated to hold between elements (or groups of elements) standing in their respective positions within the same field of relations. This field of relations, as explained above, is basically composed of a self-contained group of interdependent positions. Within the domain of the established distributional unit, the distribution of the phonemes of a given language can be carried out accurately and successfully in terms of their distributional occurrences in positions or archipositions.

The distributional unit as a model consisting of a set of positions can be understood to mean just a set of empty, unfilled, but potentially fillable positions. A "phonotagm", on the other hand, can be considered as an instance of a distributional unit where the positions are filled by the relata of a self-contained phonological structure. Among these relata in their respective positions we are justified to establish syntagmatic relations⁸.

Furthermore, the rigour of the notion "position" provides us with a powerful descriptive criterion not only for determining the minimum elements on the phonological level, i.e. the phonemes, but also for contributing towards the application of original descriptive solutions, and finally for submitting a highly

refined and economical description. An illuminating example in this context is the problem of how to account for the phonological distinction between the two French forms /ui/ [uj] "houille" and /ui/ [wi] "oui", where each of the forms is composed of the same phonotactic elements. These two forms might be interpreted, by some linguistic approaches, to form what can be called "homofoms" (i.e. "alloform of one phonotagm, the realization of which corresponding to that of another phonotagm"; compare with Mulder's definition of the notion "homophone" in the "Postulates"). However, by manipulating the "nuclear:peripheral" dichotomy (PART II, Chapter 3) it turns out that the two forms under consideration form two different phonological forms from the A.F. point of view. In consequence, it is more consistent and more adequate to represent the above forms either as /øui/ and /uiø/, or as (øNS) and (SNø), respectively, whereby the "dot" indicates the centre of "gravity" (nuclearity) in each structure, the "ø" refers to the functional absence of any element in the peripheral positions, the "N" stands for the nuclear element, and the "S" represents a semi-vowel or a consonant.

The originality of the above solution does not primarily lie in considering the phonetic forms (i.e. [i] and [j], [u] and [w]) as merely constituting realizational variants of two specific phonemes (i.e. /i/ and /u/, respectively), but in establishing such a distinction on functional grounds, i.e. by logically attributing the differences between the realizations in each case to the positional occurrences of the phonemes in question.

Archipositions:-

The establishment of at least one type of phonological "distributional unit" as the positional framework for the "mapping" of self-contained (complete) phonotagms is conceived by A.F. to be a necessary condition for the comparison of phonological structures of a language. The inescapable descriptive necessity for such a unit is dictated by the fact that the much-buffeted terms, i.e. "initial", "medial", "final", etc., (which are used extensively by many contemporary linguistic theories to designate the positional occurrences of formal elements) are too blunt, too loose and too informal to give consistent and adequate descriptions and/or solutions. The manipulation of such terms would necessarily suggest, for instance, that the /r/ of /riŋ/ "ring" occurs in the same position as the /s/ of /sTriŋ/ "string", which is logically misleading and inconsistent, (please refer to PART II, Chapter 4). Since the concept of "distributional unit" plays an important role in the theory of A.F., it can be properly described as the "over-all system of phonotactic positions", where the elements occupying any of the positions within the established maximum extension of a distributional unit contrast with all the elements standing in other positions in the same unit, (but are opposed to those occurring in the same position and to each other).

However, it often happens that the occurrence of a certain element in a specific context within a unit is distributionally bound to preclude the occurrence of any element in one or more of the adjacent positions; in the sense that the element, i.e.

a phoneme, does not tolerate the adjoining position (or positions) being filled by other (separate) elements. Consequently, this specific element will, in a manner of speaking, "occupy" all the positions that are prevented from being filled. We shall call this "space", which corresponds to two or more positions of the maximal distributional unit, an "archiposition". It follows that an "archiposition" can be defined as a "suspension of contrast (or contrastive function) obtained between any two or three adjacent (but only adjacent) positions". This means that an archiposition is a position resulting from a suspension of the distinction (based on "degree of peripheralness"; PART II, Chapter 4) between successive positions in the "overall" distributional unit. By analogy with the notion "archiphoneme" (see Chapter 6), the "archiposition" (as a product) is properly included in the sum of its terms and in each of its terms. In English, for instance, each of /ʃ/ or /h/, in /ʃriNK/ "shrink" and /hiIu/ "hew", respectively, stands in an archiposition resulting from the suspension of distinction or contrastive function between pre-e and el in the pre-nuclear (explosive) section of the distributional unit we have established for English, (see PART II, Chapter 4). The distinction between the two positions pre-e and el is suspended because the pre-nuclear occurrence of /ʃ/ or /h/ inhibits the occurrence of any other phoneme in their vicinity, i.e. nothing can occur before them in the unit, nor between them and the immediately pre-nuclear element. This means that all combinations of the type $\text{ʃ}/\underline{X}\text{riNK}/$, $\text{ʃ}/\underline{X}\text{riNK}/$, $\text{ʃ}/\underline{X}\text{hiIu}/$, or $\text{ʃ}/\text{h}\underline{X}\text{iIu}/$ (where X stands for any phoneme of S.E.) are rejected by the combination and

distribution rules of spoken English. Consequently, we establish archiposition E¹ which represents the suspension of contrastive function between two positions, namely, pre-e and e1, to account for and accommodate the two elements /ʒ/ and /h/.

The establishment of an "archiposition" within the scope of the established distributional unit must comply with the three following requirements:-

- 1- Suspension of distinction must be between positions in immediate proximity, i.e. adjacent positions.
- 2- The positions participating in this suspension should be clearly established as separate and distinct divisions within the boundaries of the same distributional unit.
- 3- The conditions for the suspension must be clearly identified and specified in terms of a type of context in which the positions partaking in the suspension are never found to be distinct from one another (i.e. filled by separate, mutually contrasting elements).

Self-Containedness and Types of Structure (combination):-

The self-containedness of a structure (combination) or even of a set of functional entities (system), which was indirectly alluded to in the course of the discussion, refers to the completeness of the structure or sets concerned. In a sense, the mere mention of the term "structure" or the term "system" implies that self-containedness is tacitly subsumed. As a

general theoretical notion, "self-containedness" is formally defined as "representing all relative dependencies of its members (constituents), as members (constituents) of the set (combination) in question". The identity of each member/constituent hinges on its being functionally relevant to a combination or distinct from all the other members of a set. The idea of a structure being self-contained can be equated with its being both well-formed and complete. In more simplistic terms, a construction is considered self-contained if the elements participating in its formation do not require the presence of any other element outside the combination in question (see Mulder, 1968, and Hervey, 1978).

The application of this theoretical notion (in the light of some other relevant concepts in the theory) to the types of combination we encounter in the process of describing human languages (and possibly other types of semiotic system) enables us to distinguish and establish three types of combination⁹:-

- 1- Wholly attested phonotactic combination
(alternative terms "simple phonological word", "phonotagm", "structure").
- 2- Partly attested phonotactic combination.
- 3- Potential phonotactic combination¹⁰.

It should be emphasized that if "potential phonotactic combinations" are not properly accounted for (or at least referred to) in the phonological description of a language, the autonomy of the form-producing compartment will collapse and suffer the consequences of exactly mirroring what is

utilized by the grammatical form-consuming system. Such a description will be corpus-based and unable to deduce and generate new material. This, as we know from previous Chapters, is entirely against the economical and productive nature of human languages.

With respect to the three types of combination referred to above, we define¹¹:-

"Wholly attested phonotactic combination" as "phonotactic combination (by definition self-contained) corresponding to the whole of the form of an allomorph", e.g. /gOuld/ "gold", /dip/ "dip", /lɹk/ "luck", etc.

"Partly attested phonotactic combination" as "phonotactic combination corresponding to part of the (polyphonotagmic) form of an allomorph", e.g. /rɒS/ in /rɒSɹrd/ "absurd", /lɪs/ or /klɪs/ (or more correctly /lɪrs/ and /klɪrs/; see PARTS II and III) in /bɒklɪs/ (/bɒklɪrs/) "backless", or /eɑrt/ in /kreɑrtɪk/ "cathartic".

"Potential phonotactic combination" as "well-formed (but not necessarily self-contained) phonotactic combination whose well-formedness can only be established by implication, on the basis of extrapolation from attested and partly attested phonotactic combinations", e.g. ?/sKl/ in ?/sKlan/ ?"sclan", which has been extrapolated from the wholly attested phonotactic combinations /klan/ "clan", /sKan/ "scan", and /slandr/ "slander", (see Hervey, 1978).

Consequently, we temporarily define the notion "(complex) phonological word" (which is mentioned casually in Mulder, 1968, but not defined) as:-

"Wholly attested phonotactic combination corresponding to the whole of a (polyphonotagmic) form of an allomorph"¹². By implication, a "complex phonological word" (alternative term "complex phonotactic combination") should be composed of at least two phonotactic combinations. This minimum requirement of a "complex phonotactic combination" will furnish us with three logical possibilities signifying three types of complex phonotactic combination; these are:-

- 1- Complex phonotactic combinations (words) entirely constituted by at least two wholly attested phonotactic combinations, e.g. the complex phonotactic combination /blakPɹrd/ "blackbird" which is composed of two wholly attested phonotactic combinations, i.e. /blak/ "black" and /bɹrd/ "bird", corresponds to the whole of the polyphonotagmic form of the allomorph "blackbird".
- 2- Complex phonotactic combinations (words) containing both wholly attested and partly attested phonotactic combinations, e.g. the complex phonotactic combination /siti/ "city" which is composed of the wholly attested phonotactic combination /sit/ "sit", and the partly attested phonotactic combination /ti/ "-ty", corresponds to the whole of the polyphonotagmic form of the allomorph "city".

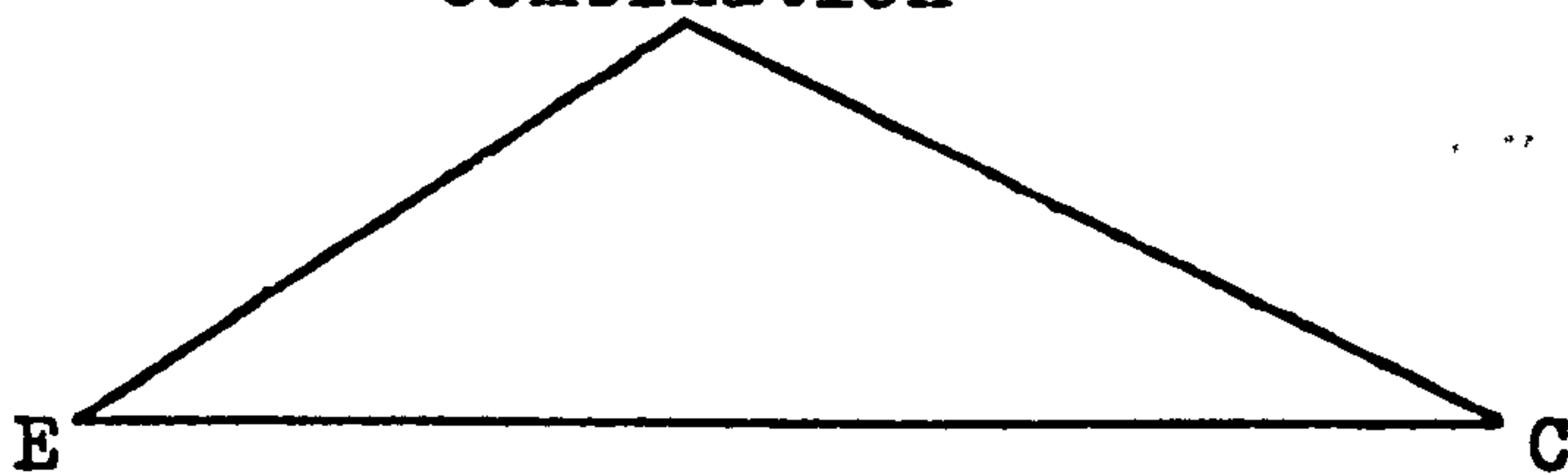
The same argument applies to the form of the complex phonotactic combination /rlAik/ "alike" which is

composed of the partly attested phonotactic combination /rl/ "al-" and the wholly attested phonotactic combination /laik/ "like".

- 3- Complex phonotactic combinations entirely constituted of partly attested phonotactic combinations, e.g. the complex phonotactic combination /imens/ "immense" is composed of two partly attested phonotactic combinations, i.e. /im/ "im-" and /mens/ "-mens", whose togetherness corresponds to the whole of the polyphonotagmic form of the allomorph "immense".

It has been referred to earlier that a "complex phonotactic combination" is by definition "a juxtaposition of at least two separable phonotactic combinations (structures)". This can be further clarified by means of the following diagram¹³:-

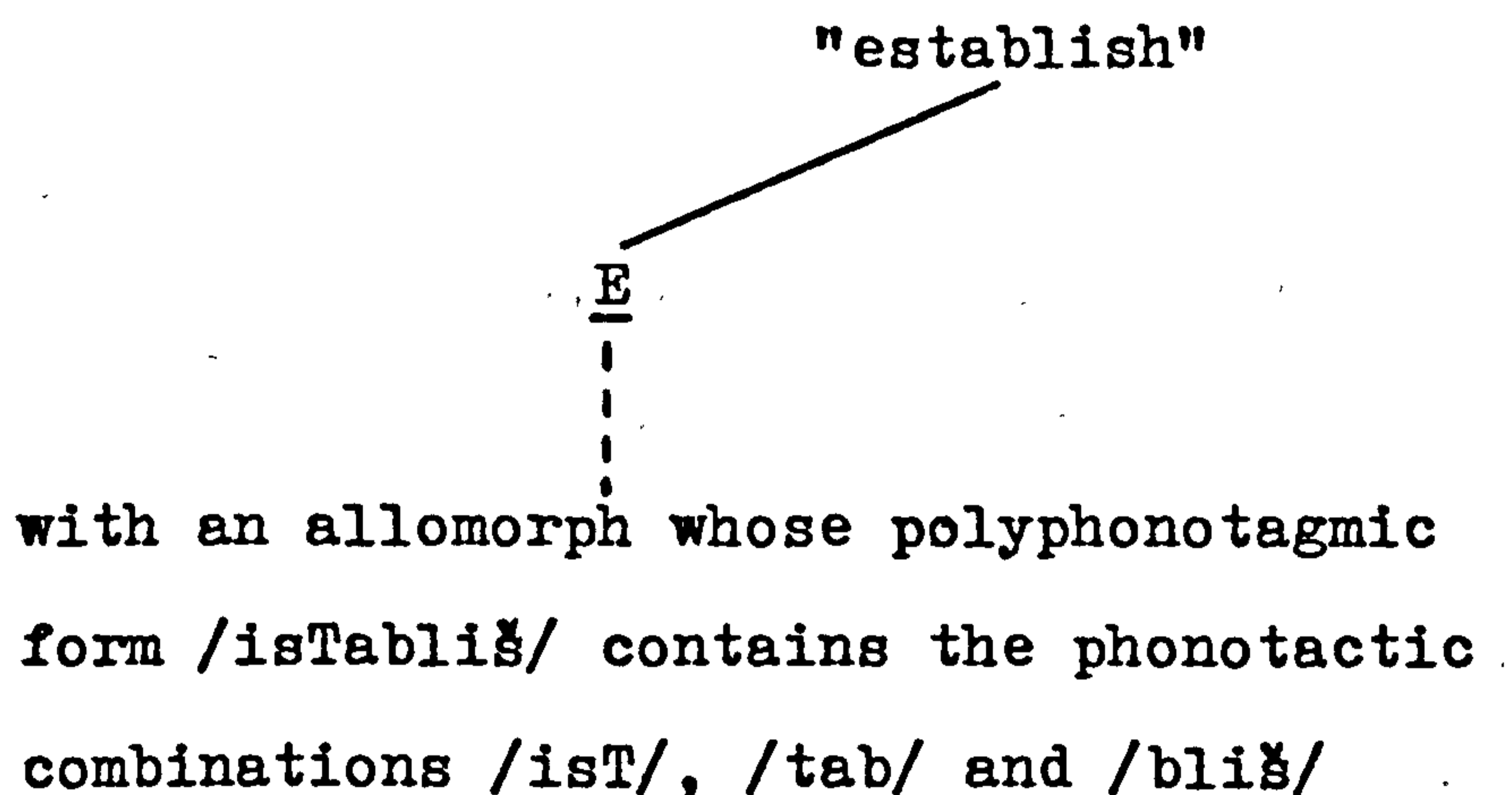
Complex phonotactic
combination¹⁴



The form of a given allomorph of the Expression is constituted by two or more (juxtaposed) phonotactic combinations.

Since we are dealing with combinations of formal elements (including potential forms¹⁵), the discussion of what the content may be lies beyond the scope of the present work.

In terms of an attested "complex phonotactic combination", the triangle above will look like the following:-



whereby,

/isT/ and /bliš/ are partly attested phonotactic combinations, and

/tab/ is a wholly attested phonotactic combination which corresponds to the form of the allomorph "tab".

Functional Amalgamation:-

The apparent difficulty in analysing "complex phonotactic combinations" into instances of attested simple phonotactic combinations (i.e. phonotagms) lies primarily in deciding where the boundary cuts should be maintained and applied within the form of the "complex phonotactic combination".

Unlike most other linguistic theories which allow grammatical, semantic and phonetic pressures to have substantial influence on their phonological analysis, A.F. does not tolerate such ontological violations.

To cope with such instances where a non-arbitrary decision is required, A.F. has developed the notion of "functional amalgamation"¹⁶.

A wall between two rooms, or a ceiling/floor between two flats in a multi-storey building, provide a striking analogy for the case in hand. Neither the wall, nor the ceiling/floor, can be considered non-arbitrarily as belonging exclusively to either of the two rooms, or to either of the two flats. Logically speaking, the wall belongs to both rooms, and so does the ceiling/floor with respect to the bottom flat and the top flat. If, however, we "count the number of spaces and walls in a building, the sum total will differ from the sum total which is obtained by describing the rooms in terms of space and walls and then multiplying them by the number of rooms", (Mulder, 1968).

By analogy, we notice that it is quite normal and natural, in a phonological description, that some (but not necessarily all) phonemes in certain peripheral positions, i.e. at the end of one phonotagm and the beginning of another, can, and should, logically belong to the two phonotagms at the same time.

In order to systematize and rationalize this logically conceived approach to the problem of assigning elements on the borders, we require that all proposed solutions should comply with the following two main conditions:-

- 1- Direct evidence from wholly attested forms in the language. If this is proved impossible, evidence should come from partly attested forms.
- 2- Full agreement with the phonotactic statements governing the distributional occurrences of phonemes.

Bearing these conditions in mind, the proposed analysis of the complex phonotactic combination /siŋiŋ/ "singing", in S.E., into /siŋ/ and (by functional amalgamation) ^ɛ/ŋiŋ/, is highly questionable from the view point of conditions 1 and 2, which automatically preclude /ŋ/ from occupying any pre-nuclear position. Consequently, a consistent and adequate analysis of the form in question will have to be into /siŋ/ and /iŋ/.

Besides, the above two main conditions may be supplemented by a third, albeit less strong, condition the function of which is, firstly, to facilitate the analytical procedure and to contribute towards submitting logical conclusions, and, secondly, to resolve certain problematic cases of analysis. It is also important to point out that, whenever the application of this condition results in conclusions which are incompatible with the findings of the first two conditions,

the issue should be settled in favour of the findings obtained from the application of the first two conditions. This condition runs as follows:-

3- Archiphonemes, which appear on the borders between two phonotactic combinations in a complex phonotactic combination, are often (but not necessarily always) attached to their contexts. (See below for application).

If we now apply the three conditions to the analysis of a complex phonotactic combination like /kapSiul/ "capsule", we are bound to get:-

By condition 1: /kapS/ is directly attested (in analogous contexts) in the form /kapS/ "caps", and /siul/ is partly attested (in analogous contexts) in the form /-siul-/ in "peninsula".

By condition 2: The distributional occurrence of /S/ in a post-nuclear position (in analogous contexts) is corroborated by forms like /lipS/ "lips", /kopS/ "cops", etc., and the occurrence of /s/ in a pre-nuclear position (in analogous contexts) is directly supported by forms like /suIid/ "swede", /siIu/ "sue", /siIud/ "pseud".

By condition 3: The archiphoneme /S/ is attached to its context, i.e. /p/.

A seemingly more complicated situation is encountered in attempting to analyse complex phonotactic combinations like /lapSiŋ/ "lapsing", /hAidei/ "highday", and /piSTil/ "pistil", each into its constituent phonotagms (i.e. attested phonotactic combinations). Analysing:-

/lapSiŋ/ into /lapS/ and /iŋ/,

/hAidei/ into /hAi/ and /dei/;

and /piSTil/ into /pis/ and /til/;

is analytically unacceptable, as such an analysis gives precedence to grammatical (and possibly semantic) considerations, rather than to phonological ones, to have direct pressure on the phonological analysis. By mapping the forms in question onto the aforementioned conditions, the analysis should be into:-

/lapSiŋ/ should be analysed into /lapS/ and /siŋ/, both of which are directly attested (in analogous contexts) in forms like /lapS/ "laps" and /siŋ/ "sing".

/hAidei/ should be analysed into /hAid/ and /dei/, both of which are directly attested (in analogous contexts) in forms like /hAid/ "hide" and /dei/ "day".

and, /piSTil/ should be analysed into /piST/ and /til/ (or possibly into /pis/ and /sTil/), both of which are directly attested (in

analogous contexts) in forms like /pist/ "pissed" and /til/ "till" (or /pis/ "piss" and /sTil/ "still").

It should be remarked in this context that the false numerical discrepancy between the number of elements in each of the complex phonotactic combinations and the corresponding number of elements in the constituent forms is attributed to the fact (which has been referred to earlier) that the sum total of elements in a complex form may, in some cases, be at variance with the sum total which is obtained by describing the constituent forms in terms of elements and then multiplying them by the number of the forms. If, however, the sum total of elements in a complex phonotactic combination is represented by X, and the combined sum total of elements of the constituent forms is represented by Y, then the relationship between the complex and its constituents can be formulated in terms of the following simple formula:-

$$X = Y + 0 \dots n$$

where "0" refers to the lack of any discrepancy between the two sum totals, and "n" refers to any number of elements, (theoretically, from 1 to infinity). An element is said to be a member of "n" if and only if it is endowed with a dual function, i.e. closing the form of one phonotactic combination and initiating the form of another. A complex phonotactic combination like /biheiv/ "behave" is analysable into /bi/ and /heiv/, where the sum total of elements in the complex phonotactic form exactly matches the sum total

of elements of the two constituent phonotagms, i.e. /bi/ and /heiv/, "be" and "have". It is a clear-cut case of equivalence between X and Y, i.e. $X = Y$. On the other hand, a form like /lapSiŋ/ demonstrates a sum total of elements which is at variance with the sum total of elements of its constituent forms, i.e. 6 compared with 7. This pseudo discrepancy can very easily be solved if the analytical results are represented as follows:-

$$/lapSiŋ/ = /lapS/ \underbrace{/siŋ/}_{17}$$

which represents a case where,

$$X = Y + 1$$

However, if we have a form like /sivlAizeišn/ "civilization", which is analysable into:-

$$/sivlAizeišn/ = \underbrace{/sivl/}_{1} \underbrace{/lAiz/}_{2} /zeišn/$$

then,

$$X = 11$$

and,

$$Y + n = 13$$

and because X and Y are equivalent, we write:-

$$X = Y + n$$

whereby, n equals 2, i.e.

$$/sivlAizeišn/ = \underbrace{/sivl/}_{1}, \underbrace{/lAiz/}_{2}, /zeišn/$$

Finally, it has been stressed earlier in the formulation of the supplementary condition 3 that "archiphonemes are often (but not necessarily always) attached to their contexts". The reason why the applicability of this condition has not been generalized is due to the fact that if it is allowed indiscriminate freedom of applicability, some conclusions which are based on its analytical application may violate the findings of the two main conditions. The following examples are sufficient to demonstrate our contention and to eliminate any misunderstanding. Analysing,

/parsPuk/ "passbook" into /parsP/ and /buk/,

/botFlAi/ "botfly" into /botF/ and /flAi/,

and, /bokSPord/ "boxboard" into /bokSP/ and /bord/,

should be rejected outright for violating condition number 1.

While the forms /pars/, /bot/, and /bokS/ are wholly and directly attested in S.E., i.e. they coincide with the forms of "pass", "bot" and "box", the forms /parsP/, /botF/ and /bokSP/ can hardly be shown to be either wholly or partly attested in the same language. Failing to comply with one of the two main conditions (see above) blocks the analytical procedure from proceeding any further.

In short, the whole argument up to this point deals with instances of so-called "internal juncture". In PART III, however, this argument will be developed further when we discuss the nature of the so-called "external juncture".

Postscript:-

In order to arrive at a valid and adequate model (or models) for the positional distribution of formal phonotactic elements, the A.F. linguist basically relies on the manipulation of the "nuclear:peripheral" dichotomy; c.f. Chapter 3 of PART II. This dichotomy also provides the A.F. linguist with the functional means for the establishment of phoneme-categories each of which is ^denow_^ed with definitive characteristics capable of keeping it distinct from all the other categories or sub-categories in the system, e.g. category of "vowels", category of "semi-vowels", category of "consonants", etc., as explained in PART II.

In addition to his knowledge of the theoretical apparatus, an A.F. linguist is recommended (though by no means obliged) to acquaint himself (properly, if possible) with the somewhat traditional ideas concerning the intricacies and peculiarities of the language (or any other semiotic system) he intends to describe. A linguist who is endowed, for instance, with first-hand knowledge of his target will start launching his hypotheses without much labour. The theoretical validity of one and only one of his major hypotheses_^ will be finally corroborated by direct evidence from attested, well-formed and self-contained formal constructions (namely from those which underlie lexical items). On the other hand, the task of an Axiomatic Functionalist linguist who is not quite familiar with the distinctive qualities of his phenomena is expectedly more arduous than his former colle^ague, though not entirely impossible. Since he is incapable of launching or initiating proper

hypothetical propositions, he restricts his initial activity to attempting to work them out. In order to come to adequate conclusions, he starts by pin-pointing the fulcra (i.e. nuclei) and then expands rightwards and leftwards by continuously adding elements which demonstrate the capability of occurring in peripheral positions, (Mulder, 1968, p.226). This process is normally brought to a halt when no further successful expansion either way can be made. The final hypothetical model, which is supposed to represent the maximum extension of a distributional unit, can afterwards be worked out and established.

Despite the differences between the methods of the two A.F. linguists for obtaining consistent and adequate results, both of them agree that only attested formal constructions in a language are of primary interest for the initial hypothesization and establishment of adequate basic descriptive models. They also share the belief that on the basis of the distribution of the formal elements of attested forms, the productivity, economy and potentiality of the system can be deduced and regulated, (see Chapter 5 of this PART). The importance and significance of the extrapolational process for the establishment of the maximum extension of a distributional unit (or units) for S.E. will be clarified in PART II, Chapter 4.

Notes to Chapter 7.

- 1- A. Martinet, Elements of General Linguistics.
- 2- L. Hjelmslev, Prolegomena to a Theory of Language.
- 3- Z. Harris, Structural Linguistics.
- 4- K.L. Pike, Language in Relation to a Unified Theory in Human Behavior.
- 5- W.A. Cook, Introduction to Tagmemic Analysis.
- 6- J.D. O'Connor and J.L.M. Trim, "Vowel, consonant and syllable - a phonological definition".
- 7- J.W.F. Mulder, Sets and Relations and "Postulates for A.F.". (The reader is advised to frequent himself with Def.s 7g, 9, 9a and 10b in the "Postulates").
- 8- "Syntagmatic relations" for "ordering relations between semiotic entities in combinations".
- 9- The present attempt to distinguish the different types of phonotactic combination has benefited from S.G.J. Hervey's article "On the Extrapolation of Phonological Forms", which was published in Lingua 5, (1978), pp. 37-63.
- 10- "Potential phonotactic combinations" are usually referred to

in theoretical linguistics by the term "accidental gaps". Among linguists, there is no general consensus as to whether "potential phonotactic combinations" should be accounted for in a phonological description, or not. John Lyons' (1972) hesitation, for instance, between the two options has virtually left him unable to decide whether to accept such "novelties", or to reject them. He even confuses "potential forms" with "irregular forms", and bases the acceptance or rejection of a proposed "potential form" on its being "easily pronounceable", "similar in form to other words" and "reflect (the) feelings" of the native speaker of a language.

11- Alternative definitions to the three types of phonotactic combination may be phrased in the following manner:-

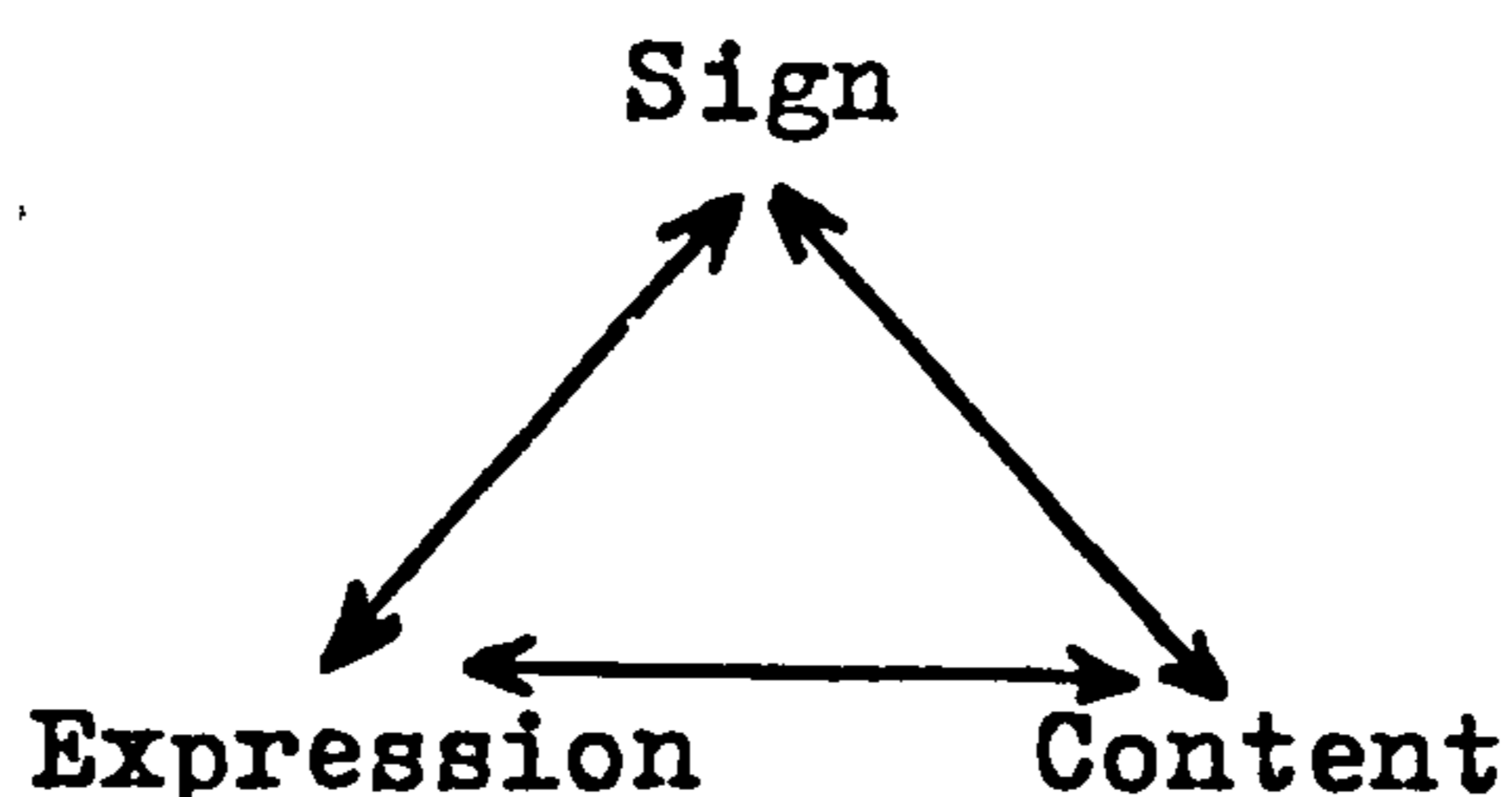
"Wholly attested phonotactic combination" as "monophonotagmic form of an allomorph".

"Partly attested phonotactic combination" as "phonotactically self-contained part of a polyphonotagmic form of an allomorph".

"Potential phonotactic combination" as "a well-formed (which may or may not be self-contained) phonotactic combination corresponding in whole or in part to the whole (or to the part) of the form of an allomorph which is totally based on (i.e. extrapolated from) evidence from wholly attested and partly attested phonotactic combinations".

12- Alternative definition:- "Complex phonotactic combination" for "the form of an allomorph which is composed of at least two phonotactic combinations".

13- The triangle in question is normally used to indicate the relationship holding between the "Sign" and its "formal" and "meaning-bearing" aspects, i.e. expression and content, respectively. See J.W.F. Mulder and S.G.J. Hervey, Theory of the Linguistic Sign, (1972). The following is a reproduction of the original triangle:-



14- A complex phonotactic combination may (in most, but not necessarily all, cases) be equal to the form of a complex plereme, on condition that each constituent moneme contains an identifiable nucleus. (See also definitions 8b, 8b³ and 9a).

15- Potential phonotactic combinations are implicitly accounted for in the present description. A form like /uilk/ "whilk", for instance, is identified as a potential monophonotagmic combination.

16- J.W.F. Mulder, Sets and Relations.

17- It should be remarked that /S/ and /s/ are no more than two different manifestations (realizations) of the same phoneme /s/ in two different positions, i.e. finally in one form after /p/, and initially in the immediately succeeding form. (See also the notion of "archiphoneme" in Chapter 6).

CHAPTER 8."Para-Phonotactics" As a Sub-System
of SystemologyIntroduction:-

In preceding Chapters (especially Chapter 1), the theoretical significance and relevance of the two established sub-systems of "phonematics" and "phonotactics", as well as the relationship holding between them, have been outlined and explained in a straightforward manner. In the present Chapter, however, we shall develop the argument a step further and investigate in brief the status of the "para-phonotactic" sub-system in the theory of A.F. and the nature of its relationship with the other established sub-systems of the systemology.

In dealing with the above issues, the argument will probably concentrate on the logical interpretation of the intention of the theory in question, rather than on blindly accepting as axiomatic the wording of some of its theoretical tenets which are not a priori free of ambiguities and internal inconsistencies.¹ This will become clear in due course. Suffice it to emphasize from the very outset that we only aspire to provide the reader with a coherent, balanced and hopefully improved understanding of the A.F. theoretical framework. This is in fact necessary since the subsequent description of the para-phonotactic sub-system of S.E. (in PART III) needs to be based on clear and solid ground.

The "Para-Phonotactic System" Defined:-

As referred to earlier in general outline (Chapter 1), the

system of "para-phonotactics" in A.F. is theoretically conceived as forming a separate sub-system of the "phonological" system of the systemology. It is solely concerned with simultaneously researching

- the identification and establishment of "para-phonotactic" features;
- the mapping of para-phonotactic features onto para-phonotactic bases;
- the establishment of para-phonotactic units on a higher than phonotactic level;

and, - the determination of the maximum extension of para-phonotactic units and the establishment of models.

(Note that all "phon-" segments of the above terminology may be substituted for "cen-"s when discussing systems of communication other than natural spoken languages).

However, before we could possibly proceed in our discussion, it is worthwhile pointing out that neither the different versions of the official A.F. "Postulates", nor the proposed modified version of Gardner (1984), have taken the necessary steps towards providing adequate definitions to the much buffeted term "para-tactic systems" (inclusive, of course, of "para-phonotactics" and "para-plerotactics"). Functionally speaking, one can not start negotiating the identification and establishment of features/elements of a given system if the system in question is not a priori explicitly identified and established as separate and distinct. Accordingly, we propose introducing and defining "para-phonotactics" as:-
 "Para-phonotactics" for "complex system of distinctive and/or

contrastive functional features providing unity and identity over and above phonotactic constructions."

In this sense, "para-phonotactic features", which belong to a "para-phonotactic system", co-occur with bases which correspond to phonotactic entities and contribute positively towards the formulation of identifiable linguistic para-phonotactic units on a higher level of abstraction, e.g. forms of para-phonotactic phonological words, forms of para-phonotactic phrases, etc. This is logical since phonotactic combinations of whatever degree of complexity can not be subject to functional manipulation of alternatives without the presence of some type of para-phonotactic features. Similar considerations also apply to established systems of para-phonotactic features in that they cannot be identified unless they are capable of proposing alternative options over and above an operational field, i.e. bases which correspond to phonotactic entities, onto which they can be mapped. Since the two "para-phonotactic" phenomena of "bases" and "features" are linked to each other in the explained sense, mutual occurrence dependency may be postulated to hold between them. Because this special and highly elaborate conjunction or co-occurrence of "bases" and "features" ultimately leads to the creation or formulation of attested "para-phonotactic units" of varying degrees of complexity, significant logical conclusions may be deduced from such an encounter; primarily that "features" and "bases" presuppose the prior existence of higher-than-phonotactic-level units, i.e. "para-phonotactic units", and that the

"para-phonotactic units", in their turn, also acknowledge the existence of two separate types of, say, feature whose togetherness is responsible for their identification as "para-phonotactic units" of certain degrees of complexity and abstraction. This, in fact, does not contradict the common hypothesis that a "complex para-phonotactic unit" - by virtue of being a unit on a higher level - is larger than its constituent parts/elements, simply because each one of them (to a certain degree) is logically implied in the other.

Reviewing the Consistency and Adequacy of Some Relevant Para-Phonotactic Concepts:-

In order to clarify our position, it is necessary to examine in brief Mulder's (1974) formulation of "Axiom C" and "Def. 17" and Gardner's (1984) proposed modifications, noting especially that while "double brackets", i.e. ((...)), will enclose Mulder's recent alterations (to appear in An Advanced Course ...), Gardner's modifications will be capitalized and enclosed within a single pair of brackets, i.e. (...). Thus, we have:-

Axiom C Figurae ((cenological entities)) may have (COMBINE WITH) para-cenotactic features (TO FORM PARA-CENOTACTIC ENTITIES) and signa ((plerological entities)) (GRAMMATICAL ENTITIES) may have (COMBINE WITH) para-syntactic features (TO FORM PARASYNTACTIC UNITS).

Def.17 ("18" in the forthcoming version) "Para-cenotactic features" for "features ((corresponding to cenological form)),

accompanying, but not determining the identity of, cenotactic (PARACENOTACTIC) entities". Of course, a cenotactic entity in combination with such features assumes an identity of its own on another level of analysis ((on the para-cenotactic level)). In cases where this is trivial, they are only different entities from different points of view, just as, for instance, a plereme is a maximum entity from the morphological, but a minimum entity from the syntactic point of view.

On proper investigation of the wording of "Axiom C" and "Def. 17", we may single out three significant issues requiring our special attention, i.e.

- 1- Mulder's claim that "figurae" ((cenological entities)) may "have" para-phonotactic features and Gardner's proposed alternative "COMBINE WITH"; (Axiom C),
 - 2- Mulder's intentional and meaningful use of the term "accompanying", (Def. 17),
- and
- 3- Mulder's use of the negative construction "not determining", (Def. 17).

As to the first issue, one can very easily refute the consistency and adequacy of Mulder's conceptual approach by comparing the semantic signification of (may) "have" with that of the infinitive of verb "accompany" in "Def. 17" ("18" in the forthcoming version). For, the primary dictionary meaning of "have" implies, among other things,

"to be in material possession of; own", "to possess as a characteristic quality or attribute",² etc. Neither of these meanings, we believe, is accurate in the given context, because the definition of the concept of "para-tactic features" in the forthcoming version of the "Postulates" points out that:-

Def. 17 "... the term para-tactic implies that the features involved are not inherent in the form of the tactic constituents and their arrangement, i.e. that they are not merely realizational on the tactic level ...",³
(my emphasis).

Since para-phonotactic features can neither be functionally shown to be inherent in the forms (or parts of forms) of phonotactic construction, nor established as constituent parts of the constructions in question (because they are not a priori isolable phonotactic elements between which tactic relations could be established, nor discrete, disjunct analytical properties of elements), they can not be said to be "possessed" by lower level entities or any of their parts.

Moreover, because the definition of "para-cenotactic features" stipulates that para-tactic features "accompany" (in the sense of being in association with, rather than in combination with) cenotactic (PARACENOTACTIC) entities, it is hard to postulate cases of proper "combination" between the two phenomena since the togetherness or co-occurrence of para-tactic phenomena (features) is entirely different from the togetherness of phonotactic elements/features. What we have here is that

"para-phonotactic features" are, in a way, "(super-)
imposed"⁴ or "mapped" onto "bases" (as features corresponding
to phonotactic units) to form para-phonotactic constructions
on a higher level of linguistic abstraction. In view of
this, one may conclude that para-phonotactic features
co-occur or group together to give shape to entities provided
by the joint efforts of the phonematic and phonotactic sub-
systems.

Significant enough, the above conclusions tie up nicely
with the third issue under discussion in this section, i.e.
that of Mulder's use of the negative construction "not
determining" in his definition of the notion "para-cenotactic
features" (quoted above) which stipulates that "para-
cenotactic features accompany, but do not determine the
identity of, cenotactic (PARA-CENOTACTIC) entities". Though
we are mainly concerned here with investigating the theoretical
significance of the negative construction "not determining",
we should not deliberately overlook ambiguities whenever we
encounter them. For, if we re-consider the wording of the
above definition, we are bound to notice that the term
"identity" has been used in the widest possible sense, i.e.
we are incapable of telling whether the term in question
refers to the "intrinsic identity" of an item, to its
"extrinsic identity" or to "both": (for an adequate treatment
of these issues, the reader is referred to Chapter 3 of
this PART as well as to Chapters 1 and 3 of PART II). In
brief, it has been pointed out on many occasions that the
establishment of the distinctive identity of an item hinges
primarily on whether the item in question is endowed with
any distinctive function in the overall system. This can

be functionally established by opposing the item's differential potential to that of another item (and ultimately to those of all the other items in the inventory) in (an) equivalent context(s). Only if the results of the oppositional procedure are satisfactorily corroborated one is entitled to claim that the item in question has a "function" and therefore it should be treated as a "distinct" and "discrete" entity. Obviously, the establishment of the "distinctive identity" of an item implies not only the establishment of its "intrinsic identity", but also the establishment of the "upper limit" of its distinctive realization. In other words, the three terms, i.e. "distinctive identity", "intrinsic identity" and "upper limit", may be treated as equivalent with respect to the same theoretical phenomena which each of them implies or refers to, i.e. the overall set of functional features of an item which it does not share in its entirety with any other (i.e. different) item.

However, because A.F. is radically different from the main stream of the European functionalist movement, as well as from all other structuralist linguistic trends, it does not maintain that once an item is established as distinct, it always remains so throughout the system (this is, in fact, a rehash of Pike's (1971) dictum "once a phoneme, always a phoneme"; the reader is also advised to refer to Chapter 2 of this PART, and Chapters 2 and 3 of PART II). For, in addition to the establishment of the "distinctive identity" of each and all items in the inventory, the theory emphasizes that any consistent and adequate description

should investigate the cases where the "distinctive identity" of any one item is either totally or partially suspended. (Note that "total suspension" leads to the establishment of "archiphonemes" and "partial suspension" leads to the identification of cases of "free-variance"; see PART II, Chapter 6). Put differently, the above argument amounts to saying that for any given phonematic/phonotactic item, three basic issues should always be considered in the following order of priority, i.e.

- 1- establishing the item's distinctive identity,
 - 2- examining the cases where its distinctive identity is totally suspended,
- and,
- 3- examining the cases where its distinctive identity is partially suspended.

Though the first two issues are normally dealt with in the phonotactic sub-system of the systemology, the treatment of the third issue may or may not lead to adequate conclusions if treated likewise as a phonotactic phenomenon. Probably, the most adequate descriptive account of certain aspects of the phenomena of free-variance may only be obtained if these phenomena in question are treated in the para-phonotactic section of the systemology; (see PART II, Chapters 6 and 7 and PART III). Suffice it to point out in the context that while the alteration between [t] or [e] , for instance, and the "glottal stop" [ʔ] in some varieties of English is an admittedly dialectal phenomenon which could be resolved by phonotactic means, the overlap between the lowest limits of the distinctive realizations of the six basic vocalic elements in S.E. and the vocalic sound [ɒ] (which is one of the standard neutral realizations of phoneme /r/) is definitely

not of a purely phonotactic nature because it evolves from the mapping of para-phonotactic features onto certain types of phonotactic complex base which are provided by the combined dynamic aptitude of the phonematic and phonotactic sub-systems. (For an extensive treatment of these issues, the reader is referred to PARTS II and III).

In view of the above discussion, and in the interest of achieving optimal theoretical and descriptive consistency and adequacy, we propose modifying the wording of "Def 17" (in the 1974 version, but 18 in the forthcoming version) in the following manner:-

Def. 17 "Para-cenotactic features" for "formal cenological features (which may, or may not, be in direct opposition/contrast with one another) accompanying, but not determining the upper limits of the distinctive realization of cenotactic entities of para-phonotactic bases, adding groupment over and above cenotactic groupment".

The significance of the above formulation does not only lie in clarifying the ambiguity in the formulation of the original definition, but also in preparing the ground for distinguishing between "distinctive" and "contrastive" types of para-cenotactic feature. Furthermore, the new definition specifies neatly the nature of the function which both types of feature perform in human natural languages. However, though para-cenotactic features are attested to

contribute towards confirming the upper limits of the distinctive realization of certain cenotactic entities in complexes, they can not be said to determine them since these can only be established by opposition in equivalent contexts. This by no means implies that all cenotactic items are consistently immune to para-cenotactic pressures. For, alongside the upper limits of the distinctive realization of certain items, there exist potential lower limits of realization in identifiable marginal locations within attested phonological complexes. It is only in such marginal contexts (to be specified in PARTS II and III) that the established system of para-cenotactic features is noted to have some say in partially suspending the strategic distinction between the "upper" and the "lower" limits of the distinctive realization of certain phonotagmic components. (Note that these issues - inclusive of our refusal to postulate distinctive/contrastive opposition/contrast between para-cenotactic features and "zero" - will be discussed in extenso in PART III). Suffice^{it} to point out that the implicit and hasty introduction of the two paratactic sub-systems to the A.F. systemology - though it provided general guidelines towards accommodating issues which otherwise could have been lost forever to the theory, or posed a serious challenge to the adequacy of its scope - has brought about with it problems sufficient to trigger a thoughtful review of much of the existing "Postulates". However, because such a thorough review lies beyond the immediate scope of the present work, we shall restrict ourselves to proposing alternative definitions (only whenever

it is deemed necessary) to facilitate the descriptive procedure and free it from any inconsistencies and inadequacies.

Let us now examine the types of feature which one expects to encounter on the para-phonotactic level.

The Types and Nature of Para-Phonotactic Phenomena:-

Originally, the discussion of the type and nature of para-phonotactic phenomena (from the view point of A.F.) was envisaged as forming part of a thorough investigation into the phenomena of "prosody" in general and the ways these have been handled by prominent linguistic schools of thought. Though the actual research of the issue has been performed and its results have been properly documented, it has been decided not to include this in the present work. For, despite the treasure of information and detail which the results contain, they are neither of immediate relevance to a work which adopts a specific "point de vue", nor have anything significant to add to the theory of A.F. as it currently stands. Henceforth, we shall devote ourselves in this theoretical section to investigating in general outline the types of phenomena which may lie within the scope of the para-phonotactic sub-system of the A.F. systemology, leaving the actual descriptive account of some of these phenomena to be attempted in PART III.

In the light of published literature on the early development of A.F., the only source of information from which one could possibly formulate hypotheses concerning

the types and nature of conventional (or conventionalized) para-phonotactic phenomena in A.F., one may single out Sets and Relations and the different versions of the official "Postulates"; (see "fn.1"). However, because the different versions of the "Postulates" contain qualitative and quantitative differences in their accounts of what may or may not constitute the para-phonotactic phenomena (see above for instances), we shall take the most recent version of the "Postulates"⁶ (to appear in Mulder, An Advanced Course ...) as a corner-stone and refer to the identified discrepancies with the earlier versions in corresponding footnotes.

If we now carry out a proper investigation of the forthcoming "Postulates", we may conclude that only four of the 122 definitions (not including the "Axioms") are of immediate significance and relevance for the identification, determination and establishment of the para-phonotactic phenomena, i.e. Def. 17, Def. 18, Def. 18a and Def. 18b. For, according to "Def. 17" which deals with the notion of "para-tactic features", we have:-

Def. 17 "Para-tactic features" for "... In natural language these are usually, but (from a functional point of view) inappropriately, lumped together under the term "prosody". This is because their phonetic substance is usually "pitch" or "stress", or a mixture of the two. But also "pause" or "junction" plays a role in this respect. Another type of para-tactic feature, frequently encountered in

natural language, is difference in sequential order, i.e. permutation of the tactic entities involved. E.g. "can he do it" versus "he can do it". This should not be confused with realizational permutation as a means of expressing syntactic relations, ... The term para-tactic implies that the features involved are not inherent in the form of the tactic constituents and their arrangement, i.e. that they are not merely realizational on the tactic level. E.g. there is nothing in the phonemic constituency of the form of the word "blackbird",⁷ nor in the fact that there are two phonotagms, that can account for the fact that it represents a unit on a higher than tactic level with an accent (in neutral realization) on the first syllable, and nor is the fact that an entity represents, say, a clause, inherent in the conglomeration (which is not even "constituency") of tactic entities that correspond to its base. ... Not all semiotic systems have, however, distinctive para-tactic features. (My emphasis).

On proper examination of the wording of the above definition, it transpires that functional para-phonotactic phenomena may basically be one of the following three types of feature, or all of them, i.e.

- a- features whose phonetic substance is either "pitch" and/or "stress" ("amplitude" in the

- 1974 version of the "Postulates"; see "fn. 8"),
- b- features of "pause" and/or "junction"; (see "fn. 8"),
- c- the feature of "permutability" of tactic entities.

However, alongside the above three possible types of para-phonotactic feature, the last sentence in the definition implicitly lays down the ground (in a very casual manner) for the possibility of sub-subdividing some or all of the aforementioned types into "contrastive" and/or "distinctive" para-phonotactic feature. While the former is defined as:-

Def. 18a "Contrastive para-cenotactic features" for "para-cenotactic features with the function of groupment over and above cenotactic groupment",⁹

the latter is defined as:-

Def. 18b "Distinctive para-cenotactic features" for "para-cenotactic features that are in a relation of direct opposition with one or more other para-cenotactic features, or with \emptyset ". A typical example is distinctive "tone", as, for instance, in Chinese. Trivially, unless there is no one-one correspondence (in which case it would not be trivial), also the phonological forms of distinctive intonations are distinctive para-cenotactic (para-phonotactic) features, whilst the intonations themselves are para-

syntactic features. One should not be misled by the terminology in thinking that "contrastive para-tactic" features are not functional. They are, as so many other things, e.g. syntactic relations, distinctive in a systemic not in a directly oppositional sense, "Distinctive para-tactic features" are, however, distinctive in the latter sense.¹⁰ (My emphasis).

It is worth remarking in this context that since the present section is solely concerned with the determination of what may potentially constitute para-cenotactic (para-phonotactic) phenomena in S.E., we shall postpone discussing the consistency and adequacy of the foregoing definitions of the two terms to a later stage in this work. Suffice it for our immediate purposes to point out that "Def. 18b" postulates a fourth possible type of para-phonotactic feature which we shall casually look into in due course, i.e.

- d- the para-phonotactic status of the phonological forms of distinctive intonations.

Be that as it may, we shall in principle acknowledge the possibility of establishing four basic types of para-phonotactic feature. Note that if the phenomena which are mentioned alongside footnote 9 are to be taken into consideration, then more than four types of para-phonotactic feature /system may probably need to be identified and established. Actually, whether the final relevant number of the established para-phonotactic systems/features for S.E. exceeds four, or falls short of this, is presently

immaterial since the above suggestions only assume the status of hypothetical postulates which are subject to probable amendment and/or refutation. The arguments which we shall develop in PART III will hopefully clarify our contention.

Notes to Chapter 8.

1- Though the earlier postulation (Chapter 1) that all natural human languages manifest a six-tier structure follows logically from the overall construction of the theory, it is in fact at variance with some of the given definitions in the "Postulates". For, if the definitions of the notions "plerology" (grammar), "cenology" (phonology), "articulation", "double articulation", etc. are properly re-investigated and then compared with the definitions of "systemology" and the explanatory notes to the definitions which follow Axiom C, then the reader will be able to detect significant logical inconsistencies which are not apparent in the first instance to the naked eye. The presence of these inconsistencies may be attributed to the historical development of the theory as reflected in the "Postulates". The formulation of the "Postulates" has actually passed through three main historical phases. At the end of each phase of which, a more or less newer version of the "Postulates" is formulated and proposed. These three essential historical phases which have contributed towards the production of the three versions of the "Postulates" may be accurately identified as:-

- 1- The 1968 original version.
- 2- The 1974 modified version (reprinted in Mulder and Hervey 1980).
- 3- The forthcoming version (to appear in Mulder's An Advanced Course ...)

Despite the fact that one always expects the latest version of any printed material to be tighter in formulation and more mature than all preceding versions, one can not escape pointing out that the forthcoming version of the "Postulates" still abounds with the same inconsistencies which have been referred to earlier. The reason is clear enough: The axioms and definitions which deal with the para-tactic phenomena have been added to the "Postulates" but not properly incorporated in the overall system, i.e. the consequences and effects of introducing "Axioms C & D" to the "Postulates" on the definitions of existing notions are neither acknowledged nor taken into account. Since many of these inconsistencies have been investigated by Gardner (1984), we see no reason to recapitulate her findings or to reintroduce them in this context. Suffice it to point out that other inconsistencies and sources of inconvenience which have so far escaped notice may be referred to whenever necessary in the main body of the Chapter.

- 2- The meanings are quoted from the Collins English Dictionary.
- 3- It should be noted that Mulder's present position in this respect is theoretically incompatible with his earlier postulation which stipulates that " 'accent' may be an integral part of the phonological form of certain linguistic units", (Mulder, 1968, p.23).

- 4- The reason why non-segmental features are referred to here as "para-" tactic features rather than "supra-" or "super-" tactic features may be attributed to the fact that the latter prefixes assign implicit priority to phonotactic constructions over and above the functional non-phonotactic features. This, we believe, is highly suspect and misleading. (See further down in the chapter).
- 5- It is worth reminding the reader that the upper limit of the distinctive realizations of phonotactic elements of given para-phonotactic bases are only determined in cenematics and/or cenotactics in terms of the overall set of oppositions into which each of them enters.
- 6- Professor Mulder has kindly made a copy of his recent version of the "Postulates" available to the present author.
- 7- It should be pointed out in this context that we find this section of the definition to be highly ambiguous and misleading. For, it may be true that in the specific case of "blackbird" neither the phonotactic construction /blakPɹrd/ (phonetically [blækbɜ:d]), nor its corresponding underlying structure (which is actually composed of two phonotactically different constructions corresponding to two identifiable phonotagms) can be of any help in determining or accounting for the para-phonotactic status of the unit in question. Yet, the phonology of S.E. is not exhausted

(as we shall see in due course) by the above type(s) of underlying structure. Because, alongside the above type (or types) of structure, S.E. abounds with phonotagms (or strings of phonotagms) whose constructional formations differ qualitatively and quantitatively from the aforementioned type(s). Among these, one may refer to those whose nuclei are either realized as [ə]'s or as [ɔ]-like sounds; (note that the first type involves one of the neutral realizations of phoneme /r/ in certain contexts, and the second type involves a reduceable [ɔ]-like realization of the six basic vocalic phonemes of S.E. in specific contexts), e.g. /dɪɪlr/ [di:ɪɔ] "dealer", /ɪlekt/ [ɪ'lekt] "elect", etc. (See PARTS II and III). Since the underlying structures of the latter types of phonotactic construction may contribute positively towards providing us with significant information concerning the para-phonotactic status of phonotactic combinations, we may conclude that Mulder's generalized theoretical statement - though applicable to certain sections of the phonemena - is inaccurate and definitely lacks the universality of application.

8- The definition of the notion "para-tactic features" in the 1974 version of the "Postulates" reads as follows:-

Def. 16 "Para-tactic features" for "... In natural language these are usually, but (from a functional point of view) inappropriately, lumped together under the term "prosody".

This is because their phonetic substance is usually simple "pitch" or "amplitude", or a mixture of the two. The lack of variation in substance leads to a great deal of amalgamation (physical simultaneity) and layering at the phonetic level, and disentanglement at this level is usually impossible. The following definitions make disentanglement possible at both the cenological and the grammatical, and within these at the contrastive, as well as the distinctive, levels. Another type of para-tactic feature, frequently encountered in natural language, is differences in sequential order, i.e. permutation, of the tactic entities involved. E.g. "Can he do it" versus "he can do it". This should not be confused with permutation as a means of expressing syntactic relations, e.g. "he hit me" versus "I hit him". The latter are inherent in the tactic construction and, therefore, not para-tactic", (my emphasis).

Note that the phonetic substance "amplitude" has been changed into "stress" in the forthcoming version. Furthermore, while the above definition does not contain any reference to "pause" or "juncture" as possible para-tactic candidates, the forthcoming version passes over them in a casual manner. In the 1974 version, "pause" and "juncture" are referred to under the definition of the notion "Contrastive para-cenotactic features", (see below).

9- The 1974 definition of the concept of "Contrastive para-cenotactic features" runs as follows:-

Def. 17a "Contrastive para-cenotactic features" for "features with the sole function of groupment over and above cenotactic groupment". i.e. para-cenotactic (para-phonotactic) features that give form and unity to cenotactic (phonotactic) complexes as such (i.e. form over and above the inherent form of the cenotactic entities themselves). Typical examples are "junction", and normal unit-accent, e.g. so-called "word accent", "word-group or phrase accent", etc. Junction, especially when not always realized by "pause", is frequently a function of accent. To be distinguished from unit-accent, which - after Martinet - I prefer to call "contrastive accent", is "connotative stress" and other features fulfilling the same function, which may be considered as (usually non-discrete) features of an auxiliary semiotic system used to draw attention to specific parts of an utterance, at the cost of others, and so adds connotation to the denotation, which remains constant. Examples of connotative stress are seen, for example, in the difference between "he hit him", "he hit him", and "he hit him" (the stressed parts are underlined), which have the same denotation, but which are different as to connotation. Of a similar

nature, and often occurring in conjunction with the former, is what one might call "connotative modulation", which usually takes the form of pitch-modulation, similar in appearance, but to be distinguished from, the phonetic forms corresponding to intonation. (Mulder's and my emphasis).

It should be noted that the definition of the above concept in the forthcoming version of the "Postulates" has dropped any reference to "connotative stress", "connotative modulation" and "pitch-modulation". The decision as to whether these features have any significant functional status, or not, will probably be referred to in the course of the arguments in PART III.

10- "Distinctive para-cenotactic features" is defined in the 1974 version as:-

Def. 17b "Distinctive para-cenotactic features" for "para-cenotactic features that are in a relation of commutation with one or more other para-cenotactic features, or with "zero" ". A typical example in natural language is "tone", as, for instance in Chinese. Also the phonological forms of distinctive intonations are distinctive para-phonotactic features, whilst intonations themselves are distinctive para-syntactic features. (My emphasis).

Two significant issues which the definition raises require

special reference, the first is the postulated opposition (i.e. commutation) between para-phonotactic features and "zero", and the second is the para-phonotactic status of the phonological forms of distinctive intonation. While Mulder has clarified and resolved the second of the two issues in his recent modified version of the "Postulates" (see "Def. 18b in the Chapter), the hypothesized opposition with "zero" has so far not been appropriately worked out. Whether para-phonotactic features commute with "zero", or not, will be determined in PART III.

PART II

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CHAPTER 1.

The Identification, Establishment and
Classification of the Consonant Phonemes
of Southern Standard British English, and
their Distinctive Features.

In foregoing Chapters, we have examined some of the major approaches concerning the nature of the notions "phoneme" and "distinctive feature". We shall presently see the application of the A.F. tenets in an attempt to identify, establish, analyse and classify the consonant phonemes of Southern Standard British English.

Introductory:-

It is worth reiterating here that the identification and establishment of any semiotic item hinges on its being intrinsically different (distinct) from at least one other item (of the same type), in the universe of discourse, and separately relevant with respect to communicative potential of at least one given context in which it occurs, (see PART I, Chapter 5). A linguistic item can therefore be considered distinctive¹ (from the view point of function) if and only if it can be opposed to some other item or to "zero" in the language concerned. In order to establish this inherent differential capability of an element, the procedure of finding "one minimal distinctive pair" may be considered necessary as well as sufficient to satisfy the minimum requirement of the commutation test². Nevertheless, a single

minimal pair should not be judged in isolation³ from the other formal elements in the inventory. What is needed is a set of equivalent contexts (so that one can form a paradigm⁴) within which all the potential candidates in a given language can alternate and interchange, and where each item is differentiated not just from one other item, but from each and all the other items. In other words, if the operation of substituting one element for another (in a certain equivalent context) succeeded in bringing about a change in the communicative potential of a form, it follows that the element in question has a function and it should be considered a separate entity in the system; but if the element participating in the operation of commutation fall short of achieving distinctive difference to the communicative potential of a specific context, it becomes obvious that such an element has no distinctive function and it should be considered part of a potential phonetic realization of some other item (or items) in the list of commutants.

Moreover, it is highly important for the validity of the commutation that the semiotic elements (participating in the opposition) should be fellow-members of at least one paradigm. Failing to take this precautionary restriction into consideration will render the pseudo-results of the whole operation of commutation descriptively suspect and misleading. The two phonemes /h/ and /ŋ/ in S.E., as we shall see in Chapter 4, have different phonotactic distributional characteristics and can never be found to be members of any one paradigm. Consequently, they can not be directly shown

to stand, and commute with one another, in any equivalent context, i.e. they are noninterchangeable elements. Nevertheless, their differential nature, as two fundamentally distinct specifiable bundles of simultaneously operating distinctive features, is ensured with reference to the overall inventory of S.E. consonant phonemes, (see further below). In other words, opposition by commutation, which is a sufficient criterion for establishing the distinctiveness of the formal elements, is not a necessary condition for mutual non-identity. This in fact boils down to saying that the establishment of an "overall" system is a "mapping" of paradigms (subsystems) into one all-embracing system.

Phonotactic Paradigms:-

Though the phonotactic paradigms we establish for any one language are basic from the view-point of description, and important with regard to descriptive generalization, there is virtually no demanding necessity to establish and enumerate them all, as the mass of detail that they contain show diminishing returns and have very little further information to add to our general understanding of the data. Instead, an established limited number of paradigms will be sufficient to demonstrate the oppositional value of the elements participating in their formation.

The differential capacity and relevance to communicative potential of each consonant of S.E. can be inferred from the examples in the following arbitrary chosen paradigms, where

each horizontal line demonstrates attested occurrences of an item in certain contexts, and the vertical axis indicates its distinctive oppositional value. Furthermore, the first set of paradigms demonstrates the pre-nuclear occurrence of the consonant phonemes of S.E., and the second set of paradigms shows their post-nuclear occurrence. Thus, we have:-

List 1: Pre-nuclear occurrences.

PHONEMES	CONTEXTS							
	/-il/	/-an/	/-an/	/-en/	/-iNK/	/-or/	/-Iig/	/-ai/
/b/	bill	ban	bang	ben		bore		by
/p/	pill	pan	pang	pen	pink	pore	peag	pie
/v/		van	vang	Venn				vie
/f/	fill	fan	fang	fen	fink	four		fie
/d/	dill	dan	dang	den	dink	door		die
/t/	till	tan	tang	ten		tore		tie
/θ/		than		then				thy
/e/					think	thaw		thigh
/g/	gill	gan	gang	gen	gink	gore		guy
/k/	kill	can	cang	ken	kink	core		
?/x/								
/m/	mill	man		men	mink	more		my
/n/	nill	nan				nor		nigh
/ŋ/	0	0	0	0	0	0	0	0
/z/				?Zen	zinc			?Xi
/s/	sill	?San	sang		sink	sore		sigh
/ʒ/							gigue	
/ʃ/						shore		shy
/h/	hill		hang	hen		whore		high
/l/	?Lill		lang	?Len	link	lore	league	lie

(The "blanks" in the paradigms refer to potentially possible combinations, i.e. "accidental gaps"⁵, the "zeros" indicate phonologically inadmissible combinations, and the "question mark" signifies the very marginal status of the marked items").

List 2: Post-nuclear occurrences.

PHONEMES	CONTEXTS							
	/ko-/	/lOu-/	/ba-/	/rIu-/	/bei-/	/li-/	/lo-/	/ha-/
/b/	cob	lobe		rube	babe	lib	lob	hab
/p/	cop	lope	bap	roup		lip	lop	hap
/v/						live		have
/f/	cough	loaf		roof				
/d/	cod	load	bad	rude	bade	lid	?Lod	had
/t/	cot		bat	root	bait	lit	lot	hat
/ð/		loathe			bathe			
/e/		loath	bath	ruth				hath
/g/	cog		bag				log	hag
/k/	cock		back		bake	lick	lock	hack
?/x/	?Koch		?Bach				loch	
/m/	com	loam	bam	room		limn	?Low	ham
/n/	con	loan	ban	rune	bane	linn		
/ŋ/	?Kong		bang			ling	long	hang
/z/	cos			rues	baize	?Liz		has
/s/	cos		bass		base		loss	
/ʒ/		loge		rouge	beige			
/ʃ/	cosh		bash					hash
/h/	0	0	0	0	0	0	0	0
/l/	col		bal	rule	bail	?Lill	loll	?Hall

(The conventions which are used in this List are the same as those used in List 1).

So far, we have demonstrated that each of the phonemes, in the Lists, is separately relevant (qua function) to the communicative potential in the language under consideration. This, provisionally, amounts to establishing the functionality and the separate distinctive identity of each item as different, not only from one other item, but from each of the other items in the universe of discourse.

However, before we start analysing (if possible) each of the molecular elements into its atomic components of functional distinctive features, we would like to remark that the proposed closed set of distinctive features, which will emerge from the subsequent analytical argument, is not a vacuous unsubstantiated set, but a set which ultimately (directly and indirectly via allophony⁶) secures its material adequacy in the distinctive phonetic facts of S.E., in the sense that the description must be answerable to (and preferably directly answerable to) the phenomena, which in this case are couched in the phonetic-distinctive protocols we establish for the S.E. phonemes. In other words, only those phonetic characteristics which contribute towards capturing the "upper limit"⁷ of a phoneme's distinctive function are deemed phonematically necessary and sufficient and should be established and accounted for in the description. The phonological analysis of phonemes into distinctive features⁸ therefore can be viewed as an abstraction of or an elaboration on the output of the auxiliary phonetic system, by means of a specially adapted filter called the "functional

principle", (see PART I, Chapter 5).

Though capturing the phonetic scope of a feature or an element is a necessary condition for the establishment of the distinctive functions and identities of phonemes and of distinctive features, it is not a sufficient criterion in that respect, as other principles, conditions and considerations have to be taken into account before conferring the qualities of "distinctiveness" and "identity" on an element. This will become clear in due course.

Distinctive-Feature Analysis:-

After such an explicatory theoretical exposition, we can now proceed towards the immediate target of analysing the consonant phonemes of S.E. into their respective phonematic bundles of functionally established distinctive features, which, we believe, will be relevant for the identification of the differential phonematic function of each and all the consonant phonemes in the language under consideration.

On functional examination of the paradigmatic oppositions in Lists 1 and 2, it transpires that the following hypothetical sets of correlated distinctive features can be isolated, identified and established on the basis of their potentiality to account for the similarities and differences between the formal elements in the system of S.E. consonants. Mark in this respect that the breaking down of phonemes into component distinctive features and the recognition of these

limited number of components as the ultimate minimal elements is logically implied in the definition of the notion "phoneme" as "a simultaneous bundle of distinctive features, etc.". In addition, the proper systematic order to which the proposed set of correlated features are subjected is, as we shall see from the following argument, of paramount relevance for the classification of the consonant phonemes of S.E., on the grounds that it gives dimensional precedence to certain correlated features over their rivals. However, it is premature to start discussing dimensions at a time when the function and identity of these features have not yet been established.

These sets of features are:-

Set 1: /labial/-/apical/-/dorsal/-/hissing/-/hushing/.

Set 2: /lenis/-/fortis/

Set 3: /occlusive/-/fricative/ } -/nasal/.

Set 4: /l-ness/.

Set 5: /h-ness/.

Notice in this context that while the features in Set 1 can roughly⁹ be said to refer to what is normally identified, in articulatory phonetics, as points or places of articulation, i.e. "properties of localization" (in Trubetzkoy's terminology, 1969), the features in Sets 2 and 3 indicate properties reflecting the manner of articulation. The member-features in Sets 4 and 5, as we shall see later, do not participate in any of these two subdivisions.

Moreover, we believe that Jakobson, Fant and Halle's (1967) proposed acoustic binary opposition "Nasal" vs. "Oral", and O'Connor's (1978) suggested acoustic/articulatory correlation "Non-nasal" vs. "Nasal", etc. can not be established as distinctive (functional) correlations with reference to the five closed Sets of features above, owing to the fact that the features "Non-nasal" and "Oral" are concomitant features of /lenis/, /fortis/, /occlusive/ and /fricative/ phonemes. In other words, all /lenis/, /fortis/, /occlusive/ and /fricative/ phonemes are automatically and by implication "Non-nasal" and "Oral". Logically, this amounts to saying that the features "Non-nasal" and "Oral" are concomitant redundant features which can not be considered functional.

Finally, the assignment of the feature /nasal/ to Sets 2 and 3, at the same time, lies in the unequivocal dictation of the "functional principle" which represents the major impetus behind any decision or solution we may adopt. It will become clear from the subsequent functional analysis of phonemes into distinctive features that the features /lenis/ vs. /fortis/ can be manipulated to distinguish between phonemes belonging to the /occlusive/ vs. /fricative/ correlation, e.g. /b, p/ vs. /v, f/, etc. Nevertheless, the same correlation can not be said to be functional with respect to the /nasal/ phonemes in S.E., i.e. /m/, /n/ and /ŋ/, because it can never be manipulated to distinguish, in the functional sense of the word, between two /nasal/ phonemes on the basis that one of them is a /fortis, nasal/ and the other is a /lenis, nasal/.

It is precisely this constant absence of any functional opposition (in S.E.) between a /lenis, nasal/ as opposed to a /fortis, nasal/ which prompts us to treat the articulatory concurrent feature /lenisness/ with all /nasal/ phonemes in S.E., a phonetic realizational phenomenon which has no functional status in phonology. Since the feature /nasal/ is mutually exclusive with the features /lenis/ and /fortis/, we see no reason why it should not be considered as the third distinct term in the multiple opposition /lenis/ vs. /fortis/ vs. /nasal/.

The same argument holds for associating the feature /nasal/ with the member-features of Set 3. It is necessary to maintain that the features in the /occlusive/ vs. /fricative/ correlation can be utilized to differentiate between the majority of the phonemes participating in the /lenis/ vs. /fortis/ dichotomy; nevertheless, the same correlation in question can never be shown to be functionally relevant in relation to the /nasal/ phonemes, as it does not serve to distinguish between what can be considered as a /fricative, nasal/ as opposed to an /occlusive, nasal/. It follows that whereas the features /fricative/ vs. /occlusive/ are redundant with reference to the /nasal/ phonemes, the feature /nasal/ can be, as we shall see from the following logical argument, opposed to each and both features in the correlation in question. In fact, the whole argument concerning the dimensional allocation of the feature /nasality/ boils down to saying that either the feature in question does not belong to any dimension (which is absurd), or it belongs, for the

above reasons, and by equal right, to both Sets 2 and 3.

We in this work have opted for the second solution which not only happens to be more consistent with the analysis into distinctive features (see below), but because it is functionally logical and materially more adequate than the first solution.

A modified Jakobsonian-type matrix can be used at this stage to sum up and demonstrate the validity and adequacy of the proportionality of the relationship between /b, p, v, f, m/ and their distinctive features. This matrix can be constructed in the following manner:-

	b	p	v	f	m
lenis	+	-	+	-	-
fortis	-	+	-	+	-
nasal	0	0	0	0	+
occlusive	+	+	-	-	-
fricative	-	-	+	+	-

(Figure 1)

(The "+" refers to a positive feature (value); the "-" stands for the absence of the feature (value) in question; and the "0" signifies a redundant feature (value) or a "neither +, nor -, nor both").

Set 1: /labial/-/apical/-/dorsal/-/hissing/-/hushing/:-¹⁰

The significance and/or relevance¹¹ of each and all the features in this complex network of oppositions, with respect to the formal elements under consideration, lies in its potentiality to pervade almost the whole spectrum of S.E. consonant phonemes and divide it into five, provisionally unrelated, categories. By mapping these features, in the complex set, onto the formal elements in Lists 1 and 2, we notice that:-

The feature /labial/ accounts for five elements, i.e.

/b, p, v, f, m/.

The feature /apical/ accounts for five elements, i.e.

/d, t, ʃ, ʒ, n/.

The feature /dorsal/ accounts for four elements, i.e.

/g, k, (x), ŋ/.

The feature /hissing/ accounts for two elements, i.e.

/z, s/.

The feature /hushing/ accounts for two elements, i.e.

/ʒ, ʃ/.

In their totality, these features can be utilized with reference to eighteen elements.

Significantly, the functionality and the separate identity of each of the features partaking in this complex operation of opposition can at this stage only be said to have been tentatively established. Furthermore, an exhaustive phonological description of the phonematic sub-systems of a language requires the establishment of the exact distinctive

function and the identity of each item in the universe of discourse of that language. The exact distinctive function of an item is calculated by establishing the class of all items with which it commutes, or to which it is "indirectly" opposed (by implication), e.g. /h/ vs. /ŋ/. In other words, the exact distinctive function of an item equals the product of all the oppositions into which it enters, and the negation of all the other items¹² in the same universe of discourse.

The exact distinctive function of the distinctive feature /labial/ can, therefore, be established in terms of the following sets of oppositions:-

a) /labial/ vs. /apical/ /b/ vs. /d/

and /p/ vs. /t/

and /v/ vs. /ʒ/

and /f/ vs. /e/

and /m/ vs. /n/

b) /labial/ vs. /dorsal/ /b/ vs. /g/

and /p/ vs. /k/

and /v/ vs. /x/

and /f/ vs. /ŋ/

c) /labial/ vs. /hissing/ /b/ vs. /z/

and /p/ vs. /s/

and /v/ vs. /z/

and /f/ vs. /s/

and /m/ vs. /z/

and /m/ vs. /s/

d) /labial/¹³ vs. /hushing/ /b/ vs. /ʒ/

and /p/ vs. /š/

and /v/ vs. /ž/

and /f/ vs. /š/

and /m/ vs. /ž/

and /m/ vs. /š/

The functionality and distinctive identity of each of the other features belonging to Set 1 can be established in the same manner.

Set 2: /lenis/-/fortis/-/nasal/:-

Owing to the fact that we are dealing with a substantial number of formal elements, the established five distinctive features, in Set 1, are bound to distinguish between sets or classes of elements, rather than between members of each class. Assuming that the findings of the multiple oppositional operation are consistent and adequate, the present set of features /lenis/-/fortis/-/nasal/ develops the analysis to a more advanced stage by means of sub-classifying the similarities and differences of the earlier findings into three further divisions.

Though there are good reasons to believe that Mulder's (1968) established features in the correlation "voiced" vs. "unvoiced" can lend themselves for the task of distinguishing between the majority of the consonant phonemes of S.E., we are unable to manipulate their services in an analysis where the principle of "functionality" overrides any other consideration. To put it differently, Mulder's proposed

correlation /voiced-unvoiced/ can not be pronounced appropriate for two reasons:-

- 1- The failure of the correlation in question to be materially adequate with regard to the "upper limit" of the features' distinctive function; (see following Chapters).

Though the presence or absence of the feature "voicedness" may, for instance, be significant for the identification of the so-called "plosive" elements, it is noticed that the feature in question may be either partly reduced or totally eliminated, e.g. the initial and final occurrences of the partly or completely "devoiced" [b], as in [b̥ɪŋk] "brink" and [b̥ʌlb] "bulb", etc. We believe that this evidence is sufficient to refute the adequacy of Mulder's established correlation "voiced-unvoiced". (For an extensive coverage of this part of the discussion, the reader is referred to the references which are mentioned in footnote 14); and,

- 2- The correlation "voiced-unvoiced" still retains some qualities which are reminiscent of the Praguean concept of "privative opposition", i.e. "+" (marked) vs. "∅" (unmarked).

Due to their variable unstable nature, the features "voiced" vs. "unvoiced" can not be considered as reliable

distinctive parameters against which the distinction between the correlated pairs of consonants can always be unmistakably pin-pointed and maintained.

Unlike the features above, the functionality of the correlated constant features in the /lenis/ vs. /fortis/ dichotomy, with respect to the consonant phonemes of S.E., can be inferred from their ability to distinguish clearly and regularly between /b/ and /p/, /v/ and /f/, etc. in all positions and contexts except, of course, in clear-cut cases of neutralization¹⁵. In other words, the features in the /fortis-lenis/ dichotomy can be said to comply fully with the two outlined factors (above), i.e.

- 1- The correlation "fortis-lenis" is materially more adequate with respect to the data under consideration.
- 2- The poles of the correlation "lenis-fortis" do not demonstrate an oppositional case where a positive value "+" is opposed to a "zero" value (i.e. to nothing), but a case where two positive values, i.e. plusses, are opposed to one another. It is a clear-cut case of a non-privative opposition.

It follows that we are virtually left with the only functional alternative which remains to be investigated, i.e. the establishment of the exact distinctive function and identity of the three features in the /lenis/-/fortis/-/nasal/ correlation.

The distinctiveness and identity of the feature /lenis/ can be established by the following set of oppositions:-

a) /lenis/ vs. /fortis/ /b/ vs. /p/

and /v/ vs. /f/

and /d/ vs. /t/

and /ð/ vs. /e/

and /g/ vs. /k/

and /z/ vs. /s/

and /ž/ vs. /š/

b) /lenis/ vs. /nasal/ /b/ vs. /m/

and /v/ vs. /m/

and /d/ vs. /n/

and /ð/ vs. /n/

and /g/ vs. /ŋ/

The functionality of the other members in this correlation, i.e. /fortis/ and /nasal/, can be established in a similar way by just swapping places with the /lenis/ feature, and reversing the positions of the columns.

By projecting the formal elements in Lists 1 and 2 onto the terms of this dichotomy, we can establish that:-

The feature /lenis/ accounts for seven elements, i.e.

/b, v, d, ð, g, z, ž/.

The feature /fortis/ accounts for an equivalent

number of seven elements, i.e. /p, f, t, e, k, s, š/.

The feature /nasal/ accounts for three elements, i.e.

/m, n, ŋ/.

Since the /dorsal/ phoneme /x/ (which has a questionable status in S.E. as a whole) is not counter-poised by a /lenis/ analogue in the same dimension, the distinction between /lenis/ vs. /fortis/ in this special exceptional case is suspended, as indicated in the table (see further below), although in realization the phoneme in question normally manifests the phonetic feature [fortis] . It follows that the phoneme /x/ can not be considered as a term in any of the oppositions in Set 2.

The numerical product of the joint differential capability of the features in this correlation records the second highest number of elements in the hierarchy of feature relevance, i.e. 17. (One should remember that the multiple operation of opposition established as /labial-apical-dorsal-hissing-hushing/ accounts for the highest number of elements, i.e. 18 elements).

Set 3: /occlusive/-/fricative/-/nasal/¹⁶:-

The motive behind the introduction of this third Set of opposed and opposing features is to furnish the spectrum of the consonant phonemes of S.E. with a new dimension, the function of which is the disentanglement between the correlated pairs of phonemes which Sets 1 and 2 were unable to set apart. Together, the three features in the /occlusive/ vs. /fricative/ vs. /nasal/ correlation are capable of distinguishing and accounting for fourteen elements, assigning six of them to the potentiality of the feature /occlusive/, five to the feature /fricative/, and

assigning the remaining three elements to the distinctiveness of the feature /nasal/. In other words,

the feature /occlusive/ accounts for /b, p, d, t, g, k/,

the feature /fricative/ accounts for /v, f, ð, e, (x)/,

and, the feature /nasal/ accounts for /m, n, ŋ/.

The reason why the /hissing/ and /hushing/ phonemes (see Set 1) are not included among the fricative phonemes in this correlation is due to the fact that they are not, and can not be, counter-balanced in the /occlusive/ section of the correlation by any corresponding item. Consequently, we are logically justified to consider the phonetic feature of [fricativity] in relation to the /hissing/ and /hushing/ elements as a non-distinctive matter of phonetic realization (concomitant with the features /hissing/ and /hushing/ as indeed these very terms suggest - which is one of the advantages of the choice of these terms).

Similarly, the opposition /occlusive/ vs. /fricative/ would have had to be suspended for /g/ and /k/ had we not decided from the very outset to consider the /dorsal, fricative/ phoneme /x/ as belonging, though very marginally, to the overall system of the S.E. consonant phonemes. While leaving this specific phoneme out or accounting for it in the description is a matter of judgement and preference, we have, in this work, opted not to ignore its peripheral status in the language concerned, (see our proposed phoneme-tables (matrices) further down in the Chapter).

Furthermore, it should be remarked that the feature /nasal/ constitutes an overlap between what otherwise would be two completely separate dimensions, (see earlier discussion).

The exact distinctive function of the feature /occlusive/ and its identity can be established in terms of the following set of oppositions:-

- | | |
|--------------------------------|-----------------|
| a) /occlusive/ vs. /fricative/ | /b/ vs. /v/ |
| | and /p/ vs. /f/ |
| | and /d/ vs. /ð/ |
| | and /t/ vs. /θ/ |
| | and /g/ vs. /x/ |
| | and /k/ vs. /x/ |
| b) /occlusive/ vs. /nasal/ | /b/ vs. /m/ |
| | and /p/ vs. /m/ |
| | and /d/ vs. /n/ |
| | and /t/ vs. /n/ |
| | and /g/ vs. /ŋ/ |
| | and /k/ vs. /ŋ/ |

Establishing the exact distinctive function and the identity of the features /fricative/ and /nasal/ can be carried out on similar lines, i.e. it is merely the counter-part of the establishment of the function and identity of the feature /occlusive/.

Sets 4 and 5: /l-ness/-/h-ness/:-

Though attempts have been made to analyse each of the

two phonemes /l/ and /h/ into, at least, two phonologically functional features having some pertinent affinity with the three established Sets, none of these efforts has led to any positive, or even encouraging, conclusions.

Since they can not be included in the phoneme-table for the S.E. consonants (see further below) without violating the "two-in-a-column-two-in-a-row" requirement, we are logically forced to identify them as "simple unclassified" elements, with the functionally established distinctive feature /l-ness/ to account for and distinguish the phoneme /l/ from all the other phonemes in the system, and the distinctive functional feature /h-ness/ as the distinguishing property of the phoneme /h/. That is to say, each of the features /l-ness/ and /h-ness/ stands simply for the global difference /l/ and /h/ manifest with regard to all the other phonemes in the system, and to each other. This, of course, simply follows Mulder 1968.

Mutual Compatibility and Exclusiveness of Distinctive Features, and the Notion "Dimension":-

Our main intention from the very outset of this Chapter was not only to analyse the consonant phonemes of S.E. into their constituent distinctive features, but also to investigate the possibility of re-constructing these well-formed and self-contained molecular elements as complexes of simple unanalysable (atomic) components.

Despite the fact that the two mod operandi operate

within the scope of the same phenomena, the theoretical procedure and the optimal target which each of them manipulates and strives to achieve is sufficient to keep them as two separate, yet interrelated, operations. While the "analytical" operation (above) is mainly interested in factorizing all complex molecular elements into their ultimate (unanalysable) atomic components (on the basis of their "functionality" or "relevance"), the "re-constructional" operation is interested in mapping well-formed and self-contained complexes onto the findings of the "analytical" operation in terms of the attested "mutual compatibility" or "mutual exclusiveness" between the functionally established distinctive features. In order to achieve its ends, the "re-constructional" operation employs visual "geometrical" devices capable of modelling the proportionality of the relationship holding, firstly, between "distinctive features" per se, and, secondly, between "distinctive features" and "phonemes". Since the "phoneme:feature" relationship will be treated further down in this Chapter, we shall devote ourselves in this Section to the discussion of the relationships holding between the five closed Sets of distinctive features which have been established earlier in this Chapter, and the theoretical reasons for classifying them in five categorically semi-disjunct Sets.

The only tentative and over-simplified clue which we have introduced earlier has been to the effect that there is a rough (but not an exact) correspondence between the

member-features of Set 1 and the phonetic parameter of "points of articulation" (i.e. order), and another correspondence between the member-features of Sets 2 and 3 with two phonetic parameters of "manner of articulation" (i.e. series). Owing to the fact that each of the remaining two Sets of features (in 4 and 5) is composed of one element only, it was not possible to include them in any of the not-too-precise sub-categories of "points" and "manner" of articulation. Though equating some of the functionally established Sets with the phonetic sub-categories or parameters of "points" and "manner" appears to exhibit the pseudo-virtue of consolidating the "phonetic:phonology" relationship, this vague correlation, on the other hand, threatens to violate the consistency and the material adequacy of the phonological description of the distinctive-feature system.

In order to avoid encountering such difficulties in the description, we believe that the whole theoretical approach to this controversial issue has to be rethought and a newer solution to the problem has to be devised. The prerequisite of this initiative, as we shall see, should be exclusively based on "phonological" considerations.

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According to an earlier discussion (PART I, Chapter 2), the notion "phoneme" has been defined as "a simultaneous bundle of (one or more) distinctive features"; among these distinctive features only unordered constructional relations

can be established. The advantage of such a theoretical conception of the "phoneme" allows us to divide the phonemes of some languages into "simple" phonemes, and "complex" phonemes; whereby, each member of the latter category (but not of the former) is constituted of or equivalent to, at least, a pair of distinctive features. Since a feature neither combines with itself, nor contracts a positive relationship (as we shall see in due course) with any of the members in the Set it belongs to, it is necessary to add that the two distinctive features in the pair should neither be identical, nor fellow-members of any one Set. In other words, these sets of pairs (triples, quadruples, etc.) of distinctive features can be considered, after Mulder 1968, as the product of a cartesian multiplication of two or more sets of distinctive features. Obviously, then, any cartesian multiplication operation involves at least two sets of distinctive features. However, it should be pointed out that these sets may or may not be disjunct. The decision as to whether sets are disjunct or not depends largely on the outcome of the analytical process of the phonotactic system of any one specific language. Furthermore, the identity of each member-feature in a set is calculated negatively and relationally in terms of the oppositions it is capable of entering into within the set. The outcome of this operation of cartesian multiplication is the formation of the well-formed and self-contained complex molecular formal elements of a given language.

Since it is not possible for all the member-features of a

functionally established set (i.e. dimension) to combine freely with each other to form complexes of distinctive features, it is fundamentally important to point out that the combinatory possibilities of any cartesian multiplication operation should always be restricted to account for attested combinations of n-tuples. It is worth mentioning that the notion "n-tuple" is generally defined by Mulder (1968) as "any item which results from a cartesian multiplication", (my emphasis). The importance of our delimitive specification on the freedom of the combinatory possibilities of a cartesian multiplication operation lies in the fact that it will automatically curtail and eliminate all possibilities of generating feature-combinations which are not themselves equivalent to attested complex combinations in any one system. It is sufficient to indicate that without these language-specific restrictions, the results of a cartesian multiplication will necessarily force the describer to acknowledge the well-formedness (though possibly not the self-containedness) of certain non-occurring, or even totally impossible, n-tuples of distinctive features in the system, e.g. the feature-combinations /hissing, occlusive, lenis/ or /hushing, nasal/ indicate non-occurring n-tuples in the consonantal system applicable to S.E., (see following Figures). In other words, if such language-specific restrictions are not recognized, the adequacy of the description is materially refuted.

On account of such restrictions on the combinatory,

possibilities of feature-combinations, we find it more illuminating to distinguish between the notion "n-tuple", when used in a general sense, and the notion "attested n-tuple" when used in a more restricted sense. While Mulder's definition of the former algebraic notion (above) can be used as a general theoretical guideline designating all imaginable combinatory results of any two (or more) sets of distinctive features, it does not take into consideration the arbitrary nature of the combinatory restrictions which may be operationally active in certain languages. In this sense, any language-specific "n-tuple" does not in fact refer to "any term", but to a "specifically attested term which results from a cartesian multiplication". It is this discrepancy between the two types of "n-tuple" that makes all phoneme-tables (or matrices) testable. Though the formerly cited feature-combinations, i.e. /hissing, occlusive, lenis/ and /hushing, nasal/, may at best be considered as theoretically possible "well-formed" n-tuples in S.E., they are definitely not attested n-tuples in the language under consideration, because such n-tuples are not equivalent to any one complex molecular element in that language, i.e. they are unrealized theoretical possibilities in the system.

In conjunction with the previously executed analysis into distinctive features, the discussion above allows us to identify two types of relationship holding between distinctive features, that of "mutual compatibility" and the other of "mutual exclusion". If the first type of relationship,

i.e. "mutual compatibility", is interpreted as referring to "all permissible and attested simultaneous constructional relationships holding between distinctive features", then the second type of relationship, i.e. "mutual exclusion", can be understood to mean "the absence of any such simultaneous constructional relationship between distinctive features".

With the above "compatible:exclusionary" relational dichotomy in mind, the functionally established distinctive features for S.E. have been divided earlier into five semi-separate and partially disjunct Sets of distinctive features. Since none of the features of any one Set can contract a meaningful and positive relationship with itself or with other fellow member-features in the same Set, it is important to note that the type of relationship holding between the constituent member-features of any one given Set is that of "mutual exclusion". This in fact applies to each of the five established Sets, even when a Set is constituted of a single distinctive feature. It is only by means of the "mutual compatibility" relationship that the member-features of the different Sets are allowed to establish "permissible and attested" constructional relationships with each other.

Subsequently, the notion "dimension" can be defined either as:-

"The normal term for a set of opposed alternatives ranged along a common parameter",

or alternatively as:-

"The actual parameter along which mutually opposed alternatives are ranged".

In this sense, the function of the notion "dimension" should therefore be understood to mean:-

"The partitioning of the overall set of distinctive features into subsets of correlated features on the basis of their compatibility and/or exclusion".

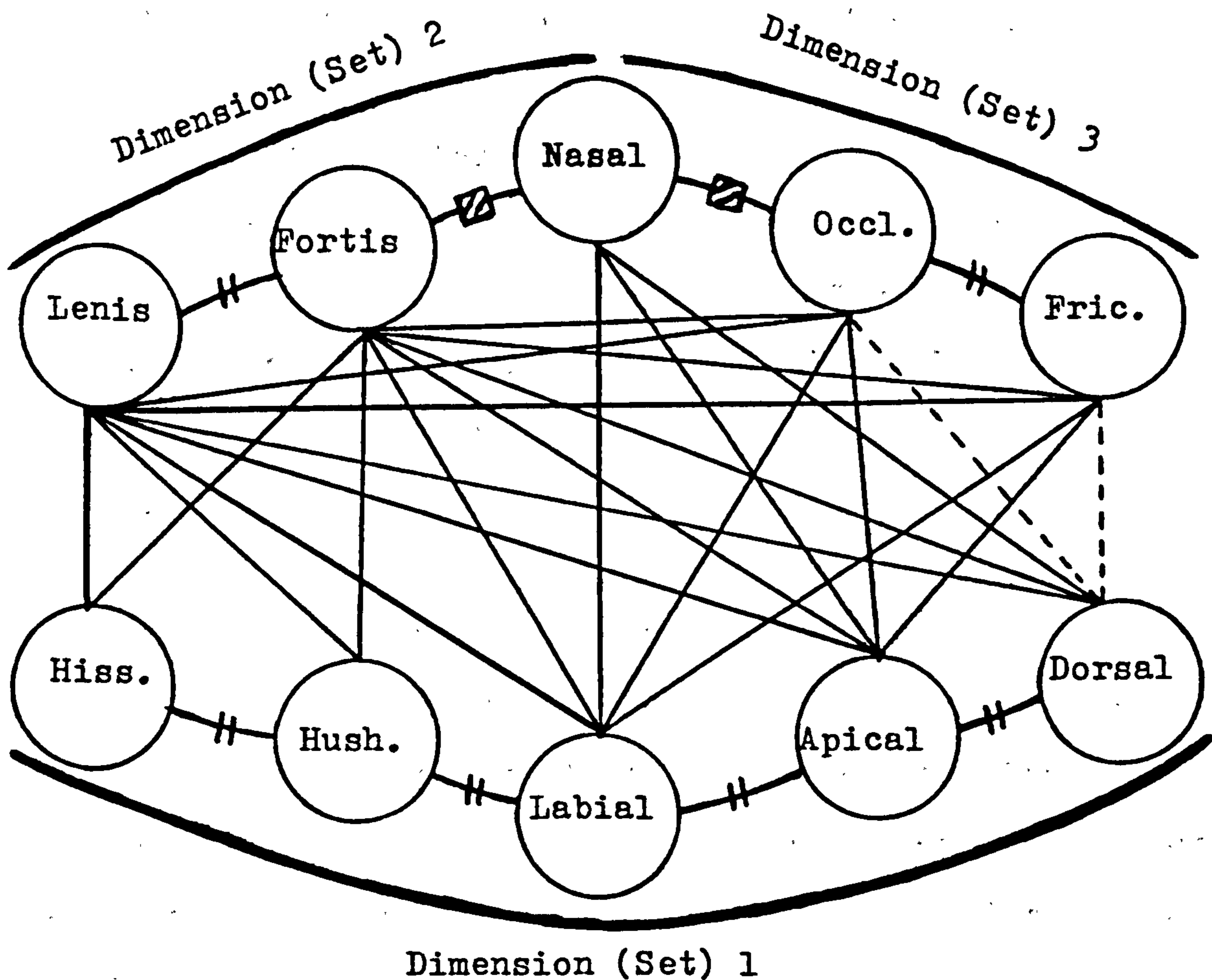
Obviously then, the eligibility of any one Set to be identified as a "dimension" in the system hinges on its ability to exhibit opposed alternatives, which necessarily means the presence of at least two opposed and opposing features in the candidate Set.

By mapping our five Sets of distinctive features onto the definition of the notion "dimension", it turns out that while the first three Sets of correlated features can be acknowledged as forming "dimensions", neither of the remaining two Sets (4 and 5) can be identified as constituting a "dimension" since they fail to display opposed alternatives. Though these two Sets of distinctive features belong to the overall distinctive-feature inventory of S.E., they do not belong to the system under consideration and, therefore, should be termed "unclassified".

However, before we start assessing the appropriateness

of the available techniques for classifying the consonant phonemes of S.E. and their distinctive features, we would like to introduce a potential diagram displaying in very simple terms all the attested permissible intersections between the members of the first three dimensions (Sets) of distinctive features, and the relationship holding between each individual member of one dimension (Set) with an individual member of any of the other two dimensions (Sets), but never between the individual members of any one dimension (Set). Indicating the logical product of the intersection between any two distinctive features, as factors, in the diagram, has been postponed to a later stage in the Chapter.

The distinctive features combinatory and relational diagram (hitherto called a "lattice"¹⁷) can be constructed and represented in the following fashion:-



Unclassified Set 4 /l-ness/

Unclassified Set 5 /h-ness/

(Figure 2)

Notice that in this specific periodic pattern, stress has been laid solely on the attested combinatory intersections of "atomic" distinctive features, rather than on the array of the "molecules" (phonemes). Furthermore, while the "slashes" on the connecting lines between the individual member-features of each dimension (Set in the system) stipulate "non-permissible" intersections or relations and, therefore,

"mutually exclusive", the "square nodes" (with slashes inside) are used to logically align the feature /nasal/ with dimension (Set) 2 and dimension (Set) 3, which automatically prohibits it from entering into any kind of contact with the individual members of either of these dimensions (Sets). This logically leaves the options open for the member-features of dimensions (Sets) 2 and 3 to establish relations of the sort indicated in the pattern.

A special remark should be added with respect to the "broken" lines in the "lattice" which connect the feature /dorsal/ with the features /occlusive/ and /fricative/. It has been shown earlier that had it not been for the sake of the very marginal occurrence of the /fricative/ phoneme /x/, the opposition /occlusive/ vs. /fricative/ would have had to be suspended/removed for/with reference to the /dorsal/ phonemes /g/ and /k/, as the exclusion of the phoneme /x/ from the calculations (and subsequently from the charts) would necessarily leave the /dorsal, occlusive/ phonemes /g/ and /k/ with no /fricative/ counterpart. This in turn would result in the non-relevance of the feature /occlusive/ with respect to /g/ and /k/. The two "broken" lines in the "lattice", therefore, should be understood to refer to this situation.

The numerical results of the functional distinctive-features analysis, together with our definition of the notion "dimension" and the two established types of

relationship holding between distinctive features, are, as we have seen and as we shall see again later, of considerable significance not only for modifying existing phoneme-tables by means of re-aligning their dimensional priorities, but also for suggesting an entirely different, presumably more adequate, method of representation which could supersede the more traditional functionalist approach of classification by means of "cartesian multiplication matrices". The positive (and negative) aspects of our proposed solutions will become evident in due course when we start discussing and developing our propositions.

Prolegomena to the Establishment of Cartesian Matrices¹⁸:-

The initial argument which we have been developing from the very beginning of this Chapter relies particularly, though not whole-heartedly, on the recommended manipulation of an orderly two-dimensional cartesian matrix. Though the Cartesian matrix itself is two-dimensional, the system it is supposed to represent may be, as it is the case with the system we have been discussing so far, multi-dimensional. Suffice it to say at this stage that as a consequence of this discrepancy between what we may call the "competence" of the matrix and its "performance", this method of classification is liable not only to create many representational inconveniences, but also to raise unnecessary theoretical issues that have very little to add to our understanding of the system, or to our knowledge of the typical proportionality of the relationships holding between

its constituent elements.

However, any Cartesian matrix, or any classificatory device for that matter, irrespective of the number of dimensions involved in its construction, will be required to be appropriate¹⁹ for the purpose of:-

- a- Testing the consistency, adequacy and simplicity of a given distinctive feature analysis.
- b- Modelling the proportionality of the relationships between the established features and their intersections in attested phonemes.

(List 3)

Moreover, the "functional principle" requires the presence of, at least, two elements in each established dimension in the matrix, as the failure to comply with the declared intention of this requirement denies an item any oppositional capability and nullifies its linguistic function and identity in the system concerned, as well as making nonsense of the notion "dimension" as the locus of opposition, by definition.

Alongside with the two main requirements in List 3, we would like to point out that when we start evaluating the appropriateness of any phoneme-table, the following general guidelines should be taken into consideration :-

- a- All matrices contain some degree of arbitrariness and distortion with reference to the facts. The best, in this respect, will be the table which

minimizes and logically justifies the amount and degree of arbitrariness and distortion within the overall framework of the established features and their intersections.

- b- A table which consistently and adequately accounts for a greater number of elements, with as few gaps as possible, is deemed simpler and superior to an alternative which accounts for a fewer number of elements and a higher percentage of gaps in the table.

To the above two general guidelines, we may add a third which, we believe, is in complete accord and harmony with the spirit of the other two criteria, as well as with the purpose of establishing matrices. Thus:-

- c- A matrix which demonstrates a potentiality for incorporating the sub-system of archiphonemes alongside with the appropriate phonemes is systematically more illuminating and representationally simpler than a table which does not.

(List 4)

In order to avoid running into any unnecessary polemic²⁰ concerning the problems of overloading the system, we shall refrain in this work from investigating the full potentiality of the last recommendation. In view of this, the recommendation in question can only be said to amount to the

status of an optional choice between a number of equally consistent and adequate systems, whereby only one of them is capable of displaying the relationships holding between the archiphonemes, on the one hand, and the phonemes and their distinctive features, on the other, while the other systems can not. The obvious choice, we believe, will inevitably be in favour of a system which includes the archiphonemes over its rivals which do not.

Earlier A.F. Models of the Distinctive Features of S.E.:-

A complete Cartesian matrix embracing all the set of the S.E. consonant phonemes, which is a sub-set of the overall set of all S.E. phonemes, was set up by Mulder in 1968. That version can be reproduced, for the sake of the argument, in the following way²¹:-

	Occlusive		Fricative		Nasal
	Voiced	Unvoiced	Voiced	Unvoiced	
Labial	b	p	v	f	m
Apical	d	t	ʤ	e	n
Hissing			z	s	
Hushing			ʒ	ʃ	
Dorsal	g	k	(x)		ŋ

(Unclassified /l/ and /h/)

(Figure 3)

The validity of the table with respect to the three major criteria of consistency, adequacy and simplicity, remained unchallenged until 1976 when the author himself pointed out that the three-dimensional matrix (above), in its existing form, violated the minimum requirement of the "functional principle", in the sense that, to quote Mulder, 1978:-

The dimension "unvoiced-voiced" in the case of "hissing" and "hushing" only occurs as built upon a single item, i.e. fricative, of the dimension they are linked to, i.e. "occlusive-fricative-nasal". As "voiced-unvoiced" has no direct connection with "labial-apical-hissing-hushing-dorsal", and the two primary dimensions involved are, therefore, "voiced-unvoiced" and "occlusive-fricative-nasal", and as in the latter there is, in the case of "hissing" and "hushing" only one item playing a part, the functional principle is violated.

The following visual three-dimensional construction which is a reproduction of Figure 3, is sufficiently clear to demonstrate this violation:-

	Occlusive		Fricative		Nasal
	Voiced	Unvoiced	Voiced	Unvoiced	
Labial	p		f		m
	b		v		
Apical	t		ʃ		n
	d		ʒ		
Hissing			s		
			z		
Hushing			ʃ		
			ʒ		
Dorsal	k				ŋ
	g		(x)		

(Figure 4)

(The dotted areas refer to empty boxes, the discussion of which will be dealt with later in the Chapter).

As an immediate result for this inconsistency, the earlier Cartesian matrix (Figure 3) had to be scrapped, and a newer version consisting of two separate matrices indirectly related²² to each other (according to Mulder, 1978) via the /voiced/-/unvoiced/ dichotomy came into circulation in 1976. The two latest versions can be set up, after Mulder, 1980, as follows:-

	Occlusive		Fricative		Nasal
	Voiced	Unvoiced	Voiced	Unvoiced	
Labial	b	p	v	f	m
Apical	d	t	ʃ	ʃ	n
Dorsal	g	k	(x)		ŋ

(Unclassified /h/ and /l/)

(Figure 5)

and as,

	Voiced	Unvoiced
Hissing	z	s
Hushing	ʒ	ʃ

(Figure 6)

where the graphic three-dimensional reproduction of Figure 5 will be:-

	Occlusive		Fricative		Nasal
	Voiced	Unvoiced	Voiced	Unvoiced	
Labial	p		f		m
	b		v		
Apical	t		ç		n
	d		ʃ		
Dorsal	k		(x)		ŋ
	g				

(Figure 7)

Though this solution has succeeded in eliminating the inconsistency and removing all gaps in the system, it has failed in preserving the unity of the system in question by establishing two unrelated matrices instead of one.

In order to test the relevance of the distinctive features in question with respect to the phonemes they account for in the matrix, Mulder (1978) supplements his two tables (Figures 5 and 6) by a Jakobsonian-type scheme which we

reproduce here for the convenience of the reader and in aid of the argument. This scheme can be established after Mulder, 1980, in the following way:-

	b	p	v	f	m	d	t	ʃ	e	n	g	k	x	ŋ	z	s	ʒ	ʃ
Labial	+	+	+	+	+	-	-	-	-	-	-	-	-	-	0	0	0	0
Apical	-	-	-	-	-	+	+	+	+	+	-	-	-	-	0	0	0	0
Dorsal	-	-	-	-	-	-	-	-	-	-	+	+	+	+	0	0	0	0
Occlusive	+	+	-	-	-	+	+	-	-	-	+	+	-	-	0	0	0	0
Fricative	-	-	+	+	-	-	-	+	+	-	-	-	+	-	0	0	0	0
Nasal	-	-	-	-	+	-	-	-	-	+	-	-	-	+	0	0	0	0
Voiced	+	-	+	-	0	+	-	+	-	0	+	-	+	0	+	-	+	-
Unvoiced	-	+	-	+	0	-	+	-	+	0	-	+	-	0	-	+	-	+
Hissing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	+	-	-
Hushing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	+	+

(Figure 8)

As we shall be arguing the pros and cons of Cartesian-type matrices further down in this Chapter, we see no immediate necessity to elaborate on them in this specific section. Suffice it to point out at this juncture that Mulder's overall Jakobsonian-type scheme (above) can not be considered a faithful reproduction of Figures 5 and 6, on account of the following reasons:-

- 1- As it stands, the scheme creates the misleading impression that we are dealing with one overall unified system of four dimensions rather than with two dimensionally unrelated and different sub-systems.

2- The feature /nasal/ looks as if it belongs solely to the correlation /occlusive/ vs. /fricative/, with no relation whatsoever with the /voiced/ vs. /unvoiced/ correlation, a point which is not substantiated by the findings of the Cartesian matrix in Figure 5.

Since the establishment of supplementary Jakobsonian-type schemes has to conform to the provisions of the functionally established Cartesian matrices, Jakobsonian-type schemes will necessarily differ in many respects according to which functionally established Cartesian matrix the linguist is ready to adopt when faced by more than one equally adequate option. Therefore, the reader will certainly recognize fundamental differences not only between the different versions of Cartesian matrices, but also between the supplementary Jakobsonian-type schemes that go with them.

Alternative Proposal "1":-

As the operation of setting up phoneme-tables is a descriptive-hypothetical act, the acceptance or rejection of any descriptive solution should be mainly based on the three major criteria of consistency, adequacy and simplicity, and the ensuing recommendations that we have built on them in Lists 3 and 4.

Bearing all these criteria and recommendations in mind, we believe that Mulder's latest established phoneme-tables (Figures 5 and 6), though a considerable improvement on the

1968 version, are still not the most consistent and adequate Cartesian matrices to serve our representational purposes.

In the process of the following discussion, we shall propose two alternative descriptive solutions to the problem of classifying and tabulating the consonant phonemes of S.E. and their distinctive features. While the first option conforms with the conventional functionalist method of classifying phonemes and distinctive features by means of Cartesian matrices, the second option breaks with this representational tradition and introduces an equally appropriate but entirely different method of accounting for and representing the proportionality of the relationships between the phonemes, on the one hand, and between the phonemes and their distinctive features, on the other, in a consistent, more adequate, simpler and less arbitrary manner.

In retrospect, it is worthwhile recapitulating the number of elements that each Set of features is capable of distinguishing:-

- 1- The complex multiple operation of opposition which includes the features /labial-apical-dorsal-hissing-hushing/ accounts for 18 elements.
- 2- The correlation /lenis-fortis-nasal/ accounts for, 17 elements.
- 3- The correlation /occlusive-fricative-nasal/ accounts for 14 elements.
- 4- The simple features /l-ness/ and /h-ness/ with

their respective phonemes which we have established earlier as "simple unclassified" elements, should be removed from our calculations because they do not partake in any of the listed oppositions, i.e. they have no feature in common with any of the other elements or features.

(List 5)

Between them, the features established above account for all consonant phonemes attested in S.E., and do so in such a way that every phoneme is distinct from every other phoneme by at least one feature-opposition.

It should also be remembered that the identification of Sets 1, 2 and 3, as signifying three phonological dimensions does not entail granting any of these dimensions phonetic precedence over the others. Since the correlation between the notion "phonological dimensions" and the phonetic "parameters" of "points" and "manner" has been proven to be misleading and unsatisfactory, the established notion of "phonological dimensions" can be said to be firmly entrenched without recourse to any direct material support from the phonetic parameters. Any fortuitous correspondence that may be established between the "dimensions" and the "parameters" would merely count as an "extra" advantage in favour of the "dimensions" established.

The difference between Mulder's modified tables (Figures 5 and 6) and the following proposed alternatives lies not only in the establishment of a different view of the "phonological dimensions" and the two types of relationship holding between the features in the dimensions but also in re-considering the priorities that can be assigned to these dimensions in the light of their numerical accountability. It will be noted that on the basis of their potentiality to account for a larger or a smaller number of phonemes, each of the established three dimensions has been allotted a specific numeral signifying its dimensional precedence in the matrix. Consequently, the multi-faceted oppositional network /labial-apical-dorsal-hissing-hushing/, which forms a "dimension" and accounts for the highest number of elements, can be said to constitute the First basic dimension. The same consideration quantitatively and qualitatively amounts to allotting the status of Second basic dimension to the complex tripartite network /lenis-fortis-nasal/. This would leave the complex opposition /occlusive-fricative-nasal/ to be located on the Third basic dimension. Though it is immaterial as to whether the "first" basic dimension is indicated horizontally or vertically in the matrix, the "second" basic dimension can always be established on the available alternative which remains unoccupied. However, the case is slightly different with respect to the exact whereabouts of the third dimension. It has been shown earlier in the analysis into distinctive features that neither of the features in the correlations /lenis-fortis/ and /occlusive-fricative/ can be relevant for the

identification of the /nasal/ phonemes, i.e. the features in these correlations can never be manipulated to distinguish between what can be called /lenis, nasals/ as opposed to /fortis, nasals/, or between /occlusive, nasals/ as different from /fricative, nasals/. Setting up the "third" dimension on certain sections of the first dimension will be basically against the functional core of feature relevance. Furthermore, since dimensions 3 and 4 overlap with respect to the feature /nasal/, the only functional possibility which is left open is the establishment of the third dimension "on top of" the second dimension in the matrix. This solution does not only happen to be consistently in line with the foregoing feature-analysis, but it also does not clash with the phonetic facts of the S.E. consonant phonemes, i.e. it is materially adequate.

On these bases, we can now launch the first of our proposals in the form of a unified two-dimensional cartesian matrix (with two potentially possible versions) accounting for a three-dimensional system to supersede the two tables in Figures 5 and 6.

The two versions of our proposed cartesian matrix can, accordingly, be visually constructed in the following manner:-

Hiss.	z		s		
Hush.	ʒ		ʃ		
	Lenis		Fortis		Nasal
	Occl.	Fric.	Fric.	Occl.	
Lab.	b	v	f	p	m
Apic.	d	ɖ	t	ʈ	n
Dors.	g	(x)		k	ŋ

(Unclassified /l/ and /h/)

(Figure 9a)

	Lenis		Fortis		Nasal
	Occl.	Fric.	Fric.	Occl.	
Lab.	b	v	f	p	m
Apic.	d	ɖ	t	ʈ	n
Dors.	g	(x)		k	ŋ
Hiss.	z		s		
Hush.	ʒ		ʃ		

(Unclassified /l/ and /h/)

(Figure 9b)

The virtue of the two versions of our proposed cartesian matrix lies in their ability to bridge the gap which caused the split of the original chart (Figure 3) into two bipartite matrices (Figures 5 and 6). Furthermore, both versions

(in 9a and 9b) consistently and adequately account for the marginal occurrence of the /dorsal, fricative/ phoneme /x/, as the phoneme in question has been established as the point of intersection between the two distinctive features /dorsal/ and /fricative/. To put it squarely, though the feature [fortis] has been presumed earlier to be a significant realizational quality of the phoneme /x/, the phonological relevance of the quality in question with respect to the /x/ has not been established, because it can never be functionally substantiated. Consequently, the opposition /lenis/-/fortis/ in the system is irrelevant for the identification of the phoneme /x/. This logically leads to considering the /x/ as an n-tuple resulting from the multiplication of the feature /dorsal/ (which is a member-feature of Set 1 on the first basic dimension) and the feature /fricative/ (which belongs to Set 3 on the third basic dimension), as alluded to above. In other words, the whole argument bears sufficient evidence to the effect that the phoneme /x/ can only belong to the first and third dimensions, but the same argument can not be utilized to locate it on the second dimension. Moreover, it has been referred to earlier that had it not been for the marginal occurrence of the phoneme /x/ in the universe of discourse of some (though not all) speakers of S.E., we would have non-arbitrarily considered the /g/ to be a /dorsal, lenis/ with the opposition between the features /occlusive/ vs. /fricative/ being suspended in the overall system. The same would have had to be applied to its /fortis/ counterpart, i.e. /k/. The only logically

consistent and adequate way to solve and represent this problem in the tables is to locate each of the two phonemes in question in the middle, between two diagonal dotted lines and two diagonal solid lines (as we have done in the above tables) where the diagonal dotted lines refer to the system applicable to those speakers who distinguish between /g/ and /k/ on the one hand, and /x/ on the other, and the two diagonal solid lines signify the system applicable to those who do not maintain such a distinction. It should be noted also that the two vertical dotted lines in each table refer to the potential systemic suspension of opposition between the two features in the /occlusive/ vs. /fricative/ correlation with respect to the /g/ and /k/, (see the discussion above).

The /hissing/ and /hushing/ elements manifest a certain resemblance to the /dorsal, fricative/ phoneme /x/, in the sense that each of the four /hissing/ and /hushing/ phonemes constitutes an n-tuple which results from the multiplication of two features belonging to two dimensions. In the case of the two /hissing/ phonemes, they may be identified as resulting from the cartesian multiplication of the feature /hissing/ (in its capacity as a member-feature in Set 1 on the first basic dimension) with either of the two features in the /lenis/ vs. /fortis/ correlation (as constituent features in Set 2 occupying two-thirds of the second basic dimension). Logically speaking, the elements which result from such multiplications can be said to belong only to the basic first and second dimensions, but never to the third

dimension.

The above argument also holds true for the /hushing/ phonemes, in that they too belong only to the first dimension, via the feature /hushing/, and to the second dimension by way of the /lenis/ vs. /fortis/ correlation, but never to the third dimension since none of the features on that dimension are relevant for the identification of the /hushing/ elements.

As we are interested in achieving a high degree of consistency and clarity, it should be pointed out in this context that the argument concerning the logical assignment of the /hissing/ and /hushing/ elements to the first and second basic dimensions, apply only to the matrix in Figure 9b, but not to the matrix in Figure 9a, as in the latter case the problem does not arise. In Figure 9a, the four phonemes /z, s, ʒ, ʒ/ have been established on the convergent lines of two dimensions only, i.e. /hissing/ vs. /hushing/ on the one hand, and /lenis/ vs. /fortis/ on the other, where their relationship with the system is being terminated at that point. Consequently, there is logically no possibility of developing the argument beyond that limit, because none of the features on the third basic dimension is functionally relevant for the identification of the /hushing/ elements. This in fact follows logically from the distinctive-feature analysis we have performed earlier.

The reason why these issues persistently demand explanation, is due to the limitations and shortcomings

inherent in the cartesian method of representing relations in general. This will be dealt with in a following section.

Finally, it is obvious from the two Figures in 9a and 9b, as well as from the preceding operation of analysing phonemes into distinctive features, that each of the following three phonemes /m, n, ŋ/ is the product of the intersection of two features belonging to three dimensions. It has been shown that the feature /nasal/ non-arbitrarily participates in the oppositional activities of Set 2 as well as Set 3 and therefore it should be logically located on both dimensions.

By comparing the two versions of our proposed cartesian table with Figure 5, we notice that while the feature /nasal/ has been logically established on sections of the second and third dimensions in our proposed solution, the same feature in Figure 5 misleadingly invokes the impression of belonging to the same dimensions. The truth is that it does not, on the assumption that the feature /nasal/ in Figure 5 has been established as a member-feature in the /occlusive/-/fricative/-/nasal/ correlation, but definitely it has not been established as a term in the /voiced/-/unvoiced/ dichotomy, (see Mulder, 1978, and M. Joos, 1969). Consequently, the box which accommodates the feature /nasal/ in Figure 5 should logically be divided into two boxes, where the feature /nasal/ occupies the upper box which corresponds to the second dimension, and the lower box which corresponds to the third

dimension should be left empty. This discrepancy between the two matrices can be represented in the following way:-

Occlusive		Fricative		Nasal
V.	Unv.	V.	Unv.	X

(Dimensions 2 and 3 in
Figure 5)

Lenis		Fortis		Nasal
Occl.	Fric.	Occl.	Fric.	

(Dimensions 2 and 3 in
Figures 9a and 9b)

Supplementary Schemes (1):-

Since the purpose of establishing cartesian matrices is the mapping of all sub-systems into an overall comprehensive system by means of summing up all the permissible phonematic relations and the proportionality in the relationships holding between features/phonemes with other features/phonemes, the matrix in this sense can be considered as an appropriate device for quick reference and information. Nevertheless, due to the discrepancy in a cartesian matrix between its "two-dimensional" structure which is supposed to account for a "three-dimensional" system, this type of construction does not render itself easily for inspection to see whether it has (or has not) complied with the conditions laid down by the functional principle and the "two-in-a-column-two-in-a-row" requirement. It is therefore necessary to supplement a cartesian-type matrix by an actual three-dimensional construction to ensure that these requirements have been met. As we have been dealing with two versions of a proposed cartesian table in 9a and 9b, it follows that we require two

three-dimensionally constructed tables, rather than one. These tables can be represented in the following way:-

	Lenis		Fortis		
Hiss.	z		s		
Hush.	ʒ		ʃ		
Lab.	b		p		m
	v		f		
Ap.	d		t		n
	ɖ		ʈ		
Dors.	g		k		ŋ
		(x)			
	Occl.	Fric.	Fric.	Occl.	Nasal
	Lenis		Fortis		

(Figure 10a)

	Lenis		Fortis		
	Occl.	Fric.	Fric.	Occl.	Nasal
Lab.	b		p		m
	v		f		
Ap.	d		t		n
	ɖ		ʈ		
Dors.	g		k		ŋ
		(x)			
Hiss.	z		s		
Hush.	ʒ		ʃ		
	Lenis		Fortis		

(Figure 10b)

With reference to the unavoidable presence of gaps (represented by empty boxes) in most cartesian matrices hitherto established and discussed, it is important to point out that the phenomenon of gaps in a phonematic system does not refer to the richness or poverty of the system concerned, nor to any possible deviation or misapplication of the A.F. criteria in the analysis into distinctive features, but rather to the arbitrary nature of language itself, and to the shortcomings and inappropriateness (see Lists 3 and 4) of the cartesian method of representation, which force us on certain occasions to discuss matters of relatively very little significance. We have seen instances of such nature in the case of the /dorsal, fricative/ phoneme /x/, as well as in the case of the /hissing/ and /hushing/ elements.

On the basis of the above, we categorically disagree with the numerous attempts which try to interpret the presence of "gaps" in phonematic lattices/matrices otherwise. One such attempt is represented by K.L. McCalla (1983) who explored the possibility of setting up convincing justification for the presence of "gaps" in phonological systems. MaCalla claims that:-

Gaps in a phonological system should fulfil the following requirements:-

- (a) they should represent phonemes which, if they appeared in the system, would not be structurally unstable; and
- (b) where possible, they should reflect the

dynamic reality of the system by representing phonemes which occurred at a previous stage in the language or which may reasonably be expected to come into the system in the future. (p.62)

We shall not, for the time being, concentrate on discussing and refuting all the points that have been launched in MaCalla's postulation; instead, we would like to draw the reader's attention to two questionable issues, namely:-

- 1) the author's loose use of the term "system", and
- 2) his subsequent failure to distinguish between "gaps" in "phonematic matrices" and "gaps" in "paradigmatic" sub-systems.

While MaCalla's use of the term "system" may be interpreted to signify many different linguistic phenomena, i.e. it may refer to a "paradigmatic" (sub-)system, a "phonematic" system, a "communicative" system, etc., his conception of the notion "gaps" is not free from ambiguity. Functionally speaking, the presence of "gaps" in "phonematic matrices" is primarily due to the inadequacies of the method of representation, and the presence of "gaps" in "paradigmatic" sub-systems reflect the natural arbitrary construction of semiotic systems.

Furthermore, besides the A.F. point of view concerning the "closedness" of phoneme-inventories the linguist establishes for any one language (PART I, Chapter 2), prominent authorities in linguistics, such as Saussure (1974), Martinet (1955 et al),

Robins (1971) , to mention but a few, have propagated similar ideas. Consequently, attempting (as McCalla has done) to set up provisions for an earlier or future possible occurrence of certain elements in a phonological system is incompatible with the functionalist creed and tradition. As the task of the A.F. linguist (and possibly of other functionalists) is to establish "language" at a certain specific point in time, only synchronic conditions should be allowed to be included in the description. This unequivocally excludes all, albeit in themselves significant, diachronic facts from exerting any pressure on the synchronic analysis of a specific section of a language, as these historical facts are normally dealt with under the different discipline of "historical linguistics".

The ramifications of this distinction between the "synchronic" and the "diachronic" studies of a certain language allow us to re-state that the presence of "gaps" in the S.E. consonant phonematic system, for instance, is primarily due to the "arbitrary" nature of the language in question which does not make use, at this specific epoch of its history, of any extra element or elements outside those which have been established in the inventory, and secondly, to the inappropriateness of the method of representation and classification which is liable to leave the "gaps" clearly visible and recognizable.

Therefore, the presence of "gaps" in the phonematic system is of an entirely different nature from the "gaps" we

encounter in the paradigmatic sub-systems (see Lists 1 and 2), as in the latter case we are dealing with potential instances of phonotagms as distinct from attested instances of chains, (see PART I, Chapter 7). While the phonemes in a phoneme-inventory we establish for any one language form a small, closed and limited set (see PART I, Chapter 2), the number of paradigms that can be established in the same language is extremely large and virtually non-enumerable, though not unlimited.

Supplementary Schemes (2):-

As cartesian matrices sometimes fall short of lending us the means of testing the relevance of the distinctive features with respect to the phonemes they account for, as well as the validity of our feature analysis, it is necessary to supplement our two versions of the cartesian matrix in 9a and 9b by two Jakobsonian-type schemes. In the following tables, the phonemes have been arranged in rows and the features have been listed in columns. Each intersection between the two dimensions is marked by a "+", a "-", or a "0"; where the "plus" stands for the positive functional feature that a phoneme has, the "minus" refers to the opposition the feature in question participates in, and the "zero" symbolizes the absence of any potential opposition. Furthermore, the value of any item marked by a "+" in any one section of a dimension is determined by the number and place of the items marked by a "-" in the proper section of that dimension.

The two Jakobsonian-type matrices for the S.E. consonant phonemes in 9a and 9b can be constructed in the following way:-

	b	p	v	f	m	d	t	ʈ	ɕ	ŋ	g	k	x	ŋ	z	s	ʒ	ʃ	l	h
Lab.	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Apic.	-	-	-	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-	0	0
Dors.	-	-	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	0	0
Hiss.	-	-	-	-	0	-	-	-	-	0	-	-	-	0	+	+	-	-	0	0
Hush.	-	-	-	-	0	-	-	-	-	0	-	-	-	0	-	-	+	+	0	0
Lenis	+	-	+	-	-	+	-	+	-	-	+	-	-	-	+	-	+	-	0	0
Fortis	-	+	-	+	-	-	+	-	+	-	-	+	-	-	-	+	-	+	0	0
Nasal	-	-	-	-	+	-	-	-	-	+	-	-	-	+	0	0	0	0	0	0
Occl.	+	+	-	-	-	+	+	-	-	-	+	+	-	-	0	0	0	0	0	0
Fric.	-	-	+	+	-	-	-	+	+	-	-	-	+	-	0	0	0	0	0	0
L-ness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	0
H-ness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+

(Supplement scheme to Figure 9a)

(Figure 11a)

	b	p	v	f	m	d	t	ʃ	e	n	g	k	x	ŋ	z	s	ʒ	ʃ	l	h
Lab.	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Apic.	-	-	-	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-	0	0
Dors.	-	-	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	0	0
Hiss.	-	-	-	-	0	-	-	-	-	0	-	-	-	0	+	+	-	-	0	0
Hush.	-	-	-	-	0	-	-	-	-	0	-	-	-	0	-	-	+	+	0	0
Lenis	+	-	+	-	-	+	-	+	-	-	+	-	-	-	+	-	+	-	0	0
Fortis	-	+	-	+	-	-	+	-	+	-	-	+	-	-	-	-	+	-	+	0
Nasal	-	-	-	-	+	-	-	-	-	+	-	-	-	+	0	0	0	0	0	0
Occl.	+	+	-	-	-	+	+	-	-	-	+	+	-	-	+	+	+	+	0	0
Fric.	-	-	+	+	-	-	-	+	+	-	-	-	+	-	+	+	+	+	0	0
L-ness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	0
H-ness	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+

(Supplement scheme to Figure 9b)

(Figure 11b)

(Compare the findings of the above two supplementary schemes with the findings of the Jakobsonian-type scheme in Figure 8).

The convention of using "solid" lines in the chart is intended to separate the three compartments which correspond to the three dimensions we have established in Figures 9a and 9b. The combination of "solid" and "dotted" lines has the dual function of distinguishing between Set 2 and Set 3, and functionally aligning the feature /nasal/ with both Sets in question on both dimensions. The "double solid" lines actually isolate the "unclassified" phonemes from the

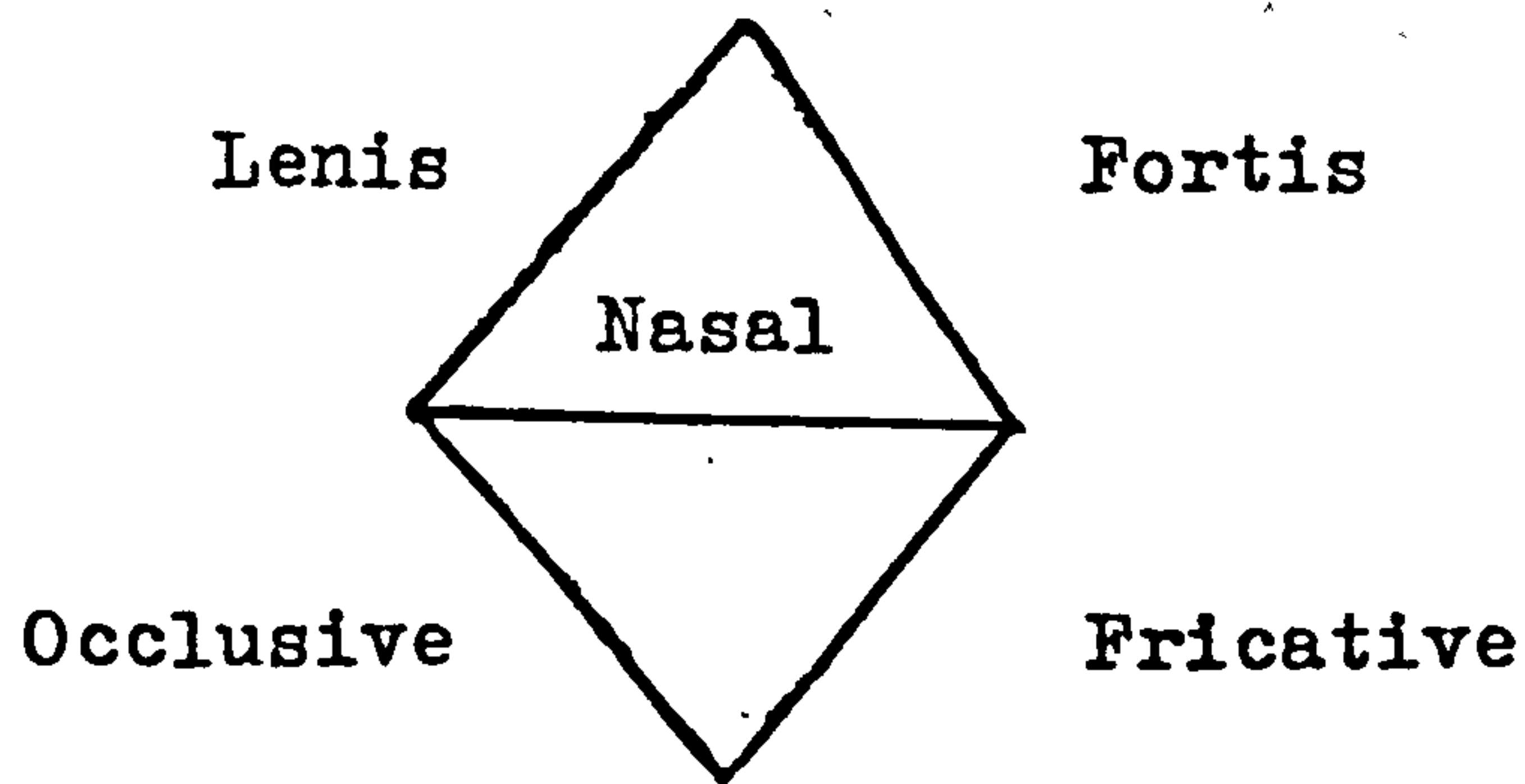
classified ones in the system. Besides, we should note that any "+" which is not offset by a "-" (or vice versa) on a specific section of a dimension amounts to nullifying the identity and the distinctive function of the feature in question with respect to the phoneme under consideration. The two "minuses" on the /lenis/ vs. /fortis/ section of the second dimension for the phoneme /x/ in both versions, for instance, or the two "pluses" on the /occlusive/ vs. /fricative/ section of the third dimension for each of the /hissing/ and /hushing/ elements in Figure 9b, can be avoided by stipulating the convention of ignoring any "plus" which is not counterbalanced by at least one "minus" (or vice versa) in the appropriate section of the dimension.

Hyper-Features and Hyper-Phonemes:-²³

In this specific section, we shall be dealing with yet another important side-issue which results from the application of cartesian matrices for the classification of the phonemes of any one language.

It has been noticed that neither the opposition /lenis/ vs. /fortis/, nor the opposition /occlusive/ vs. /fricative/, can be shown to be functional with respect to the /nasal/ phonemes /m, n, ŋ/, on the grounds that it is not possible to distinguish, within the /nasal/ Set, between what can be classified as (or analysed into) a /lenis/ or /occlusive/ /nasal/ as opposed to what can be termed as its /fortis/ or /fricative/ counterpart. To put it differently, the three

/nasal/ phonemes in S.E. are uniquely indifferent with respect to these two dichotomies. This sui generis nature of the three /nasal/ phonemes and the peculiar position they occupy in the system of the S.E. consonant phonemes can be represented as:-



The /hissing/ and /hushing/ phonemes in the system under consideration, i.e. /z, s/ and /ž, š/, respectively, also display a tendency of indifference, though of a different type, towards the /occlusive/ vs. /fricative/ dichotomy. It has been shown earlier that the dichotomy in question can never be utilized to distinguish within each of the /hissing/ and the /hushing/ categories between what can be identified as a distinctively attested n-tuple such as /hissing, fricative/ as opposed to another which can be called a /hissing, occlusive/, or between a /hushing, fricative/ as different from a /hushing, occlusive/. As a result, the opposition /occlusive/ vs. /fricative/ is suspended (in Figures 9b and 11b) with reference to the /hissing/ and /hushing/ phonemes in the system of S.E. consonants. However, the /hissing/ and /hushing/ phonemes are always represented by a [fricative] realization; [fricativity] being a typically concomitant phonetic property of the

features /hissing/ and /hushing/.

It should be pointed out in this context that the above argument does not apply to the same correlation in Figures 9a and 11a since it does not play any role with respect to the /hissing/ and /hushing/ elements, i.e. it is a neutral correlation, but not neutralized.

Moreover, it has been shown (Set 3) that the dichotomy /lenis/ vs. /fortis/ can, in fact, differentiate between correlated pairs of /fricative/ phonemes, /v/ vs. /f/, etc. It remains to be said that in the case of the /dorsal, fricative/ phoneme /x/, the opposition /lenis/ vs. /fortis/ is suspended. This suspension of opposition between the member-features in the /lenis/ vs. /fortis/ dichotomy with respect to the phoneme /x/ in the overall system of the consonant phonemes of S.E. (Figures 9a, 9b, 11a and 11b) results in assigning the term "hyper-feature" to the suspended opposition between the two features, i.e. "hyper-feature" /lenis/fortis/. This is due to the fact that the feature /nasal/ still has a distinctive role to play in the "dimension" in question, i.e. it accounts for the distinctiveness of the phoneme /ŋ/. Had this distinctive capability of the feature /nasal/ been irrelevant in the "dimension" under consideration, we should have had to establish four "hyper-phonemes", i.e. /z, s, ʒ, ʃ/, in Figures 9b and 11b since in each case the distinctiveness of a whole "dimension" has been "neutralized", i.e. rather than "+ + -"

in the /lenis-fortis-nasal/ dimension, as in the case of /x/, we here have "0 0 0" in the /occlusive-fricative-nasal/ dimension.

It is worth pointing out in this context that, though the two notions of "hyper-feature" and "hyper-phoneme" were first introduced by Mulder in 1978, they have so far not been incorporated in any version of the official "Postulates for A.F.". In the 1978 account, Mulder refers to these two notions in a casual manner without properly explaining or discussing the differences between them. Furthermore, he establishes the "hyper-phoneme" /x/ (for S.E.) which, according to him, "can be said to represent /dorsal, fricative, voiced/ as much as it represents /dorsal, fricative, unvoiced/". Despite the contradiction between his established phoneme-table for S.E. (Figure 5) and his discussion of the dimensions applicable to S.E., the above solution seems to be entirely justified on the grounds that the /voiced/ vs. /unvoiced/ correlation forms by itself a complete and separate dimension with no relationship whatsoever with the feature /nasal/. However, such a solution can neither be considered adequate nor consistent with reference to the phoneme-tables we have established so far, whereby, the feature /nasal/ has been established as the overlapping area between dimension 2 and dimension 3. In other words, though the correlations /lenis/ vs. /fortis/ and /occlusive/ vs. /fricative/ form integral parts of the 2nd and 3rd dimensions, neither of them constitutes a separate dimension by itself and in its own right since the feature /nasal/ is reckoned to be the

third relevant feature in both dimensions, i.e. an overlap. Consequently, the "hyper-phoneme" /x/ can not be systematically and consistently established in any of the proposed systems we have established up to now.

In order to make the theoretical notions of "hyper-feature" and "hyper-phoneme" more ostensible, we lay down the following two specific guidelines:-

- 1- Whenever the distinctiveness of a whole dimension is suspended, the result is a "hyper-phoneme".
- 2- Whenever the distinctiveness of only part of a dimension is suspended, the result is a "hyper-feature".

Consequently, in the absence of corresponding /hissing, nasal/ or /hushing, nasal/ phonemes in the system under consideration, the four /hissing/ and /hushing/ phonemes /z, s, ʒ, ʃ/ can be said to constitute "hyper-phonemes" for which the distinctive potential of the /occlusive-fricative-nasal/ dimension is totally suspended.

Furthermore, since the requirement for the establishment of "hyper-features" is the suspension of part of a dimension, the following "hyper-feature" can be said to have been established:-

"Hyper-feature" /lenis/fortis/ with reference to the /dorsal, fricative/ phoneme /x/ in all our Figures.

However, the case in respect to the /nasal/ phonemes is

entirely different. Though the /nasal/ elements have been shown to demonstrate total indifference towards the /lenis/ vs. /fortis/ and the /occlusive/ vs. /fricative/ correlations, the establishment of two hyper-features /lenis/fortis/ and /occlusive/fricative/ can not be logically justified, on the basis that the two correlations in question are not built on the feature /nasal/. In other words, there is no potential distinction to suspend. Furthermore, the relationship that holds between the member-features in the two correlations on the one hand, and the feature /nasal/ on the other, is that of mutual exclusivity. Consequently, the features in question can only be logically considered redundant throughout the system not suspended in a part of it.

Finally, the reader should be warned against confusing the two notions of "hyper-phoneme" and "hypher-feature" with the notion of "archiphoneme", (c.f. Chapter 6 of PART I). For, despite the fact that in both cases we are dealing with the phenomenon of "neutralization", it should be made clear that "neutralization" in phonematic contexts leads to "hyper-phonemes" and "hyper-features" and "neutralization" in phonotactic contexts leads to "archiphonemes".

Alternative Proposal "2":-

Having scrutinized and discussed the advantages and disadvantages of Cartesian matrices and other relevant issues, we have finally arrived at the point where the discussion and establishment of a second potential constructional alternative solution to the problem (an alternative alluded to earlier)

has become imminent. The shape of this proposed construction, which conforms in every respect to the consistent and adequate conclusions of a logically conducted analysis and argument, bears resemblance to the skeletal relational pattern which we have called a "lattice" in Figure 2.

In order to make the construction of our proposed complex design feasible, we have based ourselves throughout on the manipulation of certain theoretical tenets borrowed from other scientific disciplines. We can specifically mention in this context: The mathematical form of algebraic structures, the scientific conception of the notions "molecule" and "atom", and the conception of "attraction:repulsion" from astronomy (which is approximately analogous to our previously established types of relationship between the members of the established dimensions, i.e. the "compatibility:exclusion" relationship).

~~XXXXXXXXXX~~

According to Sleigh Hecht and Eugene Rabinovitch's (1955) conception of the notion "molecule" and its definition in the Collins English Dictionary (1979), each chemical "molecule" is viewed as a compound of at least two or more atoms, and each "atom" is generally conceived as consisting of "protons", "neutrons" and "electrons". To maintain the identity and unity of the molecule and its neutrality²⁴, the number of the "electrons" in the molecule must always be equal to the number of the "protons". As such, the distinguishing characteristic of any molecular element does not only depend on the number of the "protons" (positive values) it contains, but also on the

number of the "electrons" (negative values) and the number of "neutrons" (neutral values) which necessarily coexist alongside the "protons" within any one specific molecular element.

Similarly, though the "positive values" of any one linguistic element, i.e. a phoneme or a distinctive feature, constitute necessary prerequisites for the identification of that particular linguistic element, the mere theoretical fact that the linguistic element in question belongs to an overall inventory containing other linguistic elements renders the "positive values" insufficient for the global relational and differential value of any one linguistic element from all the other linguistic elements in the system. For, in addition to its "positive values" (represented by "pluses"), a linguistic element is potentially capable of acquiring "negative values" (represented by "minuses") and "redundant values" (represented by "zeros"). The total number of these "positive", "negative" and "redundant" values in a linguistic element, say a "phoneme" for instance, should be equal to the number of the "distinctive features" (see further below) in the inventory we establish for any one specific language.

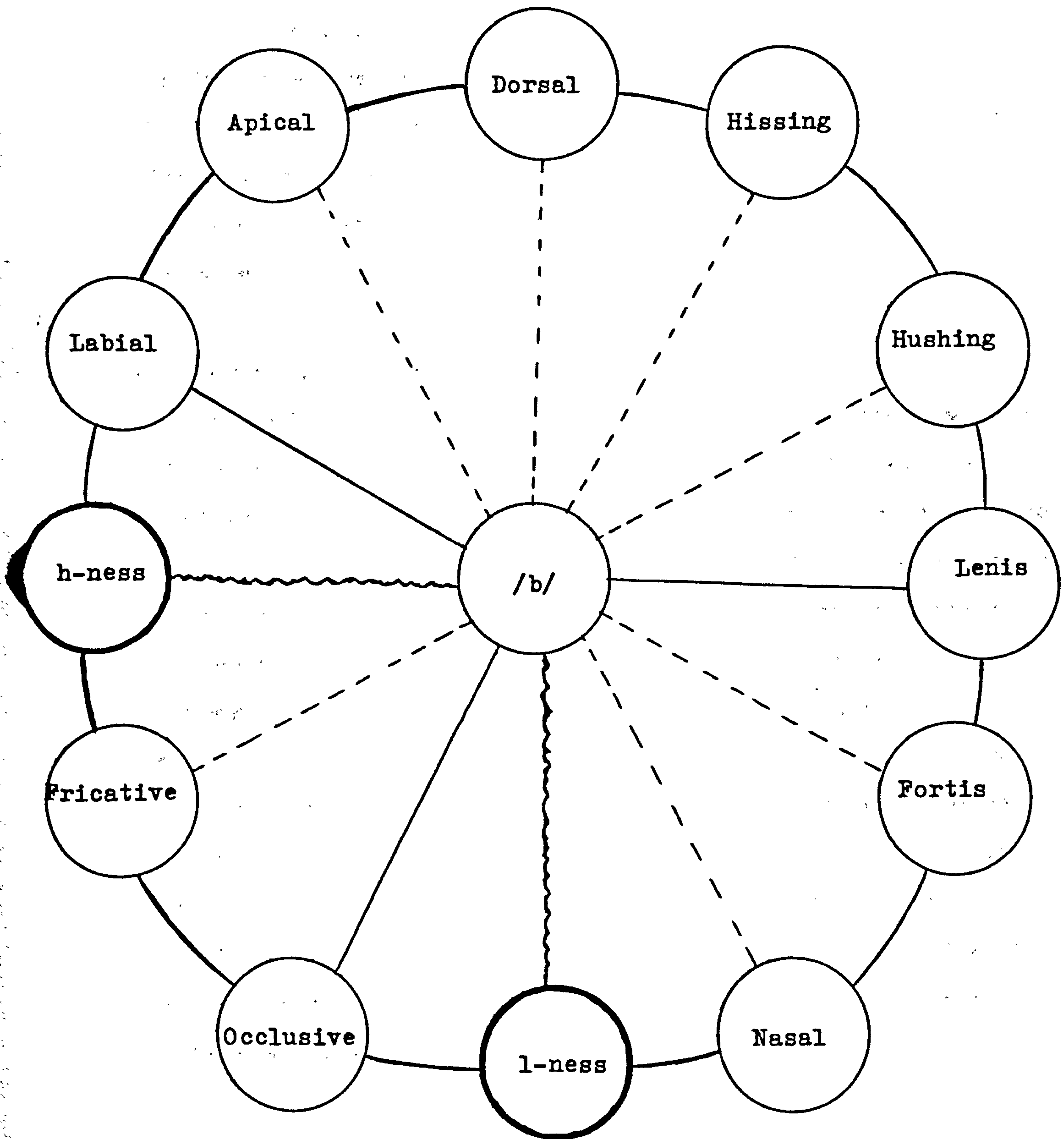
Since each single "phonematic element" belongs to a phonematic system, its global systemic value can only be determined with reference to the overall phonematic system (which is supposed to contain all the phonematic elements of any one language). It is then, and only then, that the overall systemic constructional and differential value of any one

specific phonematic element can be established and recognized. In this sense, the overall set of "phonematic features" of any one language can be envisaged as forming a set of system-bound satellites periodically revolving round other "phonematic elements" (of different type) situated in the middle. By applying the dichotomous concept of "attraction:repulsion", we can demonstrate that while some of these revolving "phonematic features" tend to move by the force of "attraction" towards the element occupying the centre, other "phonematic features" are noticed not to be fully attracted to the centre (by the force of repulsion) but are distributed unevenly at different distances from it. This may be attributed to either of the following two factors, or to both of them:-

- 1- It may well be that the central pulling force of gravitation is not strong enough (at times it may be very weak indeed) to exert sufficient attractive force to pull these elements to the centre.
- 2- The resisting repulsive force of the satellites is sufficiently strong to resist any kind of pressure from the central mass.

In consequence, the relevance of each of these revolving "phonematic" satellites to the central body is bound to vary and differ. In the interest of clarifying our contention, we shall set up a "phonematic lattice" for the purposes of summing up the different types of relationship (and values) which are attested to hold between the phoneme /b/ in S.E., for instance, and the members of the overall functional set of distinctive features which has been specifically established for the language under consideration in previous discussions in this

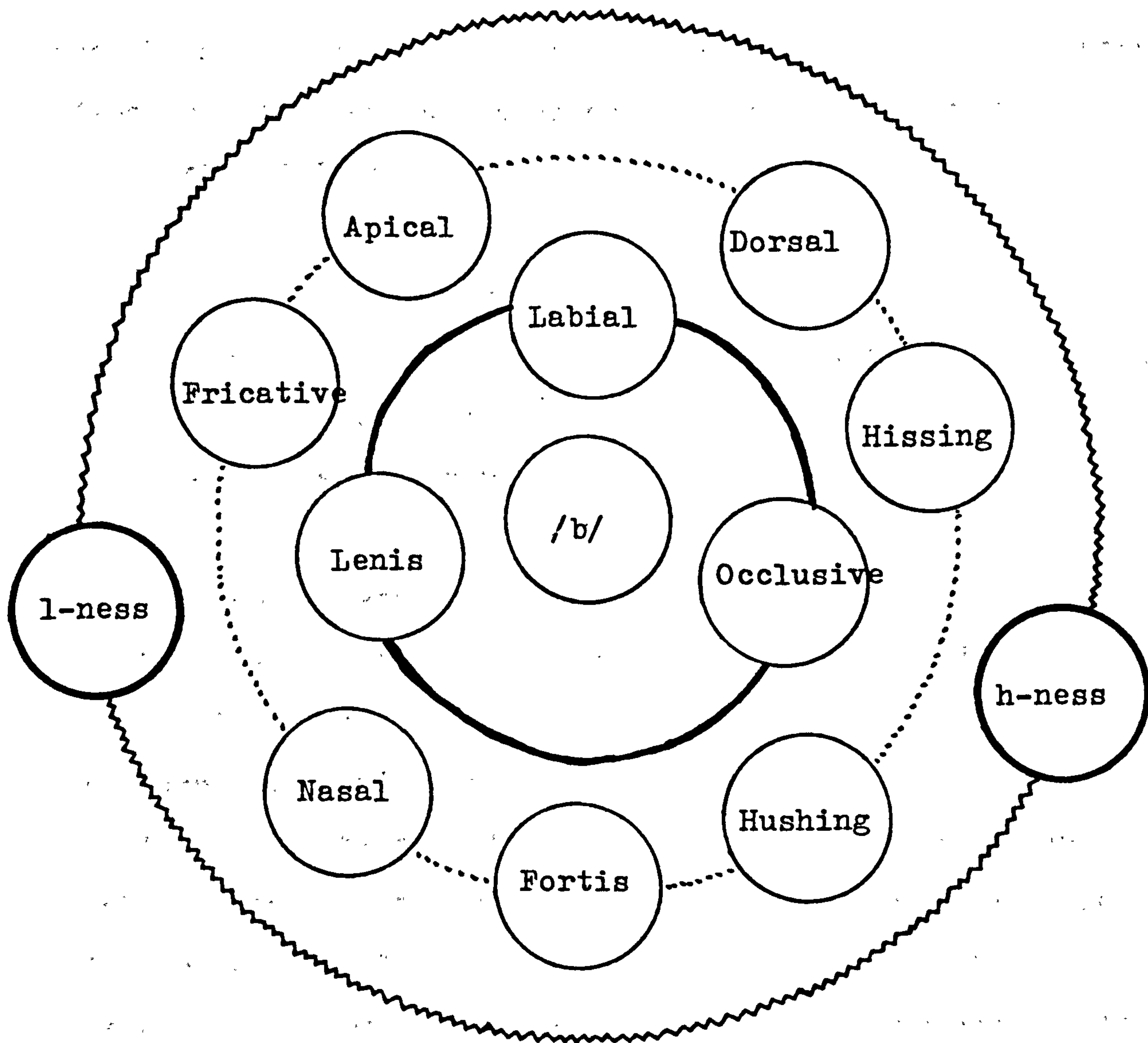
Chapter. The "phonematic lattice" for such a complex network of relationships can be constructed in the following manner:-



(Figure 12)

This reciprocal relationship between any of the revolving "features" on the one hand, and the phoneme /b/ on the other, is marked by one of three different types of line; whereby, the solid line " _____ " should be understood to mean "positively relevant to ...", the dotted line " " means "negatively relevant to ...", and the zigzagged line " ~~~~ " should be read as "redundant with respect to ..." or "irrelevant to ...". Furthermore, the thick-lined circles in the "lattice" refer to the unclassified features as members of the overall set of distinctive features, not as forming proper dimensions, or members of proper dimensions.

However, it should be pointed out that though Figure 12 is capable of indicating all the relational and systemic values which are necessary and sufficient for the global systemic distinction of /b/, it does not, visually speaking, take care of displaying clearly the varying degrees of feature relevance with respect to the central mass /b/ other than by means of the connecting lines. Alternatively, if we are allowed to borrow some conventional techniques from astronomy to establish our hierarchy of feature relevance, we can arrive at the following space-like chart which can be deemed more adequate than Figure 12 because it takes into consideration the varying degrees of feature relevance. This chart (which may be identified either as the "phonematic lattice of /b/" or as the "gravitation field of /b/") can be set up in the following way:-



(Figure 13)

The only representational difference which distinguishes this chart from Figure 12 is that the connecting lines in the latter Figure has been substituted for large "solid", "dotted" and "zigzagged" circles indicating the values of the features in question, as well as the degree of their relevance (in terms of distance) with respect to the central element. The meanings that we attach to these large circles are exactly analogous to those we have attached to the lines in Figure 12.

Consequently, the global value of /b/ with reference to the overall systemic sets of distinctive features can be inferred (from both Figures) and expressed in terms of "pluses", "minuses" and "zeros" in the following way:-

/b/ = /+ labial, + lenis, + occlusive/

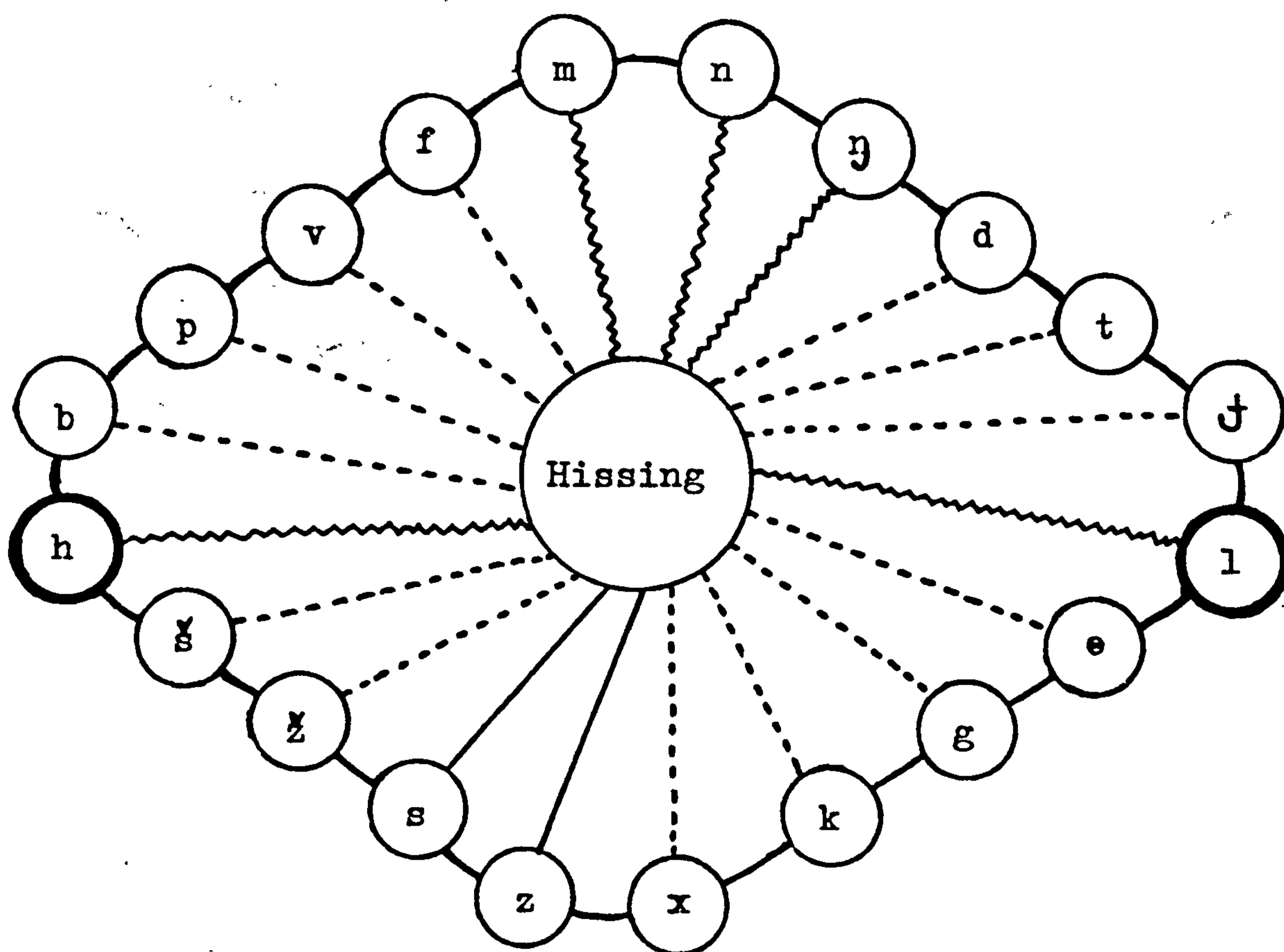
/- apical, - dorsal, - hissing, - hushing, - fortis,
- nasal, - fricative/

/0 l-ness, 0 h-ness/

In view of these conclusions, we should remark that the similarities between a "chemical molecule" and a "linguistic molecule" can no more be sustained, on the grounds that unlike the numerical equivalence between the "protons" and the "neutrons" in the structure of a chemical molecule, the number of the "positive" and "negative" values in any one linguistic molecule are not expected to be equivalent. The only requirement that we ask of such an approach is that the total number of values in a phonematic element should be equivalent to the total number of the periodically revolving phonematic elements in the "lattice".

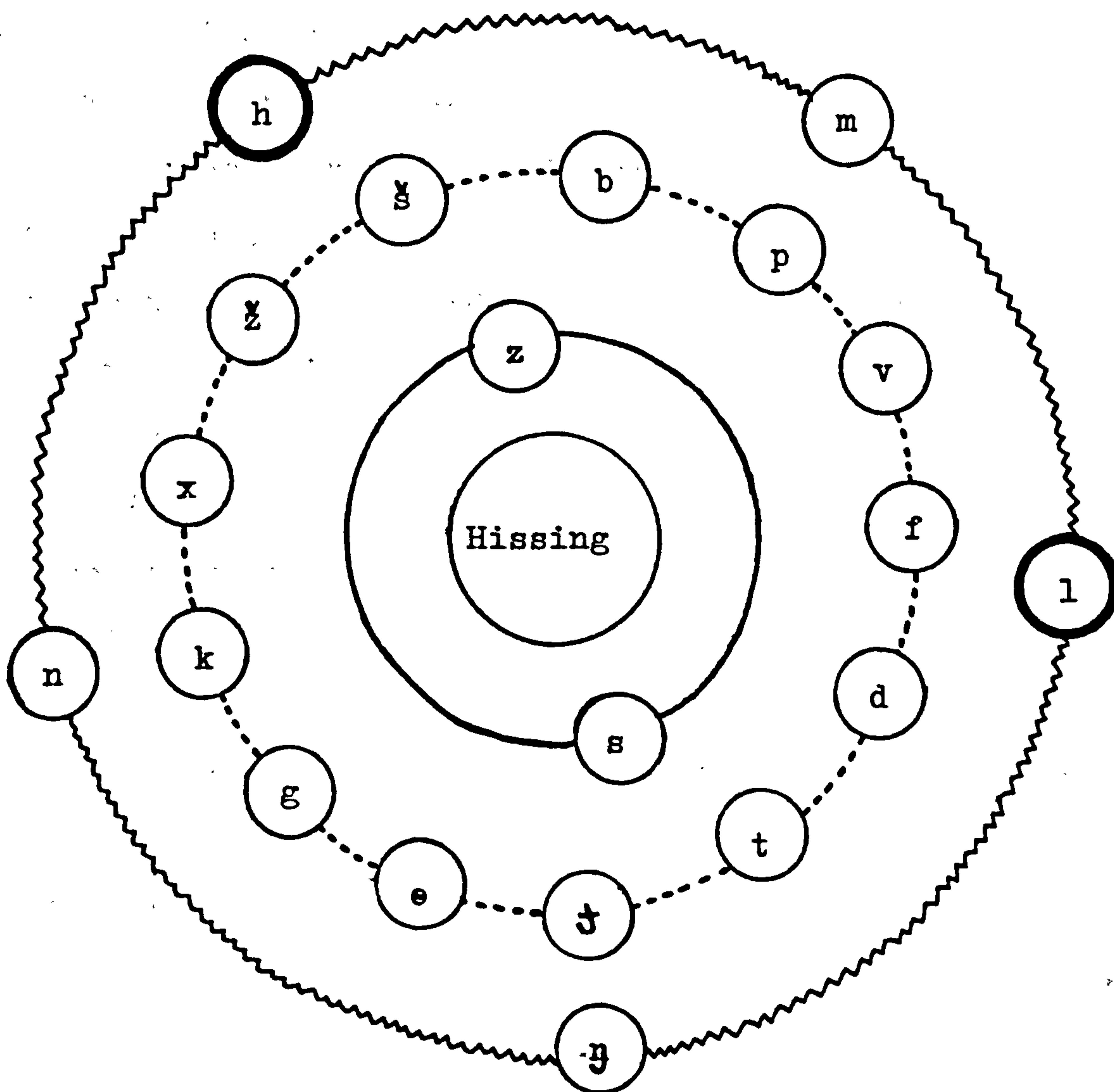
However, the reverse of the argument (above) concerning the establishment of the global systemic value of /b/ is equally sound with respect to the multiple relationship holding between one distinctive feature and the individual members of the overall set of phonemes of S.E. In this sense, any linguistic phonematic feature per se is potentially capable of possessing at least two of the aforementioned three values,

on condition that one of these values should always be "positive"; this is exactly the case with respect to the unclassified features and phonemes. In consequence, the overall systemic value of the feature /hissing/, for instance, can be inferred from the following "phonematic lattice" or "field of gravitation". Thus, we have:-



(Figure 14)

Alternatively, the "lattice" above can be reconstructed to indicate the varying degrees of relevance of the feature in question with reference to each of the individual members of the overall set of the S.E. consonant phonemes. Hence, we can have:-



(Figure 15)



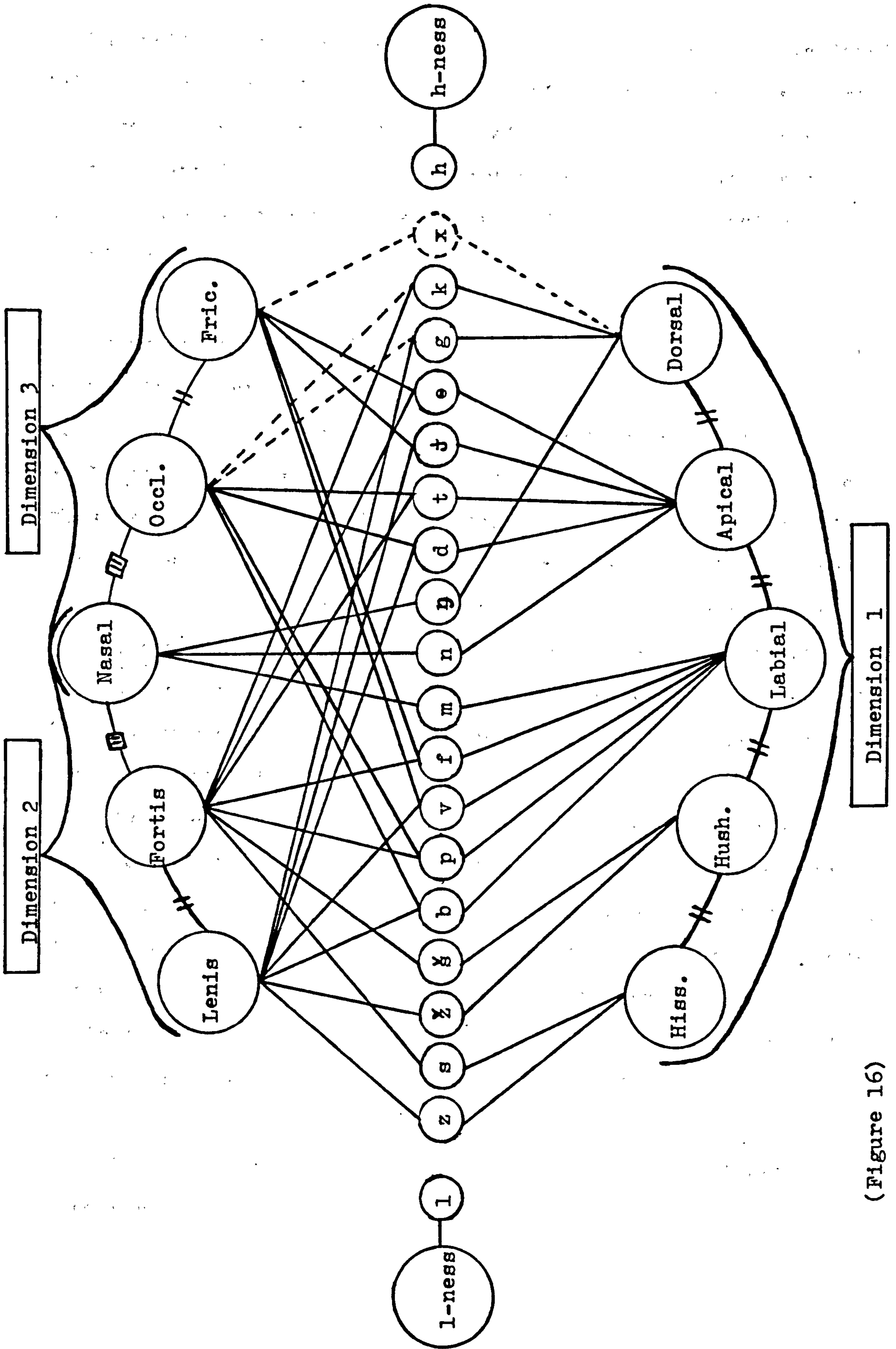
In order to make the construction of our second alternative proposition for the classification of all the consonant phonemes of S.E. ostensibly feasible, we have reconciled and incorporated into our structure a number of factors and conventions, among these we can specifically refer to: The "re-adjusted mathematical form of algebraic structures"²⁵, the

definition of the notion "dimension", and the "numerical results of the functional distinctive-feature analysis". The unique blend of these contributing factors will provide us with the means for the establishment of a self-contained multi-dimensional construction whose potentiality and appropriateness are bound to render any recourse to geometrically solid prisms and Jakobsonian-type schemes totally redundant and unnecessary, on the grounds that the proposed "structure" potentially embraces all the positive virtues of both classificatory devices and avoids their pitfalls.

To distinguish this type of construction from all other types of classificatory device established and discussed in earlier sections, we shall be identifying it, most appropriately, by the technical term "phonematic lattice".

In order to avoid any repetition, we stipulate that the constructional conventions we attach to this "phonematic lattice" are characteristically analogous to those we have established earlier with respect to the pattern in Figure 2, except that in the subsequent "phonematic lattice" the stress has been equally maintained between the phonemes and their distinctive features.

The following therefore is the "phonematic lattice" for the S.E. consonant phonemes and their distinctive features:-



(Figure 16)

The validity and appropriateness of the above representational "phonematic lattice" lies in its ability to comply with all the requirements and recommendations laid down earlier in Lists 3 and 4, and to avoid all the shortcomings and inconveniences of Cartesian matrices alluded to and discussed in previous sections.

In order to satisfy the minimum requirement of the functional principle, we stipulate that there should be at least two lines connecting each and every "atomic feature" in the lattice with at least two "phonematic molecular elements". The converse of this requirement also holds, in that no "phonematic molecule" can consistently be said to belong to the "phonematic lattice" unless there are at least two lines connecting it with at least two "atomic features". This quantitatively and qualitatively blocks the candidature of the "phonematic molecules" /h/ and /l/ (and their atomic features) from being directly incorporated in the "phonematic lattice", (see earlier discussion). As these unanalysable phonematic elements belong to the same overall inventory, but not to the "phonematic lattice" proper, we have chosen to situate these elements on the periphery of the system. This is unavoidable since atomic items of such nature which are connected to at least one common molecular element belong to different dimensions. They are listed in the inventory, but not connected with the body of the lattice itself.

While by convention the "solid lines" in the "lattice" directly refer to the "positive values" the phonematic

elements are capable of possessing, the "broken lines" and "broken circle" indicate the marginal status of the "phonematic molecular element" and the "atomic feature" in question, (see Figure 2 and its related conventions).

In view of the foregoing, we are of the opinion that the proposed "phonematic lattice" in Figure 16 is the most consistent, adequate, and simple of the classificatory devices that have been discussed in this Chapter. However, those who are doubtful of such a claim are referred back to the argument for and against the Cartesian method of representation.

On the basis of the findings of the above argument, we believe that this new type of representation supplants all other representational devices hitherto discussed.

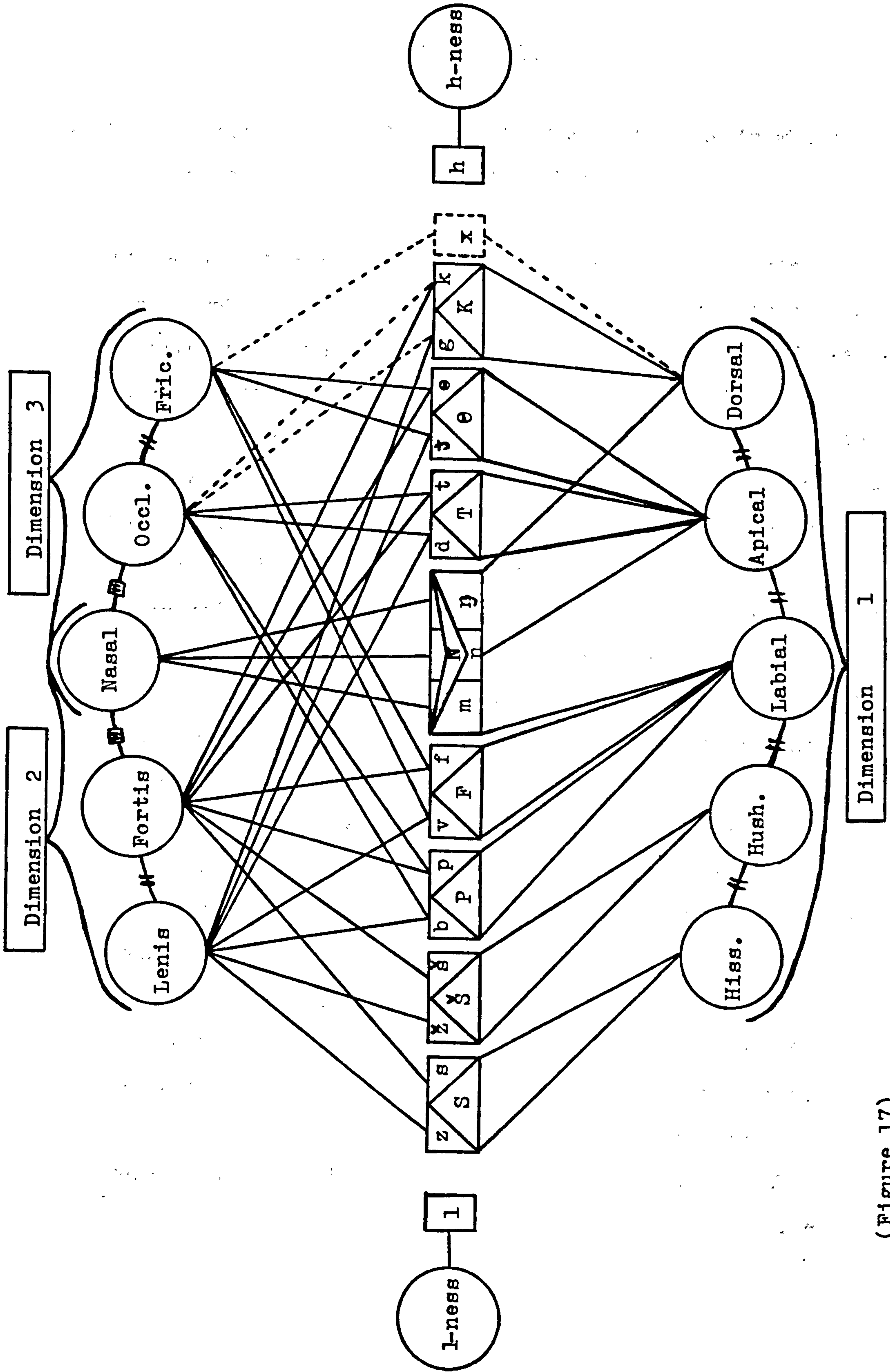
The "Extended Phonematic Lattice":-

It has been pointed out earlier in List 4 that a matrix which displays a potentiality for incorporating and accounting for the sub-system of the archiphonemes in the same system, alongside the phonemes, is systematically more exhaustive and therefore more adequate, and representationally simpler than the matrix which does not.

Hence, the following construction is an extended version of the proposed "phonematic lattice" in Figure 16. This "extended" version is capable of demonstrating how the archiphonemes can very easily be accommodated in the "lattice"

without causing any inconvenience to the system as a whole. In order to guarantee a correct reading of the "extended phonematic lattice", we need to explain and clarify two representational conventions, firstly, the special type of triangle which accommodates archiphoneme /N/ has only been used to display in a clear-cut manner the positive link between phoneme /n/ and the feature /nasal/, and secondly, it should always be remembered that the "heads" of the triangles always point out towards the neutralized features, and their "bases" refer to the relevant non-neutralized features. (See the discussion and establishment of the consonant archiphonemes of S.E. in Chapter 2 of this PART).

The proposed "extended" version of the "lattice" in Figure 16 can be constructed in the following manner:-



(Figure 17)

Notes to Chapter 1.

- 1- "Distinctive function" for "set of commutations in which a semiotic entity may partake". Def. 7a³.
- 2- "Commutation" for "alternation between semiotic entities (or "zero" and semiotic entities) in functional opposition as immediate constituents, in a given context". Def. 7a³.
 It should be remarked that it was Saussure who first drew the attention of his contemporaries and successors to the important fact that "language is a system of oppositions". Though the Prague School linguists and the Glossematicians have adopted and contributed towards the development of Saussure's notion of "opposition", we still notice that the notions of "opposition" and "contrast" are used interchangeably to refer to one phenomenon only, rather than two. Since both notions operate within the domain of a distributional unit, an Axiomatic Functionalist always distinguishes between "opposition" as a paradigmatic operation, and "contrast" as a syntagmatic operation. The reader is referred to Mulder's Sets and Relations and "Postulates for A.F."
- 3- A normal strict application of the "one minimal pair" criterion in isolation, for instance, will infallibly, though tentatively, demonstrate and establish the functionality, with respect to communication, and the separate identity of the "glottal stop" [ʔ] in S.E., e.g.

/god/ "God" vs. /go?/ "got",
 or /bigr/ "bigger" vs. /bi?r/ "bitter", etc.

It is only by means of the outlined interpretation of the concept of the "one minimal pair" requirement that we can impede the establishment of the "glottal stop" in S.E. as a separate phoneme.

- 4- "Paradigm" for "set of entities in functional opposition in a given context, within a chain". Def. 7g¹; see also the definition of "distributional unit" in PART I, Chapter 7, as well as the definition of the notion "position class" in Mulder, 1968.
- 5- In view of the unavoidable presence of "gaps" (represented by "blanks") in the eight paradigms, we can iterate Hervey's (1978) statement that:-
- Though "(accidental gaps) are the result of a discrepancy whereby certain phonological forms simply do not happen to be used (in whole or in part) as forms of allomorphs of signa, (they) are nonetheless regarded as phonologically "well-formed": potential forms", (my italics). In other words, this phenomenon is of an entirely accidental nature.
- 6- J.W.F. Mulder, "From Sound to Denotation" and "On the Art of Definition, the Double Articulation of Language, and Some of the Consequences".

- 7- See the definition of the concept "upper limit" in footnote 28 of Chapter 3 of this PART.
- 8- For lack of time and space, it is temporarily sufficient for the purpose of this work to note that Martinet's (1962), Gimson's (1978), Gleason's (1969), Cohen's (1965), Postal's (1968), and to a certain extent McCalla's (1983), etc. proposed sets of phonemic features for the classification of S.E. consonant phonemes are phonemically inadequate and conceal, not only a substantial degree of redundancy and unfunctionality, but also a direct and excessive isomorphism with the actual phonetically determined sound qualities. A grave ontological error which not only threatens to erase the borders between two fundamentally different domains of study (see PART I, Chapter 4), but which is bound to relegate "phonology" to an inferior dependant position.
- 9- The reason why the member-features in Set 1 can not be said to refer to the so-called "points of articulation" is attributed to the presence of the two features /hissing/ and /hushing/ in the same Set. It is true that these two features appear to refer to "manner of articulation" rather than to "points of articulation"; however, since the actual realization of the /hissing/ and /hushing/ phonemes does not only require a particular shape of the tongue (i.e. degree of grooving, and the "hissing" and "hushing" sounds associated with the grooving), but also a specific point of articulation lying (according to the International Phonetic Chart) along the front-back axis of the mouth in the

dental-alveolar area. It would be, therefore, entirely absurd and inaccurate to consider the features /hissing/ and /hushing/ as belonging solely to an "order" rather than to a "series". Furthermore, the phonetic realizational facts indicate, in an unambiguous way, that both "points" and "manner" of articulation are functionally included in the features /hissing/ and /hushing/. Consequently, the traditional one-to-one correspondence between the member-features of Set 1 and the phonetic "points of articulation" does not deserve to be maintained any further since reference to it is bound to lead to highly misleading conclusions. An alternative solution would be to establish these Sets of features on dimensions which do not claim any reference either to "points" or to "manner" of articulation. This is the reason behind the division of the overall distinctive-feature system of S.E. into Sets, whereby the relationship holding between the members of each Set is that of "mutual exclusion", in the sense that the features in each Set do not manifest any potentiality for combination. Later in the Chapter, we shall venture to give an adequate definition to the term "dimension" which does not resort to "phonetics" as a parameter for adequacy. It should also be pointed out in this context that the term "dimension" is used by Mulder (1968 et al) but never defined.

- Each of these features can be looked at as a "class" in respect to the elements it accounts for, i.e. the class of {/labial/ elements}, the class of {/apical/ elements}, etc. In this sense, the two classes {/labials/} and {/apicals/} are

equivalent with reference to the number of elements each of them accounts for. Neither of these two classes can be equated with any of the other classes, as class {/dorsal/} is one element short, and the two classes {/hissing/} and {/hushing/} are three elements short, each. These clues, in conjunction with the subsequent ones, will undeniably be of vital import in constructing and proposing alternative classificatory methods for the tabulation of the consonant phonemes of S.E.

- 11- The reader would have noticed that in the theory of A.F. the two terms "relevant" and "distinctive" are used interchangeably to refer to the same notion with respect to communicative potential; in the sense that what is "relevant" is by necessity "distinctive", and what is "distinctive" is automatically "relevant". Against this conception, we find an interesting, albeit questionable, distinction between the two terms launched and propagated by the German linguist Herbert Pilch (1964). "Relevant features", according to Pilch, generally typify one phoneme when compared with the rest of the phonemes in the inventory of one and the same language, and "distinctive features" are the necessary minimum number of atomic elements that are capable of distinguishing that specific phoneme from all the other phonemes in the inventory, e.g. while the "voicedness" in /m/, from Pilch's point of view, is a relevant feature but not distinctive, the feature "nasality" with respect to the same phoneme is a distinctive

feature but not a relevant one, (see H. Pilch, Phonemtheorie I, Bibliotheca Phonetica I (Basel), 1964.

- 12- "Intrinsic identity" of an element is "a function of the product of its distinctive functions, i.e. in the universe of discourse". In other words, "the distinctive function of a term with regard to another term is logically the same as the product of that term and the negated other term", noting that "a product is contained in the sum of its terms" (and in any of its terms), Mulder, 1968.
- 13- While the feature /labial/ has been demonstrated (by commutation) to be a relevant and functional feature of more than one phoneme, it is hard to envisage how the other linguists' (such as those mentioned in footnote 8) spectacular (phonological !) feature "bilabial" can be shown to have any distinctive function other than a phonetic one. Their proposed feature, which is unable to solely distinguish between /b/ or /p/ and any other separate molecular element in the inventory of English consonants, on the grounds that one of the elements is "labial" and the other is "bilabial", is logically considered redundant and, as such, "non-functional" in relation to /b/ and /p/, or to any other phoneme in that respect. The same argument and objections can be held against their other proposed features, e.g. "labiodental", "alveolar", "frontal", "non-nasal", "oral", etc., which are recommended for the classification of the consonant phonemes of S.E.

14- Bertil Malmberg, Phonetics.

L.F.Brosnahan & B.Malmberg, Introduction to Phonetics.

J.D.O'Connor, Phonetics.

A.C.Gimson, An Introduction to the Pronunciation of English.

H.A.Gleason, An Introduction to Descriptive Linguistics.

Leonard Bloomfield, Language.

K.L.Pike, Phonemics, A Technique For Reducing Languages To Writing.

D.Jones, The Pronunciation of English.

P.M.Postal, Aspects of Phonological Theory.

A.Cohen, The Phonemes Of English: A Phonemic Study Of The Vowels And Consonants Of Standard English.

15- It is interesting to point out that Martinet, in a work which I do not recall, considers the correlation of tension "fortis:lenis", with reference to the S.E. consonant phonemes, untenable, on the grounds that in a(n absurd) situation like "shouting" the realization of the "lenis" phoneme /b/ approximates the realization of its "fortis" counterpart. A point of view which does not find support from other quarters in the field of functional linguistics. However, if what Martinet proposes is true, then it is equally correct to say that the realization of the "voiceless" phoneme /p/ in a similar situation is always "voiced" rather than "voiceless". Furthermore, in the case of "whispering", the distinction between /b/ and /p/ is normally blurred.

16- See Mulder's (1968, p.109) objections against the

establishment of the feature "non-nasal" with respect to the consonant phonemes of S.E.

- 17- The reader is referred to Paul Rastall's (1983) work for his Ph.D. degree in Linguistics. In his work, Rastall has obtained conclusions relatively analogous to our own.
- 18- To the best knowledge of the author, it was R. Jakobson who first introduced and established the convention of tabulating the phonemes and the distinctive features of any one language in one overall two-dimensional matrix. N.S.Trubetzkoy's, L.Hjelmslev's, and A.Martinet's contributions in this respect are undeniable.
- 19- J.W.F.Mulder & Sándor G.J.Hervey, The Strategy of Linguistics: Papers on the theory and methodology of axiomatic functionalism.
- 20- It is ironic to realize that those who raise objections against incorporating the archiphonemes alongside the phonemes in the system are those who neither recognize the notion "archiphoneme" nor the notion "neutralization", such as the Jonesians and the post-Bloomfieldians.
- 21- J.W.F.Mulder, Sets and Relations.
 " " " " , "Descriptive adequacy and the Scottish vowels".
 " " " " , "The English Vowel Phonemes from a Functional Point of View, and a Statement of their Distribution".

See also M. Joos, "Phonology: Phonemics And Acoustic Phonetics".

22- In his article "The Phoneme-Tables and the Functional Principle", J.W.F. Mulder discusses the relationship holding between the established dimensions in Figures 5 and 6, where he adduces and establishes an unwarranted indirect relationship between the correlation of "voice" in the case of the /hissing/ and /hushing/ phonemes with the correlation of "voicing" in the case of the /labial/, /apical/, etc. phonemes. As there is no equivalence between the /voiced:unvoiced/ correlation in both cases, on the basis that while the correlation /voiced:unvoiced/ in the first table is built on the third dimension, the analogous correlation in the case of the /hissing/ and /hushing/ phonemes (in Figure 6) is built on the second dimension, there is logically no relation, whatsoever, between the two sub-systems other than their membership in the overall inventory of the consonant phonemes of S.E. However, unless the above relationship between the two cases of "voice" is viewed in terms of the overall perspective of the S.E. "phoneme:feature" relationship, the stipulated equivalence between them will only make nonsense of our conception of the notion "dimension". In other words, it is a misnomer to interpret the dimension of "voicing" in Figure 6 as referring to the "second" dimension and then equate it with the "third" basic dimension in Figure 5. The only possible solution to this problem, as we conceive it, is to maintain that because the actual "second" basic dimension, i.e.

/occlusive-fricative/ (which is not indicated in Figure 6) has become "neutral" or being "neutralized", then the "voicing" dimension should be viewed (according to the overall conception of the S.E. phoneme:feature relationship) as occupying the "third" dimension, but not the "second" dimension. In consequence, the acceptance of the presence of a relationship between the two cases of "voicing" in the two matrices hinges on the acceptance of the above logical interpretation. Accordingly, instead of the "indirect" relationship between the two correlations of "voicing" which has been postulated by Mulder, we are justified^{to} (in fact we should) discuss the establishment of a "direct" relationship between the two cases since both of them, by now, are theoretically situated on the "third" dimension.

23- See the reference in footnote 22.

24- Sleigh Hecht and Eugene Rabinovitch, Explaining the Atom: The Atom Made Intelligible.

25- See the Encyclopaedia Britannica.

CHAPTER 2.Consonantal Archiphonemes for S.E.
and Types and Rules of Neutralization.

Granted that our earlier theoretical approach to the phenomena of "neutralization" and "archiphoneme" (PART I, Chapter 6) is comprehensive and adequate, the present Chapter negotiates the utilization of the A.F. theoretical tenets for the establishment, formalization and formulation of a finite set of phonological rules of neutralization capable of accounting for and generating archiphonemes in S.E. Furthermore, since the operational field of "neutralization" is conceived to be the phonemes and their distinctive features, the analytical and classificatory results of Chapter 6 are deemed indispensable for the establishment, activation and operability of the rules of neutralization.

It is also worth stressing in this context that though Mulder's (1968 et al) descriptive account of the consonantal archiphonemic sub-system of S.E. has successfully complied with the requirements of "consistency" and "simplicity" (as well as with the main principles and directives which have been discussed and outlined in PART I, Chapter 6), it can only be said to have approximated the requirement of "adequacy", but it has fallen short of fully encompassing it. The reason for this, we presume, may be attributed to Mulder's initial interest in demonstrating how his new theoretical approach to the phenomena of "neutralization" and "archiphoneme" can be brought about in

actual practice, rather than on submitting an "exhaustive", "detailed" and "materially adequate" description of the facts. Consequently, the following descriptive account of the consonantal archiphonemic sub-system of S.E. can be viewed as an elaboration on Mulder's findings and a further extension of his established set of theoretical rules and conclusions.

"Neutralization" in Relation to the "Consonantal Archiphonemes" of S.E.

In the light of all the A.F. theoretical tenets hitherto encountered and discussed, and on the basis of a quick functional examination of the facts of S.E., one may arrive at the following basic observations and conclusions the validity of which will be corroborated further down in this Chapter; thus:

- 1- The largest number of attested cases of neutralization involve the opposition /lenis:fortis/, both as triggering context and as neutralized opposition.
- 2- The feature /nasal/ contributes singularly and/or in conjunction with some other element and/or empty/filled position towards neutralizing the oppositional potential of succeeding elements belonging to the correlation /lenis:fortis/.
- 3- The presence of the functional "Ø" in certain positions plays a significant role in effecting the suspension of opposition between members of the /lenis:fortis/ correlation.

Since the above observational statements, which are based

on the functional examination of the facts, gives merely a bird's-eye view of the phenomenon of "neutralization" in S.E., the precise nature of each and all attested and established types of neutralization-cases will be shortly discussed in extenso. Suffice it to point out at this stage that the following finite set of archiphonemes can be said to have been phonologically identified and established:-

$$\{ /P/, /F/, /T/, /K/, /S/, /š/, /θ/, /N/ \}$$

It is necessary and sufficient to emphasize, in this context, yet without going into detail, that the identification and establishment of the above archiphonemes involve (among other things) the utilization of set-theory (as outlined by Mulder, 1968) and more calculus than one might imagine.

By mapping this limited set of archiphonemes onto the overall "Phonematic Lattice" in Chapter 1, we notice that each member of the set functionally represents (and is represented by) two or more distinct phonemes in the system. In consequence:-

:: Archiphoneme /P/ can be said to represent the suspension of opposition between /p:b/ in certain contexts. The value of /P/ is therefore equal to $\{p-(-b)\}$, i.e. everything which is "both and neither" /fortis:lenis/, but which is positively /labial, occlusive/ and negatively (with reference to the overall "Phonematic Lattice") /non-fricative, non-nasal, non-apical, non-dorsal, non-hissing, non-hushing/.

It should be noted that though the features /fortis:lenis/ are logically included in archiphoneme /P/, these neutralized features can no more be considered functionally relevant for the positive or even negative identification of archiphoneme /P/. This is attributed to the impossibility of establishing another archiphoneme in the system which is only functionally /fortis/ or only functionally /lenis/. We believe that the "both and neither" relationship between the neutralized features, on the one hand, and a specific archiphoneme, on the other, follows naturally from the logical-functional conception of the notion "neutralization". It should also be pointed out that this explanation applies to all the other archiphonemes, except /N/.

:: Archiphoneme /F/ can be said to represent the suspension of opposition between /f:v/ in certain contexts. Its value is equal to $\{f-(-v)\}$, i.e. everything which is "both and neither" /fortis:lenis/, but which is positively /labial, fricative/ and negatively /non-occlusive, non-nasal, non-labial, non-dorsal, non-hissing, non-hushing/

:: Archiphoneme /T/ can be said to represent the suspension of opposition between /t:d/ in certain contexts. Its value is equal to $\{t-(-d)\}$, i.e. everything which is "both and neither" /fortis:lenis/, but which is positively /apical, occlusive/ and negatively /non-fricative, non-nasal, non-labial, non-dorsal, non-hissing, non-hushing/.

:: Archiphoneme /θ/ can be said to represent the suspension

- of opposition between /e:ʒ/ in certain contexts. Its value is equal to $\{e-(-\dot{e})\}$, i.e. everything which is "both and neither" /fortis:lenis/, but which is positively /apical, fricative/ and negatively /non-occlusive, non-nasal, non-labial, non-dorsal, non-hissing, non-hushing/.
- :: Archiphoneme /K/ can be said to represent the suspension of opposition between /k:g/ in certain contexts. Its value is equal to $\{k-(-g)\}$, i.e. everything which is "both and neither" /lenis:fortis/, but which is positively /dorsal, occlusive/ and negatively /non-fricative, non-nasal, non-labial, non-apical, non-hissing, non-hushing/.
- :: Archiphoneme /S/ can be said to represent the suspension of opposition between /s:z/ in certain contexts. Its value is equal to $\{s-(-z)\}$, i.e. everything which is "both and neither" /fortis:lenis/, but which is positively /hissing/ and negatively /non-labial, non-dorsal, non-hushing/.
- :: Archiphoneme /Š/ can be said to represent the suspension of opposition between /š:ž/ in certain contexts. Its value is equal to $\{\dot{s}-(-\dot{z})\}$, i.e. everything which is "both and neither" /fortis:lenis/, but which is positively /hushing/ and negatively /non-labial, non-apical, non-dorsal, non-hissing/.
- :: Archiphoneme /N/ can be said to represent the suspension of opposition between /m:n:ŋ/ in certain contexts. Its value is equal to $\{m-(-n)-(-\eta)\}$, i.e. everything which is "both and neither" /labial:apical:dorsal/, but which

is positively /nasal/ and negatively /non-occlusive,
non-fricative, non-fortis, non-lenis/.

The reason why the overall value of each of the /hissing/ and /hushing/ archiphonemes does not embrace the negative feature-values /non-occlusive/ and /non-fricative/ can be found in the findings of the analytical operation into distinctive features, (Chapter 1), whereby, the above two feature-values have been shown to be functionally irrelevant for the positive and/or negative identification of any of the /hissing/ and /hushing/ phonemes (and archiphonemes). Furthermore, since neither of the features /hissing/ or /hushing/ is capable of contracting any kind of comprehensible and meaningful relationship with the feature /nasal/, the negative feature-value /non-nasal/ can not be shown to be a relevant term in the overall value of the /hissing/ and /hushing/ archiphonemes. In fact, any attempt to forcibly include the negative feature-value /non-nasal/ among the values of both /S/ and /š/ will necessarily lead to results incompatible with the "consistent", "adequate" and functionally arrived at conclusions of Chapter 1. This latter argument applies also to the inability of the /nasal/ archiphoneme /N/ to contain among its overall feature-values the negative terms /non-hissing/ and /non-hushing/.

Henceforth, we shall be dealing in detail with each attested case of neutralization in S.E. On the basis of the argument in each separate section, a neutralization-rule will be formulated and formalized. The aim of the final set of

all neutralization-rules is to govern and regulate the operability of the phenomenon of "neutralization" in S.E. and to generalize its ostensive applicability and generativity in the whole system.

A suitable way of closing this section is by pointing out that the following are the only functionally attested and established types of consonantal neutralization-cases in S.E.

"Cases" and "Types" of Neutralization in S.E.:-

Neutralization-Cases: Type "1":-

The proper discussion of this type of neutralization-cases in S.E. requires the examination of the following attested examples in list "A" and their corresponding phonological forms in list "B".

It is worth re-iterating in this context that the phonological description of any one language is expected to account fully and in detail (i.e. to be materially adequate) for all attested facts, even when these attested facts are of marginal significance. However, in order to distinguish the "marginally attested" cases from the "fully attested" ones, the former have been enclosed between "rounded brackets" in all given lists. Thus, we have:-

<u>A</u>	<u>B</u>
(tsetse), (Tswana), (pistachio), picks, tops.	(/tSetSi/), (/tSuarnr/), (/pSTaršioU/), /pikS/, /topS/.
strap, leapt, begged, raised.	/sTrap/, /lepT/, /begT/, /reizT/.
spear, splash, hackbut, (spiel).	/sPir/, /sPlaš/, /hakPrt/, (/šPIil/).
sphere, catfish, Bedford, (kvass).	/sFir/, /katFiš/, /bedFrd/, (/kFars/).
sky, skill, ashkey, (Kafka).	/sKAi/, /sKil/, /ašKIi/, (/kafKr/).
(phthalic), eighth, aphtha.	(/fθalik/), /eitθ/, /afθr/.
check, jam, ridge, catch, caption.	/tšek/, /dšam/, /ridš/, /katš/, /kapšn/.

(The signification of the representational convention of "semi-circles" will be discussed in a subsequent Chapter in connection with the Mulderian polemic concept of "semi-clusters" and its questionable relevance to S.E.).

By considering the examples and forms in the two lists, we recognize that the opposition /lenis:fortis/ is always suspended in the immediate vicinity of a preceding element belonging to the same correlation. In other words, no paradigmatic opposition can ever be attested to take place between /fortis:lenis/ elements if they are preceded in a form by a term itself a member of the /fortis:lenis/ correlation. The oppositional distinctive function of /t/ and /d/ in forms like /sTrap/ and /begT/, for instance, can accordingly be said

to have been neutralized in archiphoneme /T/, which, as has been shown earlier, represents each and both elements in its respective sub-system, and is represented by both of them in the overall system.

Similarly, the above argument can be used for the identification and establishment of the remaining archiphonemes in list "B".

Consequently, while all the elements which precede the archiphonemes in list "A" (and more clearly in list "B") can be identified as forming a set of "neutralization-contexts", the neutralized elements, on the other hand, form among themselves what may be most appropriately called the "archiphonemic set" (which is a sub-set of the overall set of the S.E. phonemes). Furthermore, the special conjunction of a single "neutralization-context" with a single "neutralization-product" may be said to form a "neutralization-case". In their totality, the attested and established relationships between "contexts" and "products" constitute a unique set of "neutralization-cases". All the identified and established "contexts", "products" and "cases" fall within the range and scope of a certain "type" of neutralization which applies to them alone, and to no others.

Since the specific "type" of neutralization under discussion is distinguished from all the other types of neutralization solely in terms of its restrictive applicability to certain sections of the phenomena, rather than to all of it, it has

been identified by the special distinguishing label of "Neutralization-Cases: Type "1"". (Note that the same treatment applies to all forthcoming "cases" and "types").

It will become clear from the subsequent argument that all the established neutralization-rules account for the same phenomena, only from different angles. Archiphoneme /K/, for instance, which is generated by "rule 1" is the same archiphoneme /K/ which is generated by "rules 2 and 5". Though the governing contexts which are responsible for bringing about the phenomena of neutralization are different, the terms of the three neutralizations are always the same, i.e. the suspension of the /lenis:fortis/ correlation in /dorsal/ phonemes. Since it is functionally possible for more than one rule to generate the same archiphoneme, one is logically justified to establish some form of interrelationship between the different rules in terms of their potentiality to generate more or less the same archiphonemes. This will be dealt with properly at the end of the present Chapter.

Before we can formalize and formulate a neutralization-rule to account for the phenomena in lists A and B, it is important to clarify a significant issue which we hope has not passed unnoticed, i.e. the question as to whether the initial /s/ in rows 2, 3, 4 and 5 is a phoneme or an archiphoneme. To resolve this problem, we have to resort basically to the A.F. conception of the notion "distributional unit" as well as to the six directive guidelines which have been discussed in PART I.

If the descriptive and distributional results of Chapters 4 and 5 are taken into account, we may emphasize that the maximum attested number of successive phonemes occurring pre-nuclearly in S.E. phonotagms is always restricted to three. Overlooking for the sake of the present argument the very marginal occurrences of /t/ and /p/ in /tSuarnr/ and /pSTaršioU/, "Tswana" and "pistachio", respectively, we notice that in all pre-nuclear attested possibilities of three-element combinations in S.E., /s/ always occurs as the onset initial segment, e.g. /sTr/, /sPl/, /sKu/, /smi/, etc. in "street", "splash", "square", "smew", etc., respectively. This in fact fits well within the pre-nuclear section of the hypothetically established distributional unit for S.E., (see Chapters 4 & 5). If this sectional model, which is composed of three successive compartments, is set up in the following manner:-

Pre-explosive	Explosive 1	Explosive 2,
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and if the above consonantal combinations are mapped onto this sectional model, the following sketch will emerge:-

/sTr/	s	T	r
/sPl/	s	P	l
/sKu/	s	K	u
/smi/	s	m	i

Accordingly, one can arrive at the conclusion that all pre-nuclear distributional occurrences of /s/ are restricted

to position "pre-e", and to no other. Since pre-nuclear combinations like $\text{ʒ}/\text{zdr}/$, $\text{ʒ}/\text{zbl}/$, $\text{ʒ}/\text{zgu}/$, $\text{ʒ}/\text{zmi}/$, etc. are not attested in S.E., the decision to establish archiphoneme /S/ in position "pre-e" would not only complicate the description, but would also be arbitrarily established. Even if /S/ were arbitrarily established, one would still need distributional gaps for all the other phonemes. Because, not only the phonemes with common feature-bases which are not opposed to the entirety of /s/ in position "pre-e", but in fact all the other phonemes. Furthermore, the arbitrary establishment of /S/ in position "pre-e" logically requires a non-arbitrary decision concerning the nature of the neutralized terms, which is neither materially feasible nor functionally justified.

Since the terms of /s/ are only opposed to "∅", one is logically left with the option of postulating a case of "defective distribution" (i.e. accidental gap), rather than of "neutralization". This solution not only happens to comply satisfactorily with all the A.F. theoretical criteria, principles and directives, but also is more adequate with respect to the facts of S.E.

On the other hand, the examination of the marginal occurrence of /t/ and /p/ in position "pre-e" poses a problem of a slightly different nature. For here, an equivalent common feature-base can in fact be established for /t/ and /p/ in /tSuarnr/ and /pSTarʒiOu/, i.e. both of them are /fortis, occlusive/. Consequently, the postulation of

neutralization and the establishment of an archiphoneme to represent them both in position "pre-e" seem to constitute a possibility, though a remote one for adequacy reasons. Yet, because the occurrence of either /p/ or /t/ in position "pre-e" is corroborated by only one form each in S.E. (i.e. neither of them initiates a regularly recurrent phenomenon), the choice between operating with "neutralization" or "defective distribution" optimally rests with the simplicity criterion, (see Mulder, 1968 et al). Since one swallow does not make a summer, it would be unfeasible to formulate our descriptive statements and base them on the findings of very marginally attested cases. In consequence, the adequate solution to the problem should not involve itself in postulating neutralization, but in operating with "defective distribution".

Moreover, it should also be pointed out that it is equally unfeasible to postulate neutralization between either /s/ and /t/ or between /s/ and /p/ in position "pre-e" since no common equivalent feature-base can be established between /s/ and either of the two elements /t/ or /p/.

Finally, on the basis of the above argument, the first of our neutralization-rules for S.E. can now be formalized in the following manner:-

Neutralization-rule "1":-

"The /lenis:fortis/ opposition is always neutralized in context with preceding phoneme of the /lenis:fortis/

correlation or archiphoneme whose terms belong to this correlation".

This rule can be re-stated in terms of the following formula:-

$$-, /fortis:lenis/ \ / -, \sim(/fortis:lenis/)$$

(Note that: 1) the ordinary type of brackets is used to enclose the neutralized terms and, 2) the long diagonal slant line separates between the positions involved).

Neutralization-Cases: Type "2":-

Let us now consider the examples and their corresponding forms in the following lists:-

	<u>A</u>		<u>B</u>
limp	/liNP/	amble-ample	/aNbl/-/aNpl/
link	/liNK/	angle-ankle	/aNgl/-/aNkl/
lymph	/liNF/	{ anvil- [?] anfil unvein-unfeign unveil-unfail }	{ /aNvl/- [?] /aNfl/ /rNvein/-/rNfein/ /rNveil/-/rNfeil/ }

On the basis of the examples and their corresponding forms in list "A", we notice that the /fortis/ elements /p, f, k/ can never be opposed to their /lenis/ counterparts /b, v, g/ if they occur finally in a form, and if they are preceded in the form by the /nasal/ archiphoneme /N/. In other words, the presence of archiphoneme /N/ penultimately in a phonotagm

constitutes a necessary but an insufficient condition for suspending the oppositional distinctive values of the ultimate /labial/ and /dorsal/ n-tuples and their relevant distinctive features in a form. The other condition being a "∅" element or an "empty" position in the immediate vicinity of the final /labial/ and /dorsal/ phonemes. This in fact means that unless the /labial/ and /dorsal/ elements occur finally in a form, no neutralization can ever be postulated, and no archiphoneme can be established, either.

If we now examine the examples and forms in list "B", we can establish that the /labial/ and /dorsal/ phonemes in question still maintain their oppositional differential in the vicinity of a final "filled" position (or a final non-∅ element). Accordingly, one finds no functional justification for postulating neutralizations or establishing archiphonemes.

Finally, the second of our neutralization-rules can be formulated in the following manner:-

Neutralization-rule "2":-

"The /lenis:fortis/ opposition in /labial/ and /dorsal/ phonemes is always neutralized finally in phonotagms in context with preceding archiphoneme /N/, unless succeeded by an element".

This rule can be reintroduced in a formulaic manner as follows:-

—, /N/ / —, ~(/lenis:fortis/) /labial:dorsal/ / —, "∅"

It should be remarked in this context that this type of neutralization-context (which is composed of a "phonematic" element and an "empty" position) has hardly been raised or discussed by Mulder in any of his printed literature on S.E.

Neutralization-Cases: Type "3":-

So far, it has been shown in the previous section that neutralization-rule "2" applies only to less than %50 of the total number of the /lenis:fortis/ phonemes in the system. In the present section, however, we shall attempt to complement the argument by investigating the nature of the relationships which hold between the remaining /lenis:fortis/ phonemes and a preceding /nasal/ element. As an introduction to the argument, let us consider the examples and forms in the following lists:-

A

/z/-/s/

rams - ramps /ramz/-/rams/
bends - bents /benz/-/bens/
sings - sinks /siŋz/-/siŋs/

C

/ʒ/-/ʒ/

lunge - lunch /lɹNʒ/-/lɹnʒ/

B

/d/-/t/

damned - damped /damd/-/damt/
punned - punt /prnd/-/prnt/
banged - banked /baŋd/-/baŋt/

D

/e/-/ɛ/

warmth-something-Plymouth
/uɔrmθ/-/sɹmθɪŋ/-/plɪmθ/
month-tenth-plinth
/mɹnθ/-/tenθ/-/plɪnθ/
strength-length-strengthen
/sTɹeŋθ/-/lenθ/-/sTɹeŋθ/

something-monthly-lengthwise
 /srmθiŋ/-/mrnθli/-/lenθuAiz/

The reader may have noticed, quite correctly, that the presence of a /nasal/ element in a form does not automatically constitute a sufficient condition for neutralizing the /lenis:fortis/ oppositional differential in succeeding /hissing/, /hushing/ and /apical, occlusive/ phonemes. It is specifically the validity of such attested oppositions between /z:s/, /ž:š/ and /d:t/ in lists "A", "B" and "C", respectively, which prohibit us from contemplating establishing archiphonemes /S/, /Š/ and /T/ in the immediate vicinity of preceding /nasal/ phonemes. Put differently: Whenever an opposition can be attested, no neutralization can be postulated. This point holds not only for the correlations /z:s/, /ž:š/ and /d:t/ but also for the /nasal/ phonemes themselves in lists "A", "B", "D" and partially "C". In these lists, the differential potential which keeps the three /nasal/ phonemes /m, n, ŋ/ apart, i.e. /labiality/, /apicality/ and /dorsality/, is not affected in any conceivable way when succeeded in a chain by an element which belongs to the following set: /d, t, z, s, ž, θ/. However, the case is different with respect to the occurrence of a /lenis, hushing/ element in the vicinity of a preceding /nasal/ phoneme, (see list "C"). Since the ramifications and full implications of such a case will be fully discussed further down in the Chapter, we shall not elaborate on it in the present section.

On the other hand, if /d:t/, /s:z/ and /š:ž/ retain their oppositional capabilities in the context of a preceding /nasal/ element, no such attested distinctive opposition can be demonstrated to take place between /ǰ:e/ in the proximity of preceding /nasal/ phonemes in S.E. phonotagms. In consequence, one has no other option but to admit that the distinctive potentialities of /lenisness:fortisness/ have been neutralized in the /apical, fricative/ phonemes and an archiphoneme has to be established in such contexts, i.e. /θ/. What is necessary and sufficient for this specific type of neutralization (i.e. ~/ǰ~e/) is that it should always occur in the context of a preceding /nasal/ element.

Apart from the argument for the establishment of archiphoneme /θ/, attention should be given to the status of the preceding /nasal/ elements in list "D". It is with respect to such contexts that the present descriptive account of S.E. parts ways with Mulder's (1968 et al) partial description of the same language.

What is striking about Mulder's casual and ad hoc treatment of the relationship between an /apical, fricative/ phoneme and a preceding /nasal/ element in a form is its defectiveness. In fact, Mulder's expository examination of the above relationship is only carried out casually in his discussion of the /voiced:unvoiced/ neutralization in /labial/ and /dorsal/ phonemes in the context of a preceding /nasal/ archiphoneme, (see Mulder, 1968, p. 205); he says:- "Let us now consider ... such cases as the final consonant in /bliNK/ "blink" and /liNP/ "limp" in English. To these can be added

such cases as /niNF/ "nymph" and /mrNθ/ "month".

The author then goes on to build up his argument for the neutralization of /g:k/, /b:p/ and /v:f/ in the context of a preceding /nasal/ element, with no reference whatsoever to what happens to /e:ʒ/ under analogous conditions; and that is that. It is even more puzzling to discover in Mulder (ibid, p.203) that the context which is responsible for generating the /nasal/ archiphoneme /N/ is restricted to the "feature /labial/ or /dorsal/ in the following phoneme or archiphoneme". But, what about the postulated role which the features /apical, fricative/ play in generating archiphoneme /N/ in the given form /mrNθ/ ? No satisfactory answer is ever given.

The least that can be said of the above argumentation is that it is both vague and inaccurate. Accordingly, one should emphasize that the validity of Mulder's hypothesis as well as the adequacy of his descriptive statements on this issue have been refuted.

Since one of the most noticeable aspects of carefully worked-out descriptive solutions is a tendency towards consistency and adequacy, we should now be able to think up and propose a different functional solution to the problem under discussion, i.e. whether the penultimate /nasal/ phoneme in "month" should be neutralized, or not.

If we now base ourselves on the distributional findings of Chapter 5, we find that each of the three /nasal/ phonemes

in S.E. is endowed with a set of distributional characteristics which distinguishes it from the rest of the /nasal/ phonemes. Furthermore, we notice that the combinational possibilities of some of these /nasal/ phonemes with a succeeding /apical, fricative/ archiphoneme /θ/ is very limited indeed. While /nθ/ comes on the top of the combination scale with enormous backing from attested forms in S.E., combinations like /ŋθ/ and /mθ/, which are attested but not extensively manipulated, find positive support from a restricted number of attested forms.

Consequently, on the basis of such attested opposition between /nθ/-/ŋθ/-/mθ/ in "month", "length" and "something", respectively, (see list "D"), there is virtually no possibility whatsoever for the identification of a /nasal/ neutralization and the establishment of a /nasal/ archiphoneme.

However, with the exception of forms like /plinθ/ and (possibly) /plimθ/ in list "D" above, the fact remains that /nθ/, /ŋθ/ and /mθ/ can never be found to be opposed to one another in so-called equivalent contexts in the strict Mulderian sense, (see PART I, Chapter 5). But such a fact does not constitute sufficiently plausible evidence for the neutralization of the oppositional differential of the /nasal/ elements. Because, if the condition of "commutation in equivalent contexts" is to be taken literally and to be granted overriding priority over the positional occurrences of phonotactic elements, then we are persistently endangering the consistency and adequacy of our descriptive account.

is it the case

Not only that the /nasal/ archiphoneme /N/ in "month" would have to be arbitrarily established, but also our descriptive statements would consequently clash and nullify the content of one another. Put this way, if a descriptive distributional statement stipulates that the occurrence of /ŋ/ is restricted to position "i1" (as well as to some other archipositions; see Chapter 5), and if another descriptive statement dictates that archiphoneme /N/ in the context of a succeeding /θ/ is potentially capable of occurring in positions "i2, i3 and i4", then the two statements are incompatible and inconsistent with one another, simply because /ŋ/ is one of the terms of /N/, and /ŋ/, according to our knowledge of its distributional behaviour, is not endowed with such freedom of occurrence.

In virtue of the above exposition, we do not acknowledge a /nasal/ neutralization in context with a succeeding /apical, fricative/ archiphoneme /θ/. (It should be noted that this discussion is also relevant to the forthcoming section which deals with the establishment of the /nasal/ archiphoneme /N/).

The end result of our argumentation is the formalization of the following neutralization-rule:-

Neutralization-rule "3":-

"The /lenis:fortis/ opposition in /apical, fricative/ phonemes is always neutralized in context with an immediately preceding phoneme of the /nasal/ category".

This rule can be formulated in terms of the following formula:-

—, /nasal/ / —, ~(/lenis:fortis/) /apical, fricative/

Neutralization-Cases: Types "4", "5" and "6":-

Our investigation of S.E. forms has led to further significant and interesting conclusions. These will be the subject of our discussion in the present section. Let us first examine the given examples and forms in the following lists:-

<u>A</u>	<u>B</u>
bulb-pulp /brlb/-/prlp/	health /helθ/
shelf-shelve /ʃelf/-/ʃelv/	welsh /uelʃ/
built-build /bilt/-/bild/	
film-kiln- κ /film/-/kiln/-/κ/	
grilse-grills /grils/-/grilz/	
<hr/>	
sulker-vulgar /srlkr/-/vrlgr/	

<u>C</u>	<u>D</u>
apples, sniffles /aplS/, /sniflS/	sulk /srlK/
battled, simpleton /batlT/, /siNplTn/	

By concentrating our attention on the examples and forms in list "A", it transpires that the distinctive oppositional potential between the members of the correlations /p:b/, /f:v/, /t:d/, /s:z/, /ʃ:ʒ/ and /m:n/ (but not /ŋ/, for distributional reasons) is almost always functionally maintained in the

context of a preceding /l/. However, if we reverse the order of such formal combinations from /l+/C/ into /C+/l/ (where /C/ stands for any consonant), we notice that the elements involved are still capable of distinguishing formal minimal pairs in S.E. This should be clear from the examples and forms in the following subsidiary list "E":-

E

/pl:bl/	dapple-dabble	/dapl/-/dabl/
/fl:vl/	raffle-ravel	/rafl/-/ravl/
/tl:dl/	candle-candle	/kantl/-/kandl/
/el:žl/	lethal-betrothal	/liiel/-/(bit)rOušl/
/kl:gl/	tackle-taggle	/takl/-/tagl/
/ml:nl:ŋl/	camel-cannel-?	/kaml/-/kanl/-/?/
/sl:zl/	muscle-muzzle	/mrsl/-/mrzl/
	racial-angel	/reišl/-/eiNžl/
/šl:žl/	fetial-brinjal	/fiišl/-/brinžl/
	substantial-stringil	/(srb)STanšl/-/sTriNžl/

Though /ʃ/ and /ž/ have been correctly identified and established in Chapter 1 as separate elements in the overall phonematic system of S.E. phonemes, their oppositional capability is restricted in the language to a limited number of attested instances. This is primarily the reason why it is very difficult, if not entirely impossible, to oppose /ʃ/ and /ž/ to their /fortis/ counterparts in monophonotagmic attested equivalent contexts containing /l/ among their constituent elements.

Since the oppositional values of /j:ə/ and /ž:ž/ can be indirectly attested and inferred from the above examples and forms, there is no possibility of recognizing "neutralization", or establishing "archiphonemes", either. The only adequate and consistent way to deal with the absence of any direct opposition between /ə:j/ and /ž:ž/ in the context of a succeeding /l/ is to attribute it either to "distributional factors", or more appropriately, to "accidental non-occurrence" of certain combinational possibilities (i.e. defective distribution), rather than to "neutralization".

Also, it has been positively verified in list "E" that /k/ and /g/ can in fact be opposed to each other in the context of an immediately succeeding /l/, e.g. /takl/-/tagl/. However, though the oppositional potential of the reverse order of the same elements, i.e. /lk/ and /lg/ (list "A"), is still tenable, it is only so because the elements in question occur on the border between two phonotagms, but never finally in attested forms. For, in such a final position, the opposition /k:g/ (list "D") is almost always neutralized. In other words, since the substitution of /g/ for /k/ in the context of a preceding /l/ in contexts like /srl-#/ , /kal-#/ , /mil-#/ , etc. (where "#" indicates "zero element", "empty position", or "finality of form", whichever one is inclined to adopt) makes no odds whatsoever to the communicative potential of S.E., and since such a substitution is a priori not a matter of available functional choice on the part of the speaker (see Chapter 5, PART I), then this constant lack of opposition between /g:k/ in the context

of a preceding /l/ is said to be neutralized.

As it happens, the two examples and forms which are mentioned under list "B" manifest a striking resemblance, though not an exact one, to the case of /k:g/ in list "D". For here as well, the opposition /lenis:fortis/ in /apical, fricative/ and /hushing/ phonemes is always neutralized in the context of a preceding /l/ (or more precisely, a preceding feature /l-ness/) irrespective of whether the "product" of neutralization is succeeded in the form by an additional element or by "zero". In consequence, we establish an /apical, fricative/ archiphoneme /θ/ and a /hushing/ archiphoneme /š/ in such contexts.

It is necessary to point out that the neutralization-context which is responsible for generating the last two archiphonemes can be theoretically identified as being a "simple" neutralization-context. This type of context is conceptionally different from what can be called "compound" and "complex" contexts. Though the ramifications of such a three-pronged distinction stem logically from our earlier definition of the notion "neutralization-context", they will not be investigated in extenso in the present work. Suffice it for our present purposes to outline in brief the differences between the three types of context without attempting to define them in a rigorous manner. A "simple" neutralization-context is conceived to be constituted of a single "phonematic/phonotactic" element or "position" whose presence in a form or a distributional unit constitutes a sufficient condition for

neutralizing the oppositional potential of preceding and/or succeeding elements, correlations or positions. In consequence, the neutralization-context /l/ (or /l-ness/) in /helθ/ and /uelʃ/ exemplifies a "simple" neutralization-context. On the other hand, a "compound" neutralization-context manifests a case where the conjunction of an element/feature (or feature-correlation) and a non-adjoining empty/filled position is a priori necessary for effecting certain attested cases of neutralization. This has been verified by the examples and forms of list "B", as well as by those of list "B" in the discussion of "Neutralization-Cases: Type "2". Finally, we conceive a "complex" neutralization-context to be composed of at least two formal elements in close proximity preceding and/or succeeding the neutralizable candidates, (as for S.E., such a "complex" context always precedes the neutralizable elements). The examples and forms in list "C" above can be said to fall within the overall scope of such a conception and to comply with its requirements.

Let us now consider the examples and forms in list "C" and compare them with those in list "E". However, it is worthwhile reminding the reader of some previously obtained conclusions, i.e. most of the elements which belong to the /lenis:fortis/ or /nasal/ correlations (except /ŋ/) in lists "E" and "A" preserve their distinctive oppositional potential in the context of a succeeding or a preceding /l/, respectively. If we now compare the examples and forms in lists "C" and "E", we detect the presence of some differences

alongside the similarities. For, it is noticed that unless /l/ is separated from a preceding "vocalic" element by another "consonant", there is no potentiality for identifying neutralization or establishing archiphonemes. This has been substantiated by the examples and forms of list "A". On the other hand, the examples and forms of list "E" provide us with instances where all /l/s have been separated from the preceding "vocalic" elements by at least one further "consonant". Such an additional consonantal element is sufficient to block any kind of pressure which the nuclear elements might have exerted for maintaining the oppositional distinctive values of all /fortis:lenis/ phonemes in the immediate vicinity of /l/. Put this way, whenever /l/ is preceded by a "consonant", the opposition /lenis:fortis/ after /l/ should always be neutralized in that consonant.

If we refer back to the examples and forms in list "C", we find that not all archiphonemes whose neutralized terms belong to the correlation /lenis:fortis/ appear in the context of a preceding /C+/l/. For, with the possible exception of some marginal cases of occurrence, the principal occupants of such a position are /S/ and /T/. Nevertheless, this should not put us off from generalizing the applicability of our neutralization-rule so far as no counter examples could be found in the language to refute its consistency and adequacy. Furthermore, it is noticed that while some, but not necessarily all, of the established archiphonemes in list "C" represent allomorphs of certain signs, e.g. /S/ in /aplS/ represents one of the allomorphs of the sign "plural" and /T/

in /batlT/ represents one of the allomorphs of the sign "past" in S.E., neither /T/ in /siNplTn/ nor /S/ in the form of the (singular) noun /sniflS/ can be said to represent allomorphs of any signs.

Finally, the whole argument in this section can be summed up in terms of the following three neutralization-rules and their corresponding formulae:-

Neutralization-rule "4":-

"The /lenis:fortis/ opposition in /apical, fricative/ and /hushing/ phonemes is always neutralized in context with immediately preceding /l/",

which rule can be re-represented by means of the formula:-

$$-, /l/ / -, \sim (/lenis:fortis/) /apical, fricative/, /hushing/$$

Neutralization-rule "5":-

"The /lenis:fortis/ opposition in /dorsal, occlusive/ phonemes is always neutralized in context with immediately preceding /l/ and no element following",

which corresponds to the following formula:-

$$-, /l/ / -, \sim (/lenis:fortis/) /dorsal, occlusive/ -, / \emptyset /$$

Neutralization-rule "6":-

"The /lenis:fortis/ opposition is always neutralized

in context with immediately preceding /l/ and at least one other immediately adjoining post-nuclear position filled by a consonant",

which rule can be reiterated in terms of the following relational formula:-

$$-, /C/ / -, /l/ / -, \sim (/lenis:fortis/)$$

(/C/ in the formula refers to any "consonantal" phoneme).

The appropriateness of all the neutralization-rules, hitherto discussed and established, stems from the fact that they precisely comply with the requirements of the meta-hypotheses of "consistency" and "adequacy" of descriptive statements.

Neutralization-Cases: Type "7":-

It is high time we discuss^{ed} the establishment of the frequently referred to /nasal/ archiphoneme /N/. In order to give the issue the proper treatment, we shall deal with it from the view_{point} of the following attested examples and forms:-

	<u>A</u>
bums-buns-bungs	/brmz/-/brnz/-/brɲz/
rants-ramps-ranks	/rans/-/rams/-/raɲs/
hand-hammed-hanged	/hand/-/hamd/-/haɲd/
rant-ramped-ranked	/rant/-/ramt/-/raɲt/
plinth-Plymouth-length	/plinθ/-/plimθ/-/leɲθ/

B

limp, ample, amble /liNP/, /aNpl/, /aNbl/
 link, ankle, angle /liNK/, /aNkl/, /aNgl/
 lymph, anvil, unfail /liNF/, /aNvl/, /rNfeil/

C

gumption, scrumpton /grmšn/, /sKrrmšn/
 mansion, scrunch /manšn/, /sKrrnš/
 sanction, unction /saŋšn/, /rŋšn/

D

lunge /lrNž/
 mange /meiNž/
 angel /eiNžl/
 tangent /taNžnt/

However, before we involve ourselves in discussing the present type of neutralization, it seems to be most instructive to work out a satisfactory solution to the discrepancy between the phonetic and the phonological representations of certain attested forms in S.E. More precisely, we are referring here to the failure of certain phonetic sounds to establish any distinctive identity for themselves in specific phonological contexts, e.g. [p] in [ramps] and [gampšən], phonologically /rams/ and /grmšn/; [k] in [raŋkt] and [ʌŋkšən], phonologically /raŋt/ and /rŋšn/; [d] in [lʌndž] and [handz], phonologically /lrNž/ and /hanz/; [ʒ] in [ejndžəl], [gampšən], [ʌŋkšən] and [saŋkšən], phonologically /eiNžl/, /grmšn/, /rŋšn/ and /saŋšn/, etc., (see lists "A", "C" and "D").

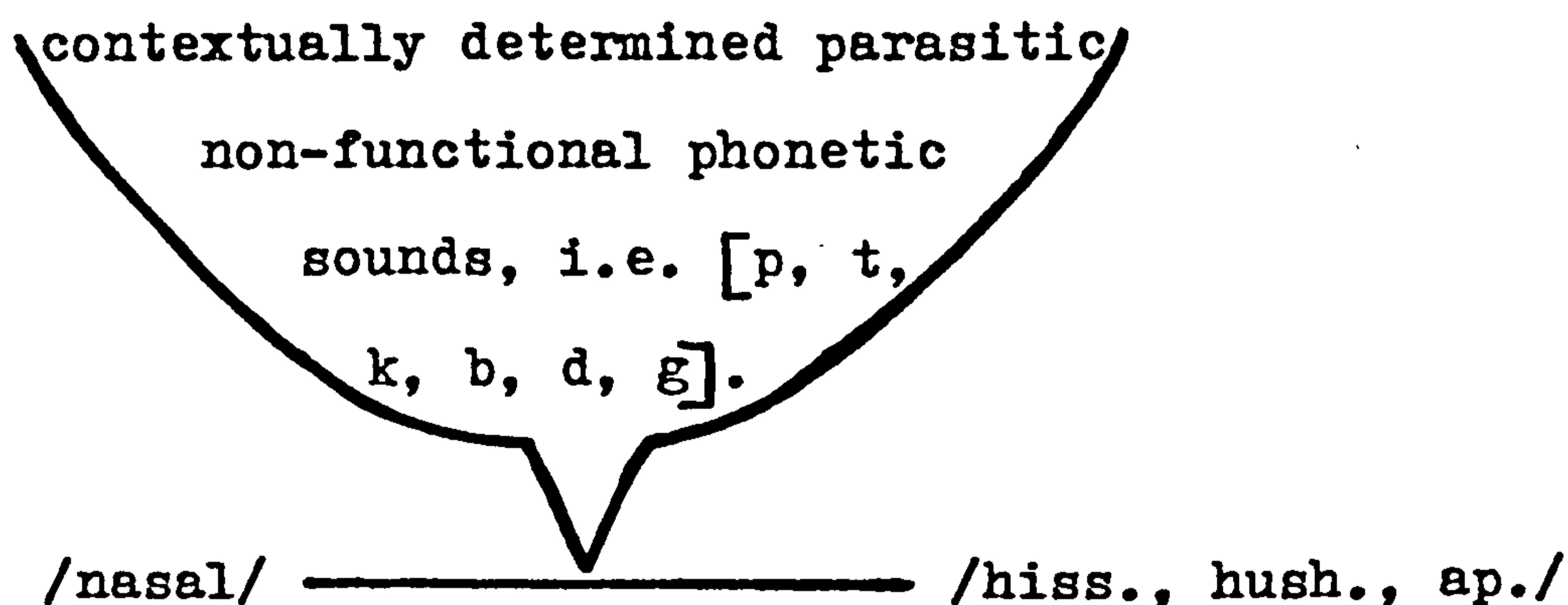
According to Mulder (1968), such sounds "are merely parasitic, i.e. contextually determined, but non-functional, phonetic features", (Mulder's emphasis).

It is obvious from the above quotation that the proposed solution to the outlined problem is basically dependent on Mulder's conception of the notion "linguistic relevance" which, as has been shown in PART I, Chapter 5, is wholly embedded in what Mulder calls the "functional principle". This in fact optimally means that unless an element or a feature can be shown (by commutation) to be separately relevant for communication, its presence in a form is deemed phonologically non-functional. The presence of the phonetic sound [d] in [bænd] "band", phonologically /band/, for instance, can very easily be shown to be separately relevant to communicative potential of S.E. by merely commuting it with "zero" or with other elements in so-called equivalent contexts. On the other hand, no oppositional phonological value can be assigned to the phonetic sound [d] in [bændz] "bands", phonologically /banz/, because it neither commutes with "zero" nor with any other element in the context of /han-z/. Accordingly, the two [d]s are not equivalent from the view point of the "functional principle".

On the basis of the above A.F. interpretation of the phenomena of "parasiticity" in S.E., one may conclude that all non-distinctive parasitic sounds represent transitional phenomena between two successive phonemes belonging to certain categories. In this sense, a parasitic sound does not constitute a realization of either one or the other of the phonemes in question, but possibly of both. One could even say that in the context /m-s/ in "ramps", the opposition /p/~∅ is neutralized, i.e. /p/ loses its value (distinctive

function) in this context and becomes a neutral feature.

Accordingly, the context which is responsible for depriving certain phonetic sounds of their phonological values can be attributed in S.E. to the special relationship between a /nasal/ element and a succeeding /hissing/, /hushing/ or /apical/ element in the same consonantal sequence. Such a relationship may be exemplified in terms of the following representational graph:-



One may even correctly guess that the choice of the succeeding /hissing/, /hushing/ or /apical/ element should automatically be in full agreement with the nature of the neutralized non-functional phonetic feature/sound, or vice versa, i.e. if the non-functional parasitic feature is characterized as [lenis], then the following /hissing/, /hushing/ or /apical/ element must necessarily be of the /lenis/ category or an archiphoneme whose neutralized terms belong to the /lenis:fortis/ correlation.

Furthermore, it seems also that the phonetic feature/sound [ɹ] in S.E. may be considered a parasitic transitional

feature. One may frequently encounter the parasitic [ɤ] in S.E. especially when a member of the /lenis:fortis/ correlation is immediately succeeded in the chain by /l/, /n/ or /m/ (but not /ŋ/ for distributional reasons), e.g. /riʃm/ "rhythm", /bɪitn/ "beaten", /hidn/ "hidden", /litl/ "little", etc. In these specific contexts, the [ɤ] neither commutes with any other vocalic or semi-vocalic element, nor with "∅", i.e. its absence does not affect either the purport or the well-formedness and self-containedness of the whole structure. Consequently, one could maintain that in context /ʃ-n/, for instance, the opposition /r/ ~ ∅ is always neutralized, i.e. /r/ is deprived of its distinctive function or value in the context in question and has become a redundant neutral feature/sound.

Having clarified the phenomena of "parasitics" in S.E., we may now proceed towards identifying and establishing the /nasal/ archiphoneme /N/ in S.E.

Apparently, the functional substitution (commutation) of /m/ for /n/ or /ŋ/ in the given equivalent contexts in list "A" always results in the formation of attested minimal pairs capable of demonstrating the triadic distinctive opposition /m-n-ŋ/. Since such a substitution is constantly valid and meaningful, there is virtually no possibility, whatsoever, of identifying neutralization-cases or establishing archiphonemes.

Similarly, one is not allowed to identify neutralization between /s:z/ on the one hand, and between /d:t/ on the other,

in the context of preceding /nasal/ elements in the examples and forms of list "A". This is due to the fact that the elements in question rigorously maintain their specific oppositional distinctive roles in the vicinity of succeeding /nasal/ phonemes, i.e. they are still capable of distinguishing one phonological form from another. (However, the case is different when an /apical, fricative/ phoneme follows in the immediate footsteps of a preceding /nasal/ element: See the discussion of "Neutralization-Cases: Type "3").

If we now shift our attention from the examples and forms in list "A" to those in list "C", we are bound to notice a striking resemblance between the cases in the two lists. For, the /nasal/ phonemes in the latter list are similarly capable of mustering oppositional differential in the context of succeeding /hushing/ elements. (It will be seen in Chapter 5 that the succeeding context may be extended to include all the members of the /lenis:fortis/ correlation). However, despite the pseudo-analogy between the cases in the two lists, the fact remains that the cases in list "C" are rather more complicated than they seem to be. This is the reason why they deserve to be singled out for special treatment.

If we examine Mulder's (1968 et al) descriptive account of the archiphonemic sub-system of S.E., we can very easily detect the absence of any reference to the potentiality of /hushing/ elements for generating the /nasal/ archiphoneme /N/. The context which is responsible for generating such a

neutralization, according to Mulder (ibid, p.203), is almost always restricted to the feature "dorsal or labial of the following phoneme or archiphoneme", (Mulder's emphasis).

Since it is always recommended, though by no means theoretically justified, to deal with correlated pairs or triples of elements, rather than with single elements, when discussing attested cases of neutralization, the present author initially hypothesized a /nasal/ archiphoneme /N/ in the context of a succeeding phoneme of the /hushing/ dimension, e.g. /lrNš/-/lrNž/, "lunch" and "lunge", respectively. The reason why examples and forms like those in list "C" were not seriously taken into account may now be attributed to the specification of "equivalence" with respect to "commutation contexts". This so-called "equivalent commutation context" has often been interpreted to mean "identical in every respect, except one". Since the formal contexts in list "C" were initially presumed to fall short of complying with such a defective interpretation, the commutation test was considered (at the time) to be invalid and had to be blocked. Instead, neutralization was inadequately postulated.

However, it was only when the author was investigating other cases of neutralization, e.g. "Neutralization-Cases: Types "4", "5" and "6", among others, that he was convinced of the absurdity and futility of narrowing the scope and interpretation of the concept of "equivalence" in its relation to "commutation contexts". In consequence, the earlier

restricted and vague conceptual approach to "equivalence" had to be re-thought, and a clearer view had to be envisaged.

On the basis of many considerations, among which is the positional affiliation of formal elements, the ideal "equivalent commutation context" may be correctly conceived as the one which is "identical in every respect, except one", e.g. /-il/ may be considered to constitute an ideal "equivalent commutation context" since all the elements in the form are identical, except the first. However, our investigations have confirmed that in many other cases the "commutation context" may turn out to be only "partly identical". If we conceive the formal construction of most monophonotagmic phonological forms in S.E. to be composed of an optional "explosive" section, an obligatory "nuclear" section and an obligatory/optional "implosive" section, and if we treat each separate section as forming an "equivalent commutation context" by itself and in its own right, then we would have solved the whole issue. In this explained sense, the specification of "equivalence" or "identity" (of commutation contexts) may be required of monophonotagmic phonological forms in general, but if this can be shown to be difficult or unfeasible, then any of the sectional divisions within the monophonotagmic form will suffice to comply with the aforementioned specification, e.g. the opposition /m:n/ is considered valid in the pair /film/-/kiln/, "film" and "kiln", respectively; the opposition /b:p/ is doubly valid in /brlb/-/prlp/, "bulb" and "pulp", respectively; and the three-pronged opposition /m:n:ŋ/ should therefore be

automatically deemed valid and attested in /grmšn/:/manšn/:
/sanšn/, "gumption", "mansion" and "sanction", respectively.
Since the /nasal/ phonemes /m:n:ŋ/ are capable (as shown) of
demonstrating oppositional potential in the immediate vicinity
of a succeeding /fortis, hushing/ element, we are neither
permitted to discuss neutralization, nor allowed to postulate
a /nasal/ archiphoneme in such a context.

However, the situation is fundamentally different with
respect to the examples and forms in lists "B" and "D".
For here, we are in fact dealing with genuine and unmistakable
cases of suspension of opposition between the /nasal/ elements.
If the examples and forms in the two lists are subjected to
the same treatment and examination, we may arrive at the
following conclusions:-

The triadic /nasal/ opposition /m:n:ŋ/ should always be
neutralized whenever succeeded in a form by an element
belonging to any of the /labial/, /dorsal/ or
/lenis, hushing/ dimensions. Furthermore, the
realization of the established /nasal/ archiphoneme /N/
always conforms with the nature of the succeeding
element. If the following element in a form is of the
/labial/ category, for instance, then the realization of
archiphoneme /N/ is constantly [m]. If, on the other
hand, archiphoneme /N/ is succeeded by a /dorsal/
element, the /nasal/ archiphoneme /N/ is always
predominantly realized as [ŋ]. Finally, if
archiphoneme /N/ is immediately followed by the
/lenis, hushing/ phoneme /ʒ/, then it is almost always

realized as [n].

On the basis of the above argument, we can now launch the seventh of our neutralization-rules and its corresponding formula:-

Neutralization-rule "7":-

"The /nasal/ opposition /labial:apical:dorsal/ is always neutralized in context with immediately succeeding phoneme of the /labial/, /dorsal/ or /lenis, hushing/ correlations or archiphonemes whose terms belong to these correlations",

which rule can be formulaically re-written as:-

—, ~(/labial:apical:dorsal/) /nasal/ / —, /lab.; dors.; lenis,
hush./

Neutralization-Cases: Type "8":-

Practically everybody possesses some degree of linguistic intuition. A child has it. Yet nobody can precisely describe and formulate the necessary rules which govern and regulate the phenomena of "neutralization" in a scientific manner without the proper knowledge and backing of a rigorous linguistic theory. Linguistic intuition is not sufficient on its own to solve intricate linguistic problems. This is exactly the case with our eighth type of neutralization-cases. For, without the backing of the theory of A.F. and its theoretical tenets, the functional establishment of this type

of neutralization could never have materialized.

Let us first examine the examples and forms in the following two lists:-

	<u>A</u>	<u>B</u>
thou-thow	/ʃAu/-/əAu/	thrash /θraʃ/
thy-thigh	/ʃAi/-/əAi/	thread /θred/
though-thole	/ʃOu/-/əOul/	threap /θri:p/
they've-thane	/ʃeiv/-/əein/	threw /θri:u/
thus-thug	/ʃrs/-/ərg/	thrill /θri:l/
		throb /θrɒb/
		thwack /θwak/
		thew /θi:u/

It is not hard to notice from list "A" that the substitution (in equivalent contexts) of any one of the /apical, fricative/ phonemes /ʃ:ə/ for the other automatically effects a difference in communication. Since the established and attested distinction between /ʃ:ə/ is a priori a matter of functional choice between two alternatives, the oppositional distinction is deemed tenable and valid. However, the same can not be said of the examples and forms in list "B" because the choice of the /apical, fricative/ element which occurs in the respective position (actually it is an archiposition: See Chapter 4) is automatically determined by the presence of a semi-vocalic element in position "e2". Put differently, the presence of any of the three semi-vocalic elements functionally impedes the

oppositional process and activates instead the phenomena of neutralization. Tautologically, then, the substitution of either of the /apical, fricative/ formal elements for the other in all the examples and forms in list "B" effect no separate phonological difference in communication. Since the members of the /fortis:lenis/ correlation can no more be manipulated to distinguish between /ʃ/ and /ʒ/ in the given contexts of list "B", one can not avoid acknowledging neutralization and establishing archiphoneme /θ/.

The above decision to operate with "neutralization" rather than with "defective distribution" may be attributed to the following reason:-

- 1- /ʒ/ is not the only phoneme which occurs in the respective position.
- 2- The opposition /lenis:fortis/ in /apical, fricative/ phonemes is never attested (not even in one single minimal pair) in the vicinity of a succeeding semi-vocalic element in position "e2".

Functionally speaking, it seems that deciding in favour of "defective distribution" is not a feasible solution. For, even if the above objections were brushed aside, it would remain difficult to produce irrefutable and non-arbitrary evidence to justify dealing with the matter from the view point of "defective distribution".

In view of the above, one tends to emphasize that the

"neutr^alization" solution not only happens to be simpler and less arbitrary but also is intuitively more satisfactory and slightly more adequate than the other alternative.

Following the main line of the argument, we should now be able to work out the eighth neutralization-rule and its corresponding formula, i.e.

Neutralization-rule "8":-

"The /lenis:fortis/ opposition in /apical, fricative/ phonemes is always neutralized when position "e2" is filled by a semi-vocalic element",

which rule can be re-stated in terms of the following formula:-

—, ~(/lenis:fortis/) /apical, fricative/ / —, /S-V/

(/S-V/ in the formula stands for any semi-vocalic element in position "e2").

Neutralization-Cases: Type "9":-

The discussion of this type of neutralization-cases brings our investigation of the phenomena of neutralization in S.E. to a fruitful conclusion. However, it should be pointed out from the very outset that this specific type of neutralization applies only to less than half a dozen examples in S.E. Nevertheless, it is theoretically irrelevant whether this type of neutralization is of wide or restricted applicability.

What is theoretically important is our awareness of the marginal presence of such a neutralization-type in the overall archiphonemic sub-system. We are referring in this context to the role which the potential and very marginal /dorsal, fricative/ phoneme /x/ plays in suspending the oppositional differential of all succeeding phonemes of the /lenis:fortis/ dimension.

On the basis of examples and forms like:-

lochs	/loxS/	Bach's	/baxS/
Reich's	/rAixS/	soughed	/sIuxT/

we arrive at the conclusion that whenever the /dorsal, fricative/ phoneme /x/ occurs, all /lenis:fortis/ oppositions in immediately succeeding phonemes are neutralized.

The above concise argument and its conclusive results are sufficient to pave the way towards the formalization and formulation of this last type of neutralization-rule. Thus, we have:-

Neutralization-rule "9":-

"The /lenis:fortis/ opposition is always neutralized in context with immediately preceding /dorsal, fricative/ phoneme",

which rule corresponds to the following formula:-

—, /dorsal, fricative/ —, ~(/lenis:fortis/)

Conclusions:-

We are now in a position to propose an overall construction which is capable of demonstrating in a consistent, adequate and simple manner the various intersections between all the established neutralization-rules. These intersections will be indicated in terms of the archiphonemes the rules are capable of generating. The converse is equally correct, in the sense that the construction is expected to be adequate enough to tell us at a glance which rules are theoretically responsible for generating which archiphonemes, and which archiphonemes are generated by which rules. Also, the construction is required to reveal the hierarchical nature of the established rules (as well as the relative significance of each one of them) in terms of their potentiality to account for a higher/lower number of archiphonemes in the system. Quantitatively and qualitatively speaking, this is indicative of the varying degrees of productivity which distinguish each rule from all the others.

In order to set up such a construction, the neutralization-rules (which are represented by the symbols "R1", "R2", etc.) will be indicated horizontally on the top row, and the established set of archiphonemes will be tabulated vertically on the leftmost side of the construction. Each intersection between a rule and an archiphoneme will be marked by a "plus". The number of "pluses" in any one row or column is symptomatic of the relative significance of the archiphonemes involved and the productivity of the rules which govern their

establishment. However, in order to distinguish between "attested" and "potential" archiphonemes, a "?" has been printed beside each of the latter. Thus, we have:-

	R1	R2	R3	R4	R5	R6	R7	R8	R9
/P/	+	+				+			+
/F/	+	+				+			+
/T/	+					+			+
/θ/	+		+	+		+		+	+
/K/	+	+			+	+			+
/S/	+					+			+
/š/	+			+		+			+
/N/							+		

As it stands, the above representational device is well-equipped to tell us, for instance, that with respect to productivity,

Rules 1, 6 and 9 are theoretically the most productive and economical of all established rules, i.e. each rule is capable of generating 7 archiphonemes.

Rule 2 comes second and accounts for 3 archiphonemes.

Rule 4 occupies the third place with 2 archiphonemes to its credit.

Rules 3, 5, 7 and 8 are situated at the bottom of the scale with 1 archiphoneme, each.

Though "Rules 1, 6 and 9" are theoretically capable of accounting for and generating 7 archiphonemes each, i.e. they are numerically equivalent in this respect, one should distinguish between the "attested generativity" of each rule and its "potentiality". Accordingly, the relevant section of the above information can be rearranged and mapped onto the following matrix where "0" stands for "lack of potentiality", and "A" means "archiphonemes":-

	<u>Attested generativity</u>	<u>Potential generativity</u>
R1	7 A	0 A
R6	2 A	5 A
R9	2 A	5 A

In other words, the first row in the matrix reads:-

"Rule 1 accounts for 7 attested archiphonemes which exhaust the whole system (except /N/)".

The second row reads:-

"Rule 6 accounts for 2 attested archiphonemes and is potentially capable of accounting for 5 more.

(The same applies to the third row in the matrix).

Moreover, the construction also provides us with information concerning the relationship between each single archiphoneme and the set of the established rules. In this sense, one may say that:-

Archiphoneme /θ/ is generated by rules 1, 3, 4 and 8, and can be generated by rules 6 and 9.

Archiphoneme /K/ is generated by rules 1, 2 and 5, and

can be generated by rules 6 and 9.

Archiphoneme /P/ is generated by rules 1 and 2, and can be generated by rules 6 and 9.

Archiphoneme /F/ is generated by rules 1 and 2, and can be generated by rules 6 and 9.

Archiphoneme /Š/ is generated by rules 1 and 4, and can be generated by rules 6 and 9.

Archiphoneme /T/ is generated by rules 1, 6 and 9.

Archiphoneme /S/ is generated by rules 1, 6 and 9.

Archiphoneme /N/ is generated by rule 7 only.

It is also worthwhile noting that though other complex, intricate and more elaborate representational devices could be devised and developed for the purpose of providing us with more sensitive and comprehensive information about the archiphonemic sub-system, the idea itself seems to be time-consuming and lies beyond the immediate scope of the present work.

Finally, the realizations of the above consonantal archiphonemes and statements of their distribution will be duly discussed in a succeeding Chapter.

CHAPTER 3.

The Vocalic Phonemes and Archiphonemes
of S.E.: Establishment, Analysis and
Statements of Distribution and Realization.

"Nuclearity" vs. "Peripheralness": A Necessary Prelude:-

The subtle theoretical distinction drawn between the two notions participating in the "nuclear" vs. "peripheral" correlation is unique, in the way it is formulated, to A.F.

Apart from its significance to the establishment of positional hierarchy within the overall set of S.E. phonemes, this dichotomy will most appropriately lend us the methodological reasons for classifying the "vocalic" elements in S.E. into two categories, i.e. positional classes. It is, therefore, expedient to discern the nature of the theoretical differentia between the two terms in this polarity.

Theoretically, the notion "nucleus"¹ is defined as the "identity element" towards which the tactic² functions and relations of all the other elements, in a given phonotactic structure, are directly³ or indirectly⁴ orientated, and by means of which they can be sub-classified in terms of their degree of peripherality. The way this notion is conceived renders its presence logically indispensable for the functionality and identity of any phonotactic structure. In other words, a "nuclear" elements never commutes with "zero", (see the "Supplement" to this Chapter).

Set against the notion of "nuclearity", in the dichotomy above, is the notion of "peripheralness". A "peripheral"⁵ entity is defined as a "governed entity" or "a non-nuclear constituent". As we only have one⁶ nuclear position in the distributional unit we have established for S.E. (see Chapter 4), we can safely state that all non-nuclear peripheral elements in a phonotactic construction are functionally dependent for their occurrence (as well as for their function) on the nucleus of that construction. In terms of occurrence dependency, these "peripheral" elements can be further sub-divided into "expansions" and "bound" entities. A "peripheral" element is considered an "expansion"⁷ of some other element (notably the nucleus) if its presence does not contribute towards the well-formedness or self-containedness of the form concerned. In such a case, the element in question is said to be replaceable by "zero". On the other hand, if this "peripheral" element does not commute with "zero", then its presence, as a peripheral immediate constituent, is a prerequisite for the actualization of the nucleus and the self-containedness (which implies well-formedness) of the form concerned. A "peripheral" element exhibiting such characteristics is properly identified as a "bound element" or "entity"⁸, (see footnote 9 for the application of these notions to the analysis of an instance of an attested form).

Though these notions are necessary for the classification of the phonemes of S.E., they are insufficient to account for the paradigmatic¹⁰ and the syntagmatic¹¹ phenomena. It is by means of a phonotactic positional description that we can

completely and exhaustively describe the types of relation holding between the constituent phonotactic elements in a given structure. The maximum extension of the phonotactic distributional unit for S.E. structures will be dealt with properly in a succeeding Chapter. However, we have good reasons to believe (as we shall see later in the work) that the distribution and description of the nuclear elements of S.E. can be entirely performed within the limitation of three positions, out of the total number of positions, i.e. "ten" positions, in our hypothetical distributional unit for S.E., namely, a nuclear position (symbolized by "n"), an immediately adjoining explosive position, and an immediately adjoining implosive position, (represented by "e2" and "il", respectively). Reference to other positions may be necessary, especially when the presence of a certain consonant has a bearing on the realization of a vocalic nuclear element.

The "Vocalic" Phonemes of S.E.:-

Before we proceed towards our specific target of identifying, analysing, classifying and establishing the distinctive function and identity of the vocalic phonemes of S.E., it should be pointed out that although Mulder's descriptive account of the vocalic system of S.E. in 1968 and 1974 constitutes the foundation on which the present section of the description has been based, certain aspects of the aforementioned account have had to be modified and developed (in the light of some recently established observations, relations and conclusions) in order to arrive at a still better and clearer understanding of the vocalic system under consideration. We shall refer to

these points of departure whenever necessary.

The functionality and differential capacity of each of the vocalic elements of S.E. can be deduced from the following seven columns of attested monosyllabic examples, where the commutation between the vocalic nuclear elements has been executed, as much as possible, in equivalent contexts. These examples can be arranged and displayed in the following manner:-

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
/e/ is attested in	wen	yen	wren	ken	pair	bay	wrote
/o/ is attested in	wog ¹²	yon	wrong	con	pore	boy	
/a/ is attested in	wag	yam	ran	can	par	buy	rout
/r/ is attested in	won	young	run	come ¹⁴	purr		
/u/ is attested in	wool	ewer	rook ¹³	pull	poor	be	root
/i/ is attested in	win	year	ring	kin	peer		

(List 1)

In terms of the corresponding phonotactic structures, the examples in the above List can be restated as:-

	u+	i+	r+	-	+r	+i	+u
/e/	uen	ien	ren	ken	per	bei	rOut
/o/	uog	ion	roŋ	kon	por	boi	
/a/	uag	iam	ran	kan	par	bAi	rAut
/r/	uṛn	iṛŋ	rṛn	krm	pṛr		
/u/	uuḷ	iuṛ	ruḳ	pul	puṛ	bIi	rIut
/i/	uiṇ	iiṛ	riŋ̣	kin	piṛ		

(Figure 1)

While the leftmost column contains the complete list of the vocalic elements, the corresponding rows display instances of their occurrence in certain contexts. The "pluses", which are situated on top of the table, indicate the peripheral status of certain vocalic elements in their relation to preceding and/or succeeding nuclear elements in each respective column. The central column demonstrates the vocalic elements in purely consonantal contexts. The sole function of the "dots" (underneath certain vocalic elements) is to designate the syllabic nucleus in those cases where there is a possibility of confusing it with some other element having similar categorical status. Moreover, the right-hand part of the grid in Figure 1 (and its corresponding equivalent in List 1), which contains capital letters representing archiphonemes, will be treated in its proper context in the argument below.

Suffice it to indicate at this stage that the functionality

and the separate identity of each of the vocalic nuclear elements in List 1 (and Figure 1) can be said to ^{have} been identified and established. The establishment of the upper limits of the elements' distinctive function as well as their main types of realization will be discussed in more detail at the end of the present Chapter.

XXXXXXXXXXXXXXXX

A quick glance at the table, in Figure 1, will be sufficient to demonstrate that, from a purely A.F. point of view, the vocalic system of S.E. is composed of six basic phonemes including /r, i, u, a, e, o/¹⁵.

As it can be seen from the same table, the three phonemes /r, i, u/ have a distributional capability for occurring either as nuclei of self-contained phonotactic constructions, or immediately before and/or after any element in the nuclear position. This dual role which the former three elements enjoy is not shared by the other three vocalic elements /a, e, o/ whose distributional occurrence is limited to the nuclear position.

On the basis of this fundamental distributional discrepancy, we are in a position to establish two interrelated vocalic categories:- "Vowels" and "Semi-vowels"¹⁶. Since each of them basically refers to a class of elements, the two terms can be phonologically defined as:-

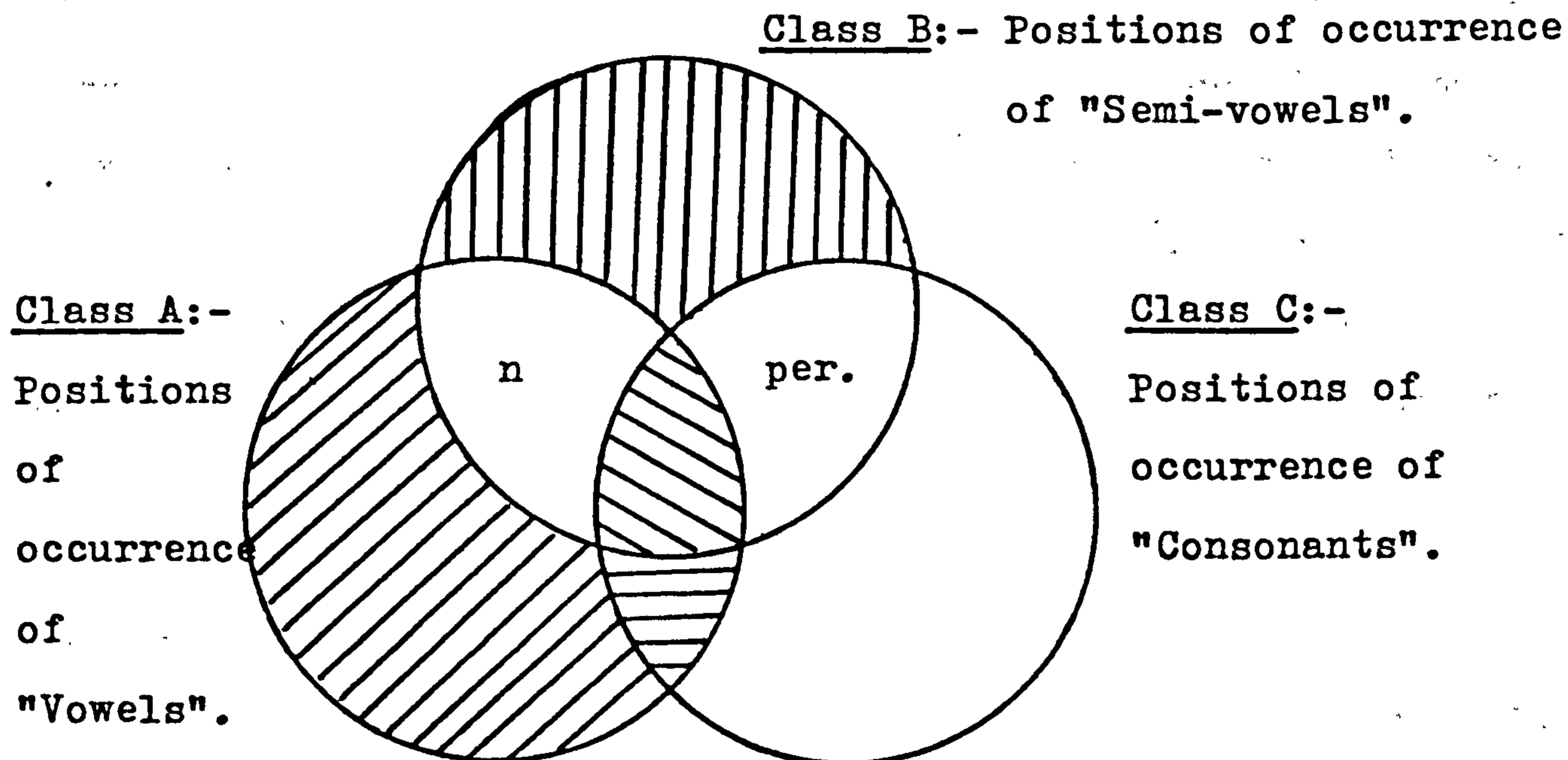
"Vowel" for "phonotactic element whose phonotactic distribution is restricted to the nuclear position".

"Semi-vowel" for "phonotactic element whose phonotactic distribution includes nuclear and peripheral positions".

Consequently, the term "consonant" can be defined as:-

"Consonant"¹⁷ for "phonotactic element whose phonotactic distribution contains (explosive and/or implosive) peripheral positions in a distributional unit".

By employing a Venn diagram for three classes, we can now represent the types of relationship holding between the three theoretical categories in terms of the positional occurrences of their members (as classes). Thus, we have:-



(Figure 2)

As "vowels" by definition only occur in the "nuclear" position, the shaded area in their circle indicates an empty

class, in the sense that "vowels" by definition never occur in any peripheral position. This is not the case with the "consonantal" elements whose positional occurrences overlap with the peripheral positional occurrences of "semi-vowels". In other words, the blank area in the "consonantal" circle refers to the positional occurrences of consonants which are not shared by any other class of elements, including "semi-vowels". (The abbreviations in the Venn diagram refer to:- "n" for "nucleus" and "per" for "peripheral").

Analysis and Classification of the S.E. "Vocalic" Phonemes:-

The relative ease we have encountered in the process of analysing and classifying the consonant phonemes of S.E. (Chapter 1) can be ascribed, among other things, to the initial possibility of distinguishing (in the widest sense of the word) between what is traditionally known as "points of articulation" (order) and "manner of articulation" (series)¹⁸. However, this potential rough distinction can not be held tenable with respect to the vocalic elements in the same language, because it is hard to confirm with a relative degree of accuracy which of the correlated sets constitutes the "order", and which of them forms the "series". Since we have no logical justification whatsoever to distinguish, within the functionally established sets of features for the S.E. vocalic phonemes (see below), between so-called "points" and "manner" of articulation, i.e. order and series, the decision to assign the members of any one set to a specific dimension, rather than to another, optimally rests on considerations of simplicity

and practicality of representation. In fact, the problem is not supposed to arise (and it does not) since we only have two distinctive sets situated on two dimensions, neither of which is more significant than the other.

Analysis and Classification:-

By basing ourselves on the results and findings of List 1 and Figure 1, we can assume, though tentatively, that the phonematic description of the vocalic system of S.E. (which is composed of six basic elements only) can be successfully and exhaustively performed by means of as few as two Sets of correlated distinctive features. These two functionally established Sets can be stated as:-

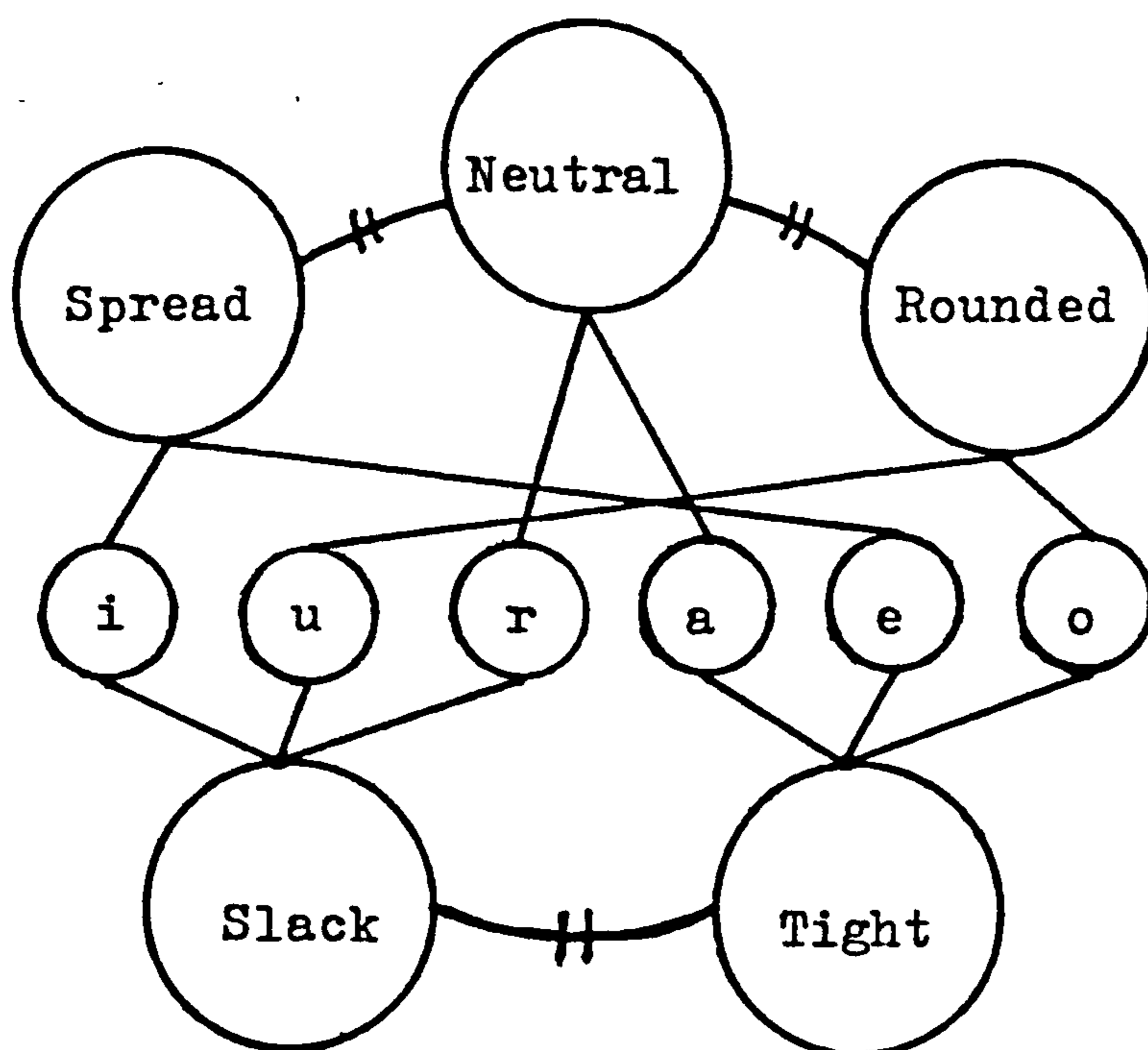
Set 1: /Slack/ vs. /Tight/¹⁹ (established with reference to the muscular tension of the tongue).

Set 2: /Spread/ vs. /Neutral/ vs. /Rounded/²⁰ (established with reference to the shape of the lips).

The reason why we have opted for the "muscular tension"²¹ of the tongue as a constant parameter for the description of the "vocalic" elements, rather than for the "horizontal" or "vertical" attributes²² of their articulation, lies not only in the discouraging, confusing and somewhat inconsistent conclusions which we have obtained from experimenting with the latter characteristics but also in the high degree of distortion to the facts resulting from the numerous attempts to achieve conformity and homogeneity in the system. Since

it is not possible to utilize the parts of the tongue, or its height in the mouth cavity, as a means of functionally distinguishing between the six vocalic elements of S.E. in a consistent and adequate manner, we are virtually left with no other alternative but to account for the similarities and differences between these vocalic elements in terms of the hypothetically established two Sets of distinctive features, as stated above. It should also be remarked that the distinctive features in both proposed correlations have been established and arrived at by applying the same procedure as discussed and explained in Chapter 1. Therefore, we see no demanding necessity to reintroduce the same argument once again.

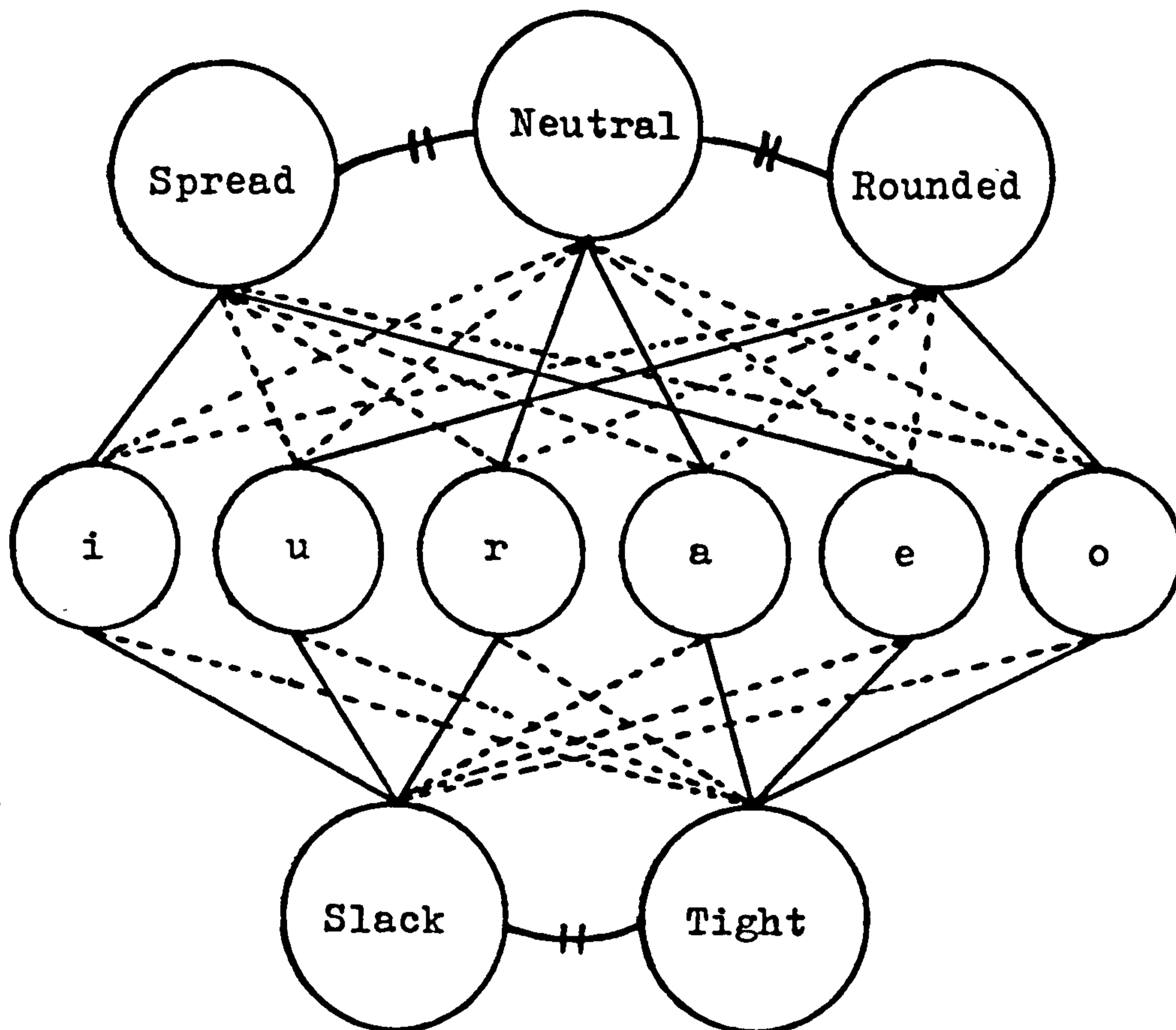
The overall system of the S.E. vocalic phonemes and their distinctive features can accordingly be set up in terms of a two-dimensional "phonematic distributive lattice", (see Chapter 1 for the discussion of the convention of setting up "lattices"). This "phonematic lattice" can be constructed in the following manner:-



(Figure 3)

(The conventions of setting up this "phonematic lattice" are similar to those mentioned in Chapter 1).

Undoubtedly, the reader still remembers an earlier discussion concerning the issue of the "global" value of each and all linguistic elements. The "global" value of any linguistic element, it was stressed, should be calculated positively and negatively, and always against the background of (and in relation to) all the other elements in the inventory. Furthermore, it was proven beyond any shadow of doubt that only "distributive lattices" can most appropriately perform the comprehensive task of mapping all significant relations and information onto one visual multi-dimensional structure, while "cartesian matrices", it was shown, require the support of "geometrical prism" and "Jakobsonian-type grids" to provide us with relatively analogous information, though not without many inconsistencies and inadequacies. The "overall global phonematic lattice" for the S.E. vocalic elements can be set up as follows:-



(Figure 4)

(The "solid" lines in the "lattice" signify "positive values" with respect to the phonemes/features involved, and the "dotted" lines refer to their "negative values", i.e. the functional opposition the features/phonemes in question participate in²³).

Furthermore, the manoeuvrability and flexibility of "phonematic lattices" allow them to demonstrate in very accurate and simple terms the material adequacy of the visual phonematic constructions themselves. In order to highlight the significance of the above qualities over cartesian matrices, we find it necessary and illuminating to reproduce here Mulder's (1968) and Mulder and Hurren's (1968) attempt at classifying the vocalic phonemes of S.E. by means of a

two-dimensional cartesian table. Their proposal was constructed in the following way:-

	Neutral	Spread	Rounded
Semi-vocalic	r	i	u
Vocalic	a	e	o

(Figure 5)

On close inspection of the potentialities of the two Figures (3 and 5), we can single out four relevant points the validity of which, as we shall see from the subsequent argument, justifies and confirms our choice and preference for the use of "lattices" as the most adequate method of representation available so far. These points may be phrased and listed in the following manner:-

- 1- Manoeuvrability, flexibility and comprehensiveness of visual representational devices.
- 2- Fulfilment of the three major criteria of consistency, adequacy and simplicity, (see List 3, Chapter 1).
- 3- Compliance with the general guidelines and recommendations mentioned in List 4, Chapter 1.
- 4- Economy of representation.

It is normally taken for granted that phonematic representational structures are not required, when classifying phonematic elements (features and phonemes), to take into

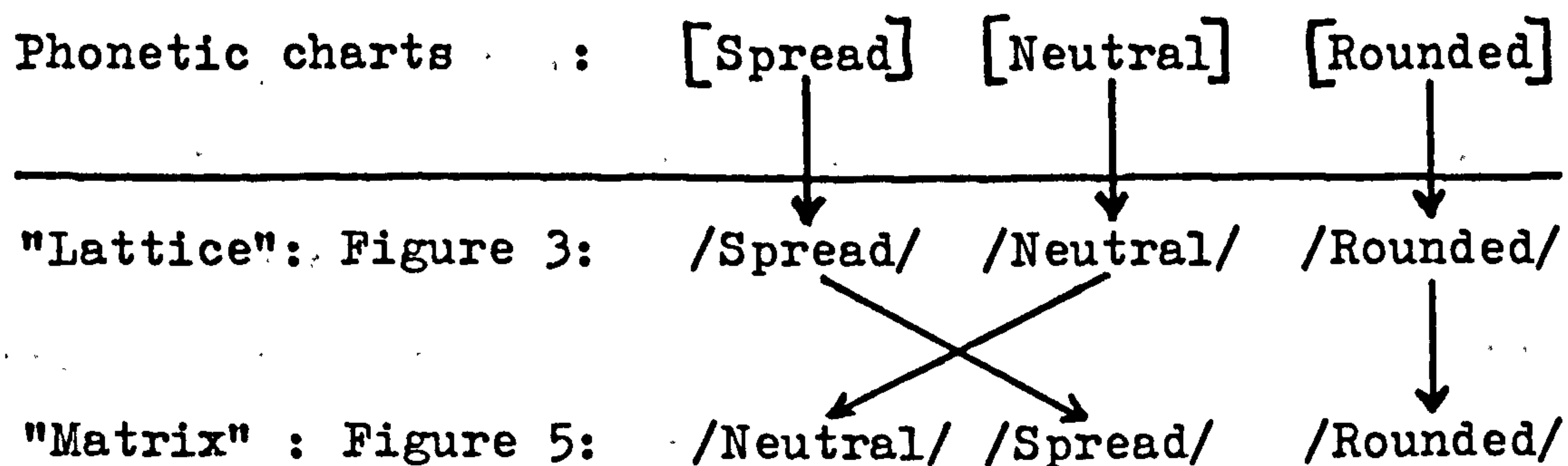
consideration the actual arrangement of the phonetic counter-domain of these phonematic elements in the phonetic charts.

However, our stand on this issue is somewhat different.

For, if a phonematic construction is capable of taking account of such logically motivated phonetic arrangements, without losing sight of its phonological aims or giving in to phonetic pressures, then it should be automatically preferred to an alternative which can not, or does not.

A quick glance at the above two tables in Figures 3 and 4 will be sufficient to demonstrate our contention.

The logical arrangement of the constituent elements in the three-term distinctive feature correlation /spread-neutral-rounded/ has not been adhered to in the cartesian table. Instead, the member-features in question are arranged in the cartesian table as /neutral-spread-rounded/. However, since all known phonetic charts (including the original chart of the IPA) prefer to classify them logically starting from the [spread] position of the lips to the [neutral] position, and from there to the [rounded] position, we find a classification which starts from a [neutral] position and goes back to a [spread] position, and finally jumps to a [rounded] position slightly awkward and cryptic. Visually speaking, the difference between the two types of arrangement can be seen from the following graphic outline:-



Even though this strong evidence is sufficient to demonstrate the higher degree of material adequacy which "lattices" enjoy over "cartesian matrices", it is necessary, for our general understanding of the two representational devices, to investigate in brief the reasons behind the failure of cartesian matrices to comply with the "material adequacy" requirement.

Critically speaking, the original error which brought about the above inadequacies evolved, in the first place, from the functionalists' persistent emphasis on the manipulation of cartesian matrices for representing relations, (see Chapter 1).

However, Mulder and Hurren, who established the above cartesian table for the classification of the vocalic phonemes of S.E., could have avoided the whole problem by simply arranging the features according to their logical sequence in the matrix. Yet, they did not opt for this simple solution, because they wanted to demonstrate (possibly unconsciously) how the established vocalic archiphonemes (see further below) could be properly accommodated in their cartesian matrix, which is very strange indeed (if true), because nowhere in his printed literature does Mulder pay the slightest attention

to this significant issue. His reluctance to investigate it properly might have been triggered by his fears of "overloading" the system (see Chapter 1), which used to be a serious accusation in linguistics. Be that as it may, in order to display the potentiality of their system, Mulder and Hurren brushed their reservations aside and employed two additional cartesian tables, instead of one, on the grounds that the contexts of neutralization differed with respect to the established archiphonemes. Mulder and Hurren's two tables can be represented as follows:-

Semi-vocalic	R		
Vocalic	a	e	o
	Neutral	Spread	Rounded

Before implosive /i/

(Figure 6)

Semi-vocalic	R	
Vocalic	a	o
	Neutral	Non-neutral

Before implosive /u/

(Figure 7)

Before we resume our discussion, it should be made clear that we do not commit ourselves to accepting the validity of Mulder and Hurren's archiphonemes, nor do we accept their

adequacy.

As they stand, the two tables, visually speaking, violate the minimum requirement of the functional principle, i.e. the presence of a pair of elements in each column and another pair in each row. This rather awkward situation could have never occurred had the two subsystems (Figures 6 and 7) and the original cartesian table (Figure 5) been amalgamated to form one unified system, e.g.

	Neutral	Spread	Rounded
Semi-vocalic	r	i R	u
Vocalic	a	e	o

/R/ before implosive /i/ and /u/

/O/ before implosive /u/

(Figure 8)

(The heads of the triangles point out towards the neutralized terms (features and phonemes), and the relevant non-neutralized terms occupy the section which lies to the left of each triangle).

By basing ourselves on Mulder and Hurren's account, we may tentatively claim that the positive value of /R/ is necessarily /+ semi-vocalic/, and the sum total positive value of /O/ is /+ vocalic, + spread, + rounded/. However, if we take into account that /+ spread, + rounded/ is logically equal to the negation of the non-neutralized term /neutral/, we come to

the conclusion that /+ spread, + rounded/ is equal to the phonological product /non-neutral/, (which in Jakobsonian-type grids is equal to /- neutral/)²⁴.

However, if the special features arrangement on the horizontal dimensions in Figures 5, 6, 7 and 8 is changed from /neutral, spread, rounded/ into some other possible arrangement²⁵, the results are not always encouraging or unanimous. For, out of the six possible such arrangements of the above three features, only four of them can successfully account for archiphoneme /O/ in the matrix. On the other hand, archiphoneme /R/ can be said to have been accounted for properly in the matrix by all six possibilities, (which is understandable since this archiphoneme, according to Mulder and Hurren, represents the suspension of opposition between all semi-vocalic elements in certain contexts; consequently, archiphoneme /R/ stretches to cover the whole horizontal section which is allocated to the semi-vocalic elements).

On all the above counts, we are fully convinced that "phonematic lattices" are more adequate, simpler and more economical than cartesian tables. Furthermore, "lattices" are more flexible, more manoeuvrable and easier to operate with than the rigid cartesian matrices. Adequate plausible evidence has been produced to prove that one single "lattice" is sufficient not only to account for the attested types of relationship, but also to offer us further relevant information which no other sole table (of any kind) could have succeeded in matching within the limitations of its own borders.

In fact, in order to match the capabilities of a single "lattice", a functionalist linguist may be required to establish one or more cartesian tables and many corresponding multi-dimensional solid structures and Jakobsonian-type grids.

Vocalic Archiphonemes:-

It will be sufficient for our present discussion to know that an "archiphoneme" represents a suspension of a specific distinctive opposition between two or more phonemes in certain sub-systems, i.e. contexts. In order to make the application of this notion ostensibly unambiguous, the theory stipulates that as a pre-requisite for the establishment of archiphonemes, the elements partaking in the operation of neutralization should have some (but not all) distinctive features in common, as otherwise, no archiphoneme can be established. (For an extensive coverage and discussion of the phenomena of "neutralization" and "archiphoneme", the reader is referred to PART I, Chapter 6).

On the above bases, Mulder (1968) and Mulder and Hurren (1968) establish two archiphonemes /R/ and /O/ for S.E.; whereby, archiphoneme /R/ is said to represent the suspension of opposition between /r, u, i/ in the context of a succeeding /i/ or /u/, and archiphoneme /O/ is said to represent the suspension of opposition between /o/ and /e/ in the context of a following /u/ in position "implosive l".

Having established two vocalic archiphonemes for S.E., the two authors conclude that "neutralizations, when they occur,

are only between phonemes of the "vocalic", or between phonemes of the "semi-vocalic" order, not between phonemes of the "neutral", the "spread", or the "rounded" series", (Mulder and Hurren, 1968).

Needless to say, the subsequent argument will bear sufficient evidence to refute the material adequacy of the above generalization.

On functional examination of the relations holding between the six basic vocalic elements of S.E., we are in a position to maintain that Mulder and Hurren's established archiphonemes require some modification and further elaboration. This in fact necessarily entails reassessing the status of Mulder and Hurren's archiphonemes, as well as investigating the possibility of establishing a different set of archiphonemes for S.E. The final outcome of the reassessment operation is certain to contribute a more adequate descriptive account of the phenomena under consideration.

By basing ourselves on the findings of List 1, and Figures 1, 3 and 4, it turns out that the only facts available to us are the following:-

- 1- Before semi-vowel /u/ in position "il", instead of a six-term vocalic opposition in the nuclear position, we only have a three-term vocalic opposition involving:-

[rawt] vs. [rowt] vs. [ruwt]

which correspond to:-

"rout" "wrote" "root"

2- Before semi-vowel /i/ in position "il", instead of a six-term vocalic opposition in the nuclear position, we only have a four-term vocalic opposition involving:-

[baj] vs. [bij] vs. [bej] vs. [boj]

which correspond to:-

"buy" "be" "bay" "boy"

Since in the context of the semi-vocalic element /u/ in position "il", the three vocalic elements in the first set of examples, i.e. [ɑ, o, u], can never be found to be functionally opposed to [ʌ, e, i] in the nuclear position, we are justified in establishing three archiphonemes corresponding to the suspension of opposition between [ɑ] and [ʌ], [o] and [e], and [u] and [i]. After all, these phonemes are the only pairs which enjoy common distinctive features among themselves, (see further below). These three archiphonemes will be symbolized by /A/, /O/ and /I/, respectively.

Similarly, the second set of examples, which contains a four-term vocalic opposition in the nuclear position, allow us to register that no opposition can be established between [ɑ] and [ʌ], or between [i] and [u] in the context of a succeeding /i/ in position "il". Consequently, two archiphonemes should be established to account for these phonological phenomena.

As the neutralized nuclear elements in the second set of examples are similar to those we have just encountered and established in the first set, there is functionally no phonological justification to represent the last two cases of neutralization by capital letters which are different from the ones we have already established. In fact, symbolizing them by a different pair of capital letters would be highly misleading, on the grounds that the reader is bound to interpret them as representing new archiphonemes whose terms are presumably different from the other established archiphonemes; a conclusion which, as we have seen, is both inaccurate and implausible.

It should also be pointed out that the choice of these specific capital letters, rather than any others, to represent the three archiphonemes, is taken on the grounds of, firstly, their adequacy with respect to the most common realizations of the archiphonemes and, secondly, their availability in all typewriters.

However, the above argument can not be pronounced complete without providing satisfactory answers to two important queries, i.e.

- 1- the reason for establishing archiphoneme /A/,
- and, 2- the reasons for not establishing further archiphonemes.

In retrospect, it is worth pointing out that though Mulder and Hurren's established archiphonemic set

(as represented in Figures 6 and 7) is (self-) consistent, it is not necessarily adequate with respect to the facts it is supposed to describe. This will become clear from the sequence of the following argument.

Many phoneticians/linguists have noticed that the presence of certain phonetic segments in phonetic forms may have bearings on the phonetic quality of some other preceding/succeeding phonetic segments in adjoining forms. However, the degree of the pressurizing influence is sufficient to substitute (though by no means to transform) one element for another (or for "zero") in the system. This phenomenon is normally referred to in articulatory phonetics by the common term "assimilation" (or "sandhi" for some specialists). Though the discussion of the different types of "assimilation" and their full implications lies beyond the immediate scope of this work, it is sufficient for our present purposes to indicate that the most familiar type of phonetic "assimilation" is conceived to be the one which takes place on the border between two phonetic forms and which involves the "final" phonetic segment of the first form and the "initial" segment of the second form, e.g. the so-called juxtaposition of "is" [iz] and "she" [ʃi(:)] in "is she" will exemplify a case of so-called "regressive (external) assimilation" (as opposed to the so-called "progressive (external) assimilation"). Accordingly, "is she" must be phonetically transcribed as [iz ʃi(:)] , whereby the [z] has been substituted for [ʃ] under the influence of the "initial" [ʃ] of the following form; (c.f. Abercrombie, 1974; Brosnahan and Malmberg, 1976;

Bloomfield, 1973; etc.). However, most phoneticians are of the opinion that most attested types and cases of "external assimilation" in S.E. are by no means compulsory, in the sense that the speaker may choose to realize the above example as [iz ʃi(:)] rather than [ɪz ʃi(:)] and therefore blocking the phenomenon of "assimilation" from taking place in actual communication.

On the basis of the above, two points should be singled out and stressed, firstly, that the phenomenon of "external assimilation" is ultimately a matter of choice on the part of the speaker and, secondly, it always takes place on the border between what may be identified as two separate phonetic forms.

Unlike the attested cases of phonetic "assimilation", referred to above in general outline, the case in hand, i.e. the reason for establishing archiphoneme /A/, is of a relatively different nature, because we are not dealing here with what we have called "external assimilation", but with what we may identify as "internal assimilation", (or "internal sandhi").

However, if the above explicatory note manifests a correct understanding of the phenomena of "assimilation", then our conception of what "internal assimilation" actually specifies should not pose any problem.

"Internal assimilation" is noticed to take place within

the borders of a single phonetic form and almost always under the influence of a preceding/succeeding phonetic element belonging to the same form. According to such a conception, the "optional choice" which characterizes cases of "external assimilation" becomes in cases of "internal assimilation" very limited - if not entirely obliterated. This may be attributed to the lack of any possible "available alternative" in the latter cases. If at all such a limited choice is quite possible in practice, which is doubtful, we believe that it will be entirely based on an arbitrary decision. For, if we consider examples like "drought", "foul", "sight" and "wise", we can very easily notice that the phonetic element which is expected to occur in the phonetic contexts of [dʒ-wt], [f-wl], [s-jt] and [w-jz] can never non-arbitrarily be assigned to either [æ] or [ʌ], (not even to [a], for that respect). Phonetically speaking, though the sound in question may be heard to bear closer affinity to [ʌ] than with [æ], the fact remains that it belongs to neither, and therefore no overlap in the phonetic scope between /a/ and /r/ can ever be established.

Since it is the presence of a succeeding /u/ or /i/ which determines the quality of the immediately preceding element in the nuclear position, we are inclined to treat the phonetic phenomena of "internal assimilation" as unmistakable cases of "neutralization". In consequence, we can not avoid identifying and establishing archiphoneme /A/ to represent the suspension of opposition between /a/ and /r/ in the context of a succeeding /u/ or /i/. This solution does not

only happen to be more consistent with the other descriptive statements, but it is also materially more adequate with respect to the facts of S.E.

With the establishment of three vocalic archiphonemes, the vocalic system of S.E. seems to be adequately covered and consistently accounted for; whereby, each two of the six vocalic elements represent and are represented by one archiphoneme in the system. By implication, this amounts to saying that there is virtually no possibility of establishing any additional archiphoneme, because the terms of such an archiphoneme will not only overlap with the terms of other established archiphonemes in the system, but its triggering context will also overlap with the triggering context(s) of other established archiphonemes, which is neither consistent nor adequate. Accordingly, we are confident that the above descriptive account of the archiphonemic system of S.E. covers the attested suspensions in the language most adequately without any need for further archiphonemes.

Summing up, we are now in a relatively secure position to maintain that the following three nuclear vocalic archiphonemes, which correspond to the marked areas of List 1 and Figure 1, have been established for S.E., i.e.

- 1- archiphoneme /A/ results from the regular suspension of opposition between /a/ and /r/ in the context of an immediately succeeding /u/ or /i/ in position "implosive l",

- 2- archiphoneme /I/ results from the regular suspension of opposition between /i/ and /u/ in the context of an immediately succeeding /u/ or /i/ in position "implosive l",
- and, 3- archiphoneme /O/ results from the regular suspension of opposition between /o/ and /e/ in the context of an immediately succeeding /u/ in position "implosive l".

On the basis of the above, we can now formalize and formulate our neutralization rules in the following manner:-

Neutralization-rule "1":-

"The /slack:tight/ opposition in /neutral/ phonemes is always neutralized in context with succeeding /slack, spread/ or /slack, rounded/ phoneme",

which rule can be re-formulated in a formulaic manner as follows:-

$n, \sim (/slack:tight/) /neutral/ / il, /slack, \begin{cases} \text{spread/} \\ \text{rounded/} \end{cases}$

In order to ensure the correct reading of all the formulae, it should be made clear that the conventions used in writing them refer to the following:-

n : Nuclear position.

(/.../): Brackets containing neutralized elements.

/.../: Slant lines containing non-neutralized relevant elements.

/ : Separates between the "nuclear position" and the immediately succeeding "implosive position", i.e. "il".

~ : Negates the oppositional value of the bracketed elements.

il : Position implosive 1.

< : Either the combination /slack, spread/ or the combination /slack, rounded/.

Neutralization-rule "2":-

"The /spread:rounded/ opposition in /slack/ phonemes is always neutralized in context with succeeding /slack, spread/ or /slack, rounded/ phoneme",

which can be formulated in terms of the following:-

n, ~(/spread:rounded/) /slack/ / il, /slack, $\left\{ \begin{array}{l} \text{spread/} \\ \text{rounded/} \end{array} \right.$

Neutralization-rule "3":-

"The /spread:rounded/ opposition in /tight/ phonemes is always neutralized in context with a succeeding /slack, rounded/ element",

which rule can be formulaically re-written as:-

n, ~(/spread:rounded/) /tight/ / il, /slack, rounded/

Although the realizational aspect does not constitute a pre-requisite for the establishment of the above three archiphonemes, it is significant to note that, for instance, the standard realizations of cases like /bAu/ and /bAi/, "bow" and "buy", respectively, are [baw] and [baj], alongside which one may frequently hear the realizations [baw] and [baj]. The same is true with respect to /bIu/ and /bIi/, "boo" and "be", respectively, where the standard realizations are mostly [buw] and [bij], alongside which exist the dialectal realizations [biw] and [buj]. Similarly, the standard realization of /dOu/ is that of [dow], beside which exists the dialectal realization [dɛw].

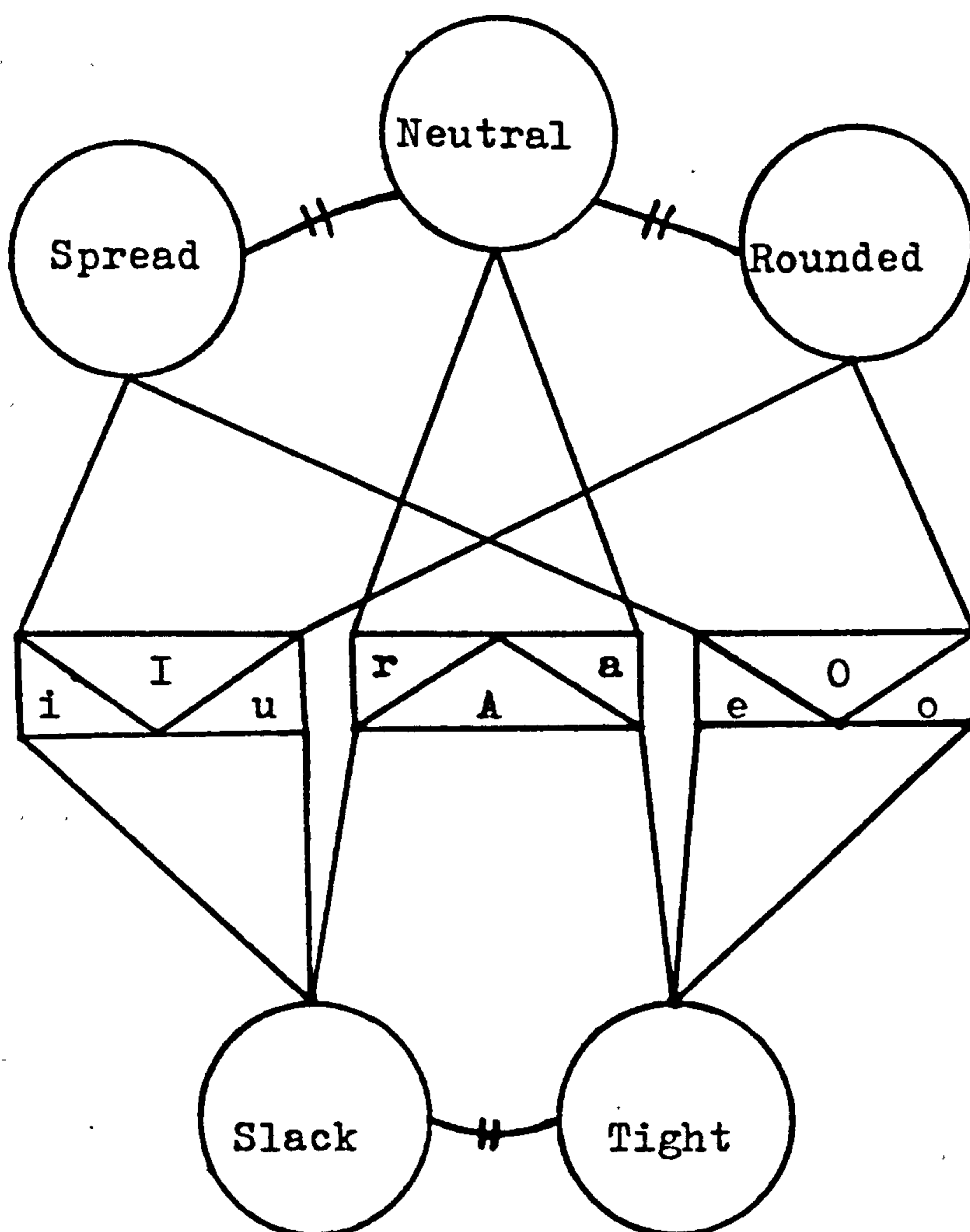
Obviously then, each of these three vocalic archiphonemes represents a specific suspension of opposition between two nuclear vocalic elements in the vicinity of certain specifiable contexts. However, if any of these triggering contexts happens not to be present in a form, no neutralization can be contemplated and no archiphoneme can be established.

The "Extended Phonematic Lattice":-

The issue of classifying the archiphonemes of a language alongside the phonemes in the same system was raised and discussed in Chapter 1. The resultant system, it was argued, allows the specialist to inspect the proportionality of the relationships holding between the phonemes and the archiphonemes, on the one hand, and between these molecular elements and the established sets of atomic distinctive features, on the other, in a consistent, adequate, simple and most appropriate manner. Furthermore, it was also stressed, that a system which is endowed with such facilities should be considered systematically more exhaustive and therefore more adequate, and representationally simpler than an equally consistent and adequate system which is too rigid to provide us with comparable vital information, (see Lists 3 and 4 in Chapter 1 of this PART).

For similar considerations, we shall apply the above theoretical views for the construction of a "unified" system to accommodate and account for all the vocalic elements of S.E. The proposed system, as we shall presently see, is basically an extension to the "phonematic lattice" in Figure 3.

This "extended" version can be set up by means of the following two-dimensional "lattice", i.e.



(Figure 9)

(The conventions which are attached to this "lattice" are analogous to the ones we have attached to Figure 17 in Chapter 1, in the sense that the "heads" of the triangles (which accommodate the archiphonemes) point out towards the neutralized features, and their "bases" refer to their relevant non-neutralized features).

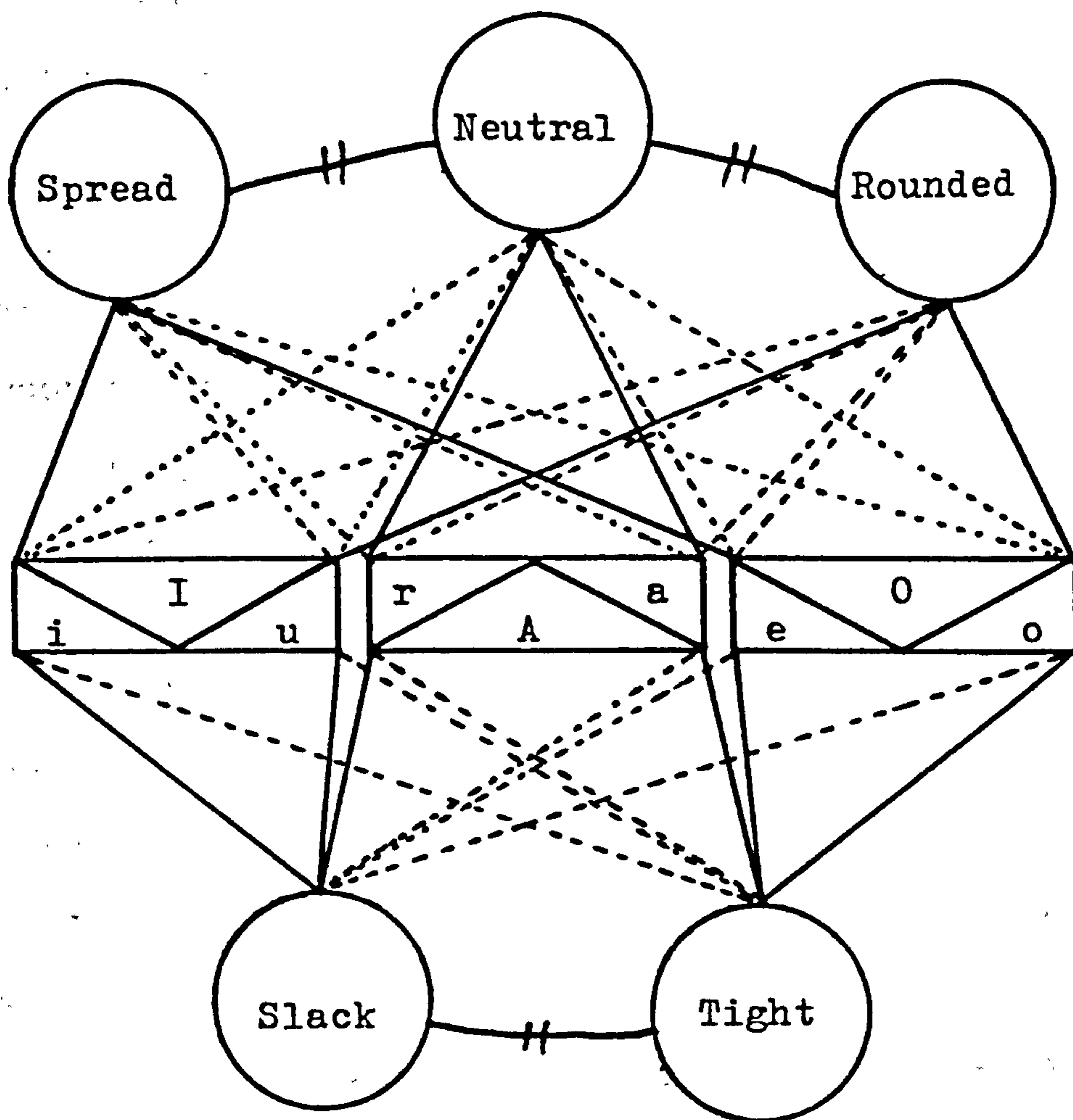
By basing ourselves on the findings of the above "lattice", we can very easily deduce the features which are relevant for

the positive identification of the three established archiphonemes /A/, /I/ and /O/; these are:-

- 1- The feature /neutral/ is the only relevant feature for the positive identification of archiphoneme /A/.
- 2- The features /slack, non-neutral/ are the only relevant features for the positive identification of archiphoneme /I/. (It should be re-iterated here that the feature /non-neutral/ may either be equal to /+ rounded, + spread/ or to /- neutral/. Whatever our choice may be, we can not escape the fact that we are dealing here with an unmistakable case of "suspension of part of a dimension". According to an earlier discussion (Chapter 1), we are allowed to establish the feature /non-neutral/ as a "hyper-feature" in the system. The value of this "hyper-feature" may also be represented as /spread/rounded/).
- 3- The features /tight, non-neutral/ are the only relevant features for the positive identification of archiphoneme /O/.

Finally, even though the above "lattice" has successfully accommodated and accounted for all the established molecular and atomic elements in the S.E. vocalic system, it has only done so with respect to their "positive" values. In order to demonstrate the flexibility, potentiality and manoeuvrability of the above method of representation, the overall global differential values of all vocalic elements (in terms of their "positive" and "negative" values) have been taken into account in constructing the following

"lattice". This new "lattice" may be most appropriately identified as the "global phonematic lattice" of the S.E. vocalic elements. Thus, we have:-



(Figure 10)

(Each "positive" value of an element is represented by a "solid" line, and each "negative" value is represented by a "dotted" line).

Consequently, the overall global value of any phonematic element is calculated globally with reference to all the phonematic elements in the inventory. The overall global value of /a/, for instance, can be calculated as follows:-

/a/ = /+ neutral, + tight, - spread, - rounded, - slack/

On the other hand, the overall global value of the feature /tight/ will automatically be:-

/tight/ = /+ e, + a, + o, - i, - r, - u/

However, with respect to the "compatibility:exclusiveness" types of relationship, the overall global value of the feature /tight/ amounts to:-

/tight/ = /+ spread, + neutral, + rounded, 0 slack/

However, the readers who still prefer recourse to Jakobsonian-type grids for testing the consistency and adequacy of phonematic representational devices will find in footnote 24 a matrix which satisfies their needs.

"Diphthongs", "Monophthongs" and "Triphthongs":-

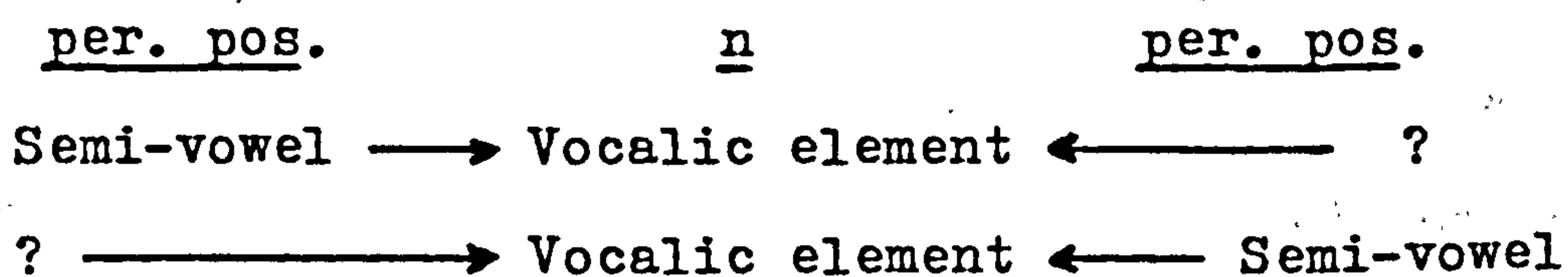
The monitor of linguistic trends who is familiar with structural and functional linguistic approaches, but does not have a fair account of the A.F. brand of functional linguistics, would have, no doubt, noticed the absence of any reference to the so-called "diphthongs", "monophthongs" and "triphthongs". This is not strange since it is possible to account for the differences between these phenomena in a consistent and adequate manner by means of the outlined theoretical notions of "nucleus", "peripheral", "vowel", "semi-vowel", "archiphoneme" and "position". Accordingly, there is virtually no functional reason for condoning the establishment of "diphthongs" and "monophthongs", not to mention the "triphthongs", as separate unanalysable vocalic phonemes in the inventory²⁶. However, the following

discussion will further clarify our approach to the problem. Needless to point out in this context that the present phenomena under consideration bear some resemblance (and may be related) to the previously discussed phenomena of "neutralization". For, in both cases we are dealing with combinations of vocalic elements. Each such attested combination is constituted of a "nuclear" element (which may be a vowel, a semi-vowel or an archiphoneme) and a "peripheral" vocalic element, namely a "semi-vowel".

A so-called "diphthong" like [ɔj] in "boy", or a so-called pure (long) "monophthong" like [u:] in "do", phonologically /-oi/ and /-Iu/, respectively, can be accounted for, in A.F., in terms of the aforementioned theoretical notions, i.e. by assigning /o/ and /I/ to the nuclear position, and /i/ and /u/ to the immediately succeeding implosive position.

A similar solution can be applied to combinations like [ju] in "your" and [uʌ] in "one", phonologically /iɰ-/ and /ur-/ , respectively, where the "dots" indicate the nuclear elements, and as such assigning the occurrence of /i/ and /u/ to the immediately preceding explosive position.

In our view, the phenomena of "diphthongization" and "monophthongization" ultimately fall within the scope of the following two possibilities, i.e.



where the "heads" of the arrows point out towards the vocalic

element in the nuclear position and their "tails" point out towards the semi-vocalic or consonantal elements in the respective positions. The two "question-mark" signs indicate the presence or absence of a consonantal element. The abbreviations "n" and "per. pos." refer to "nuclear position" and "peripheral position", respectively.

A so-called "triphthong" can be interpreted as a sequence of three vocalic elements comprising either a single phonological form, or a poly-syllabic construction. While the combination /iɪr/ "year", which is composed of three semi-vocalic elements, can not be analysed into more than one phonological form, the instance of the combination /-air/, which is composed of the same number (though not necessarily of the same type) of vocalic elements, can in fact be analysed into two successive phonological forms, i.e. /-ai/ and /ir/, where, by functional amalgamation (see PART I, Chapter 7), the non-nuclear element /i/, which marks a syllabic boundary, belongs non-arbitrarily to both forms or syllables.

It follows that the "triphthongization" phenomenon can be looked at as a sequence of three simple "vocalic" phonemes, whereby, the central element occupies the nuclear position and the other two elements occupy the immediately preceding and succeeding explosive and implosive positions, e.g. /iar-/ in "yard", /uer/ in "ware", /uei-/ in "wade", /-iIu/ in "new", /-rAi/ in "try", etc. These cases may be accounted for in terms of the following pattern:-

<u>per. pos.</u>	<u>n.</u>	<u>per. pos.</u>
Semi-vowel	Vocalic element	Semi-vowel

Consequently, establishing "diphthongs", "monophthongs" and "triphthongs" as unanalysable vocalic entities in the inventory not only contradict the conceptual definitions of the aforementioned notions but it also violates the three major requirements of consistency, adequacy and simplicity.

The Realizations of the Vocalic Phonemes and Archiphonemes of S.E.:-

Our aim, in what is left of this Chapter, is to establish the nature of the intrinsic identity²⁷ and the upper limit²⁸ of the distinctive realization of each vocalic phoneme or archiphoneme of S.E. This will be immediately followed by a range of what we believe are the most commonly observed realizations of the phoneme in question. In this respect, the statements of realization are essential "to make possible the activation of the phonological description, i.e. to generate new data on the basis of the description", (Mulder, 1968).

Before we start assessing the realizational aspect of each vocalic element (including the archiphonemes), it is worth noting that the member-features in the /lenis:fortis/ dichotomy, which pervades our classification of the consonant phonemes of S.E., quantitatively and qualitatively affect the realizational aspect of the vocalic nuclear elements, (see below). Thus, we recommend formulating a

limited number of statements which apply to the realizations of all vocalic elements of S.E. These are:-

- 1- The occurrence of /tight/ vocalic phonemes in open syllables (i.e. where all implosive positions are empty) is not possible in S.E.
- 2- The realizations of all /tight/ and /slack/ vowels and semi-vowels in the nuclear position are slightly longer and more open when the immediately succeeding implosive position is filled by a /lenis/ consonant, a /nasal/, or an /l/, but rather shorter and less open when succeeded by a /fortis/ consonant.
- 3- The realizations of all vocalic sequences, namely, those which are composed of a nuclear vocalic element in conjunction with an immediately following semi-vocalic element, are longer and more open when the immediately succeeding implosive position (i.e. i2) is filled by a /ø/, a /lenis/ consonant, an /l/, or a /nasal/, but rather shorter and less open when succeeded by a /fortis/ consonant.

However, it should be remarked that a hierarchy of length and openness can be established and worked out on the basis of the aforementioned information, (see further below). The realizations of all vocalic elements in the nuclear position, irrespective of their categorical status, are longer and more open when succeeded by a semi-vocalic element in the immediately succeeding implosive position than when succeeded by phoneme /l/. Yet, their realizations are slightly shorter

and less open in the vicinity of a /nasal/ consonant, and even much shorter and less open when a /lenis/ consonant follows. The length and openness of nuclear vocalic elements in the context of a following /fortis/ consonant is ranked at the bottom of the hierarchy, slightly above the cases where position "il" is filled by / \emptyset /.

Accordingly, the above established hierarchy of length and openness may be summed up in terms of the following formulae. These formulae are arranged on a descending scale of various degrees of length and openness. It starts by classifying the longest and most open realizations of the vocalic nuclear phonemes and gradually climbs down towards their shortest and by no means their lesser open realizations. However, in order to make these formulae as concise and clear as possible, the following abbreviations will be used in their formulation, i.e. "n" for "nuclear position"; "V." for "vocalic element"; "il" for "position il"; "S.-V." for "semi-vowel"; "—" for "filled by"; "/" for "position marker" and "/ /" for "type of element required to fill the position in question". Thus, we have the following six basic formulae:-

1- n, —, /V./ / il, —, /S.-V./²⁹.

which formula may be extended to account for more attested cases of length and openness, i.e.

1a- n, —, /V./ / il, —, /S.-V./ / i2, —, / \emptyset /.

1b- n, —, /V./ / il, —, /S.-V./ / i2, —, /lenis/.

1c- n, —, /V./ / il, —, /S.-V./ / i2, —, /l/.

1d- n, —, /V./ / il, —, /S.-V./ / i2, —, /nasal/.

1e- n, —, /V./ / il, —, /S.-V./ / i2, —, /fortis/.

- 2- n, —, /V.// il, —, /lenis/.
- 3- n, —, /V.// il, —, /l/.
- 4- n, —, /V.// il, —, /nasal/.
- 5- n, —, /V.// il, —, /fortis/.
- 6- n, —, /V.// il, —, /∅/.

We presume, that this limited number of generalized statements (and the corresponding formulae) will be sufficient to clarify and reduce the number of our statements of realization without going into the same details every time we discuss the realizations of a specific vocalic phoneme.

The phoneme /a/:-

- a) This phoneme belongs to "pos. n".
- b) In this position, it commutes with /e, o, r, i, u/.
- c) The distinctive function and identity of this phoneme are established by the following comparisons:-

1- a/e	/bag/ "bag"	vs.	/beg/ "beg"
2- a/o		vs.	/bog/ "bog"
3- a/r		vs.	/brg/ "bug"
4- a/i		vs.	/big/ "big"
5- a/u	/bak/ "back"	vs.	/buk/ "book"

d) The realizations of /a/:-

- 1- This phoneme is generally realized as a "short, relatively fronted (considering its degree of openness) between half-open and open, unrounded (neutral) vowel", e.g. "man" [mæn], "sat" [sæt], "cap" [kæp], "bag" [bæg], "scalp" [skælp].

It is important to remark here that the realizations

of all vocalic elements in the nuclear position, including /a/, are subject to definite geographical, sociological, occupational, educational, etc. variations. Though the discussion of such realizational variations lies beyond the immediate scope of this work, certain outstanding realizational deviations from the widely acknowledged S.E. norms have to be alluded to and accounted for in this section of the description. In this context, we may cite that the realizations of phoneme /a/ range between the "half-open frontal" [æ], to the somewhat "relatively back" [ɑ], to the "fully back" [ɒ]. The first of these can be considered to be the normal realization of the phoneme /a/, and the last two may be treated as positional and/or dialectal variants.

- 2- In the context of a succeeding /l/ in position "il", the realization of phoneme /a/ is that of a "lowered and retracted" vowel, normally symbolized as [a] rather than as [æ], e.g. [kɑːsɪfaj] "calcify" as different from [kæt] "cat".
- 3- When [æ] is succeeded by [ː] in forms like [stɑː] "star", [bɑː] "bar", [dɑːk] "dark", the realization of the nuclear phoneme /a/ is noticed to be that of a "relatively backed, more open, unrounded (neutral)" vowel, i.e. [ɑ].
- 4- With some speakers in the London area, the above "relatively backed" realization [ɑ] in [ɑː] gives way to a rather "fully backed" realizational

version [ɒ] in [p:], while with others in the same area, the realization of this vocalic combination is that of an "approximately frontal" variety [a:].

- 5- Some speakers in the South of England tend to replace the Standard realization of the vocalic combination [a:] by another vocalic combination, i.e. [ɑ:], when occurring finally in a form, e.g. [bɑ:] "bar", [stɑ:] "star", [fɑ:] "far". It is worth remarking that this realizational statement is also relevant for the realization of /r/ in position "il".

The phoneme /e/:-

- a) This phoneme belongs to "pos. n".
 b) In this position, it commutes with /a, o, i, r, u, A, I/.
 c) The distinctive function and identity of this phoneme are established by the following comparisons:-

1- e/a	see: al		
2- e/o	/beg/ "beg"	vs.	/bog/ "bog"
3- e/r		vs.	/brg/ "bug"
4- e/i		vs.	/big/ "big"
5- e/u	/bek/ "beck"	vs.	/buk/ "book"
6- e/A	/peil/ "pale"	vs.	/pAil/ "pile"
7- e/I		vs.	/pIil/ "peel"

- d) The realizations of /e/:-

- 1- The Standard realization of /e/ is as a "short, front, ranging between half-close [e] and half-open [ɛ], unrounded (spread)" vowel, e.g. "pen" [pɛn], "set" [sɛt], "dead" [dɛd].
- 2- In the context of a following /i/ in pos. "il", the

realization of the nuclear /e/ tends to be as a "front, half-close, spread" vowel, i.e. [e] rather than [ɛ], sliding towards the position of [j], e.g. "take" [tejk], "day" [dej], "cage" [kejdz].

Alongside this Standard realization, there exists a sub-standard (or rather a dialectal) tendency to replace the "half-close" realization [e] by the "half-open" realization [ɛ], e.g. "take" [tɛjk], "bake" [bɛjk].

- 3- When [ej] is succeeded by a [ɔ], the realization of the vocalic combination in question is relatively narrower and shorter than usual, e.g. "sayer" [sejɔ], "player" [plejɔ], "grayer" [gɹejɔ]. (This statement also applies to the realizations of phonemes /r/ and /i/).
- 4- In the context of a succeeding /r/, the nuclear phoneme /e/ can be realized as a "front, half-open, unrounded (spread)" vowel which precedes towards a "central, approximately half-open, spread" articulation of [ɔ], e.g. "hare" [hɛɔ], "fare" [fɛɔ], "dared" [dɛɔd], "bear" [bɛɔ].
- 5- The Midlanders opt for a "central, half-close, half-open" realization [ɔ:] as an alternative for the Standard [ɛɔ]; thus, examples like "pair", "care", etc., are realized as [pɔ:] or [pɔɔ], and [kɔ:] or [kɔɔ]. (This realizational statement applies also to the realizations of phoneme /r/ in the nuclear position).

The phoneme /o/:-

- a) This phoneme belongs to "pos. n".
- b) In this position, it commutes with /a, e, r, i, u, A, I/.
- c) The distinctive function and identity of this phoneme are established by the following comparisons:-

1- o/a	see: a2		
2- o/e	see: e2		
3- o/r	/bog/ "bog"	vs.	/brg/ "bug"
4- o/i		vs.	/big/ "big"
5- o/u	/kok/ "cock"	vs.	/kuk/ "cook"
6- o/A	/foil/ "foil"	vs.	/fAil/ "file"
7- o/I		vs.	/fIil/ "feel"

d) The realizations of /o/:-

- 1- The Standard realization of this phoneme is as a "short, open, back, with slight lip-rounding" vowel, ranging between [o] and [ɔ], e.g. "dog" [dɔg], "cod" [kɔd], "cockle" [kɔkl], "cog" [kɔg], "doll" [dɔɫ].
- 2- This phoneme can be realized as a "back, approximately between open and half-open, rounded" vowel [ɒ], when followed in the implosive position by /r/ realized as [ɹ], e.g. "horse" [hɒ:s], "naughty" [nɒ:ti], "sword" [sp:d], "floor" [flɒ:].
- 3- Some speakers of S.E. have a tendency for replacing the [ɒ] in [ɒ:] by a "relatively half-open, back, rounded" vowel [ɔ] which terminates as a "central, relatively half-open, unrounded" vocalic element [ɤ], e.g. "horse" [hɔɤs], "floor" [flɔɤ], "four" [fɔɤ].
- 4- A "closer and more rounded" realization of [ɒ] in [ɒ:] is normally used by Londoners, e.g. "saw" [so:],

"four" [fo:] .

- 5- The Scottish always replace the Standard British [ɔ] in [ɔ:] by their own "close" [o], e.g. "port" [port], "floor" [flor].
- 6- The S.E. realization of the vocalic combination /oi/ in instances like "coy" [kɔj], "soil" [sɔjɫ], "boil" [bɔjɫ], "annoyed" [ɔnojd], is that of a "back, rounded, below half-open" vowel which proceeds to end as a "front, unrounded, relatively close" articulation with "spread" lips.
- 7- A "closer, yet relatively backer" realization of [ɔj] can be noticed in the London area, e.g. "soil" [sojɫ], "noise" [nojz].

The phoneme /r/:-

- a) This phoneme belongs to "pos. n", "pos. e2" and "pos. il".
- b) In "pos. n", it commutes with /a, e, o, i, u/.
- c) In "pos. e2", it commutes with /i, u, l, n, F, m, P, T, K, θ, e, ø/³⁰.
- d) In "pos. il", it commutes with /i, u, n, v, N, l, k, m, p, b, s, f, d, ʒ, t, g, x, e, ʃ, ø/.
- e) The distinctive function and identity of this phoneme are established by the following comparisons:-

1- r/a see: a3

2- r/e see: e3

3- r/o see: o3

4- r/i /brg/ "bug" vs. /big/ "big"

5- r/u /brk/ "buck" vs. /buk/ "book"

f) The realizations of /r/:-

(I) Realizations in "pos. n":-

- 1- In the nuclear position, this phoneme is always realized as a "short, unrounded (neutral), central (slightly to the back), half-open" vocalic element, symbolized as [ʌ], e.g. "skull" [skʌɫ], "cup" [kʌp], "mother" [mʌt̚]. In this position, the vocalic element /r/ is subject to local dialectal and individual realizational pressures which result in a certain amount of free variance, (see below).
- 2- In the type of English which is spoken in the London area and elsewhere, this phoneme is realized either as an "open, front" vowel or as a "short, half-open" vowel with lips "neutral". The phonetic range of this vocalic element lies between [a] and [ɛ], e.g. "cup" [kʌp], "mother" [mʌt̚].
- 3- In the Northern regions of England, the realization of the nuclear /r/ in prominent syllables is that of a "back" vocalic element approximating the realization of an "unrounded" [o], symbolized as [ɤ] and realized as a "short, half-close, unrounded, back" semi-vowel, e.g. "cup" [kɤp], "mother" [mɤt̚], "dull" [dɤɫ].
- 4- For some speakers of English in the Midlands and the North, the distinction between [ʌ] and [ɔ] in an accented nuclear position does not potentially exist, because both are realized as a "short, central, half-open, half-close" vocalic element, with "neutral (unrounded)" lips, "tenser" and "less open" than [ʌ], symbolized as [ɔ], e.g. "come" [kɔm],

"one" [wʌn], "curry" [kəri].

- 5- Regardless of the type of syllable the phoneme /r/ is the nucleus of, it will always be phonologically represented by /r/ in this work. Nevertheless, a realizational distinction should be clarified and maintained between the occurrence of /r/ as the nucleus of prominent syllables, and its occurrence as the nucleus of less prominent or weak syllables. In prominent syllables, the /r/ is always realized as [ʌ], but it is realized as [ɔ] in weakly accented syllables. Furthermore, two types of [ɔ] can be recognized in weakly accented syllables, i.e. a "central, half-close" variant in non-final positions, e.g. "about" [ɔbawt], and a "central, half-open" variety occurring finally in a form before a pause, e.g. "sofa" [sowfɔ], [soɔfɔ] or [sɔɔfɔ]. The following set of examples will further clarify our contentions, e.g. "sucker" [sʌkɔ], "mother" [mʌtɔ], "vulture" [vʌɔtɔ], where each form is composed of two syllables, and each syllable contains the same semi-vocalic element; yet, the difference between the two nuclei in each form is a realizational one caused by the "+ prominence" on the first syllable, and the "- prominence" on the last syllable. However, in the following second set of examples, it will be noticed that the nucleus nucleurum of each phonological word is occupied by a vocalic element other than /r/, and the second syllable in each

form contains the weaker version of the phoneme /r/, phonetically [ɹ], as a nucleus, e.g. "larger" [lɑ:dʒɹ], "over" [owvɹ] or [ɔwvɹ], "annex" [ɔnɛks], "flatter" [flætɹ].

- 6- Many Southerners tend to replace the final [ɹ] in all the examples in number 5 above by the "short, central, half-open" semi-vowel [ʌ]. It will be shown in PART III that the realization [ɹ] (which is the neutral and weakest vocalic element in the spectrum of S.E. vocalic system) is the underarticulated nuclear variant of all the other vowels and semi-vowels of S.E.
- 7- In some other areas of England, speakers tend to replace [ɹ] by an "[r]-coloured" or a "retroflexed" [ɹ], symbolized as [ɹ̠], when it occurs finally or when it is followed by a consonant, e.g. "over" [owvɹ̠] or [ɔwvɹ̠], "mother" [mʌtɹ̠], "flatter" [flætɹ̠], "standard" [stændɹ̠d].
- 8- In the following forms, "fur" [fɹ:], [fɹ̠], [fɹ̣:], or [fɹ̣:ɹ̠], "bird" [bɹ:d], [bɹ̠d], [bɹ̣:d], or [bɹ̣:ɹ̠d], "kernel" [kɹ:nɹ̠], [kɹ̠nɹ̠], [kɹ̣:nɹ̠], or [kɹ̣:ɹ̠nɹ̠], "dirge" [dɹ:dʒ], [dɹ̠dʒ], [dɹ̣:dʒ], or [dɹ̣:dʒ], the nuclear phoneme is realized either as a "mid. central, neutral, between half-close and half-open" semi-vowel, or as a "half-open, central (slightly to the front), unrounded" vocalic element.
- (See also statements no. 4 and 5 in the section on phoneme /e/).
- 9- The vocalic combination in the above statement has

a number of dialectal varieties ranging from a closer to an opener variety. An extreme closer variety resembles something like [w:] (unrounded [u:]), and the opener version approximates a lengthened [ʌ:].

- 10- In Scottish English, the vocalic combination [ɪ:] ([ɪ], [ɜ:], or even [ɪ:ɹ]) is mostly realized as [ɪr], or more commonly as [ɪr̥] (a [ɪ]-like [i] succeeded by a flapped (slightly rolled) [r], or a fricative [r̥]), e.g. "bird" [bɪrd] or [bɪrd̥]. The same applies to the vocalic combination [ɛɹ], (see statement no. 4 in the section on phoneme /e/).

(II) Realizations in "pos. e2":-

- 1- In the explosive position, phoneme /r/ is normally realized as a "post-alveolar retroflex liquid" semi-vowel, sometimes called by some phoneticians "fricative lingual", symbolized as [ɹ], e.g. "rock" [ɹɔk], "wreck" [ɹɛk], "rose" [ɹowz] or [ɹɔwz], "rush" [ɹʌʃ].
- 2- With some speakers of S.E., a "voiced post-alveolar fricative (spirant)" realization of the semi-vowel /r/, symbolized as [r], is used instead of the "retroflex" [ɹ] in the same set of examples in the above statement.
- 3- A "frictionless continuant" variety of the /r/ in statement 2 is used by many speakers of S.E.
- 4- In the context of a preceding /lenis, apical, labial or dorsal, occlusive/, the realization of /r/ is

often "partly " or "wholly" voiceless. This realization is most adequately represented as [ɹ̥], e.g. "proud" [pɹ̥aʊd], "crest" [kɹ̥ɛst], "try" [tɹ̥aɪ], "shrimp" [ʃɹ̥ɪmp].

- 5- A "flapped" realization [ɾ] for the "voiceless [ɹ̥]" is noticed in the speech of some British citizens in the cases mentioned in statement no. 4, as well as in weakly accented intervocalic syllables, e.g. "very" [vɛɾi], "merry" [mɛɾi].
- 6- Some speakers of dialectal S.E. replace the "voiceless [ɹ̥]" by a "front trilled" or a "rolled lingual" or a "vibrant [ɾ̥]".
- 7- Though on a narrower scale, other realizations of phoneme /r/ may be attested in the speech of some British subjects in "pos. e2", among these marginal realizations one can recognize the "rolled uvular" [R] (better called the "front" or "apical" [R]), the "back" or "uvular" [r], the "breathed velar fricative" [ɹ̥], the "uvular fricative" [ʁ], etc.

(III) Realizations in "pos. i1":-

- 1- In the implosive position, phoneme /r/ is realized as [ɹ̥:], where it signifies the lengthening of the nuclear element, e.g. "farm" [fɑ:m], "purse" [pɹ̥:s], "jaw" [dʒɹ̥:]. (See statement no. 5 in the section on phoneme /a/). In this specific position, phoneme /r/ is subject to considerable contextual and free variance in relation to the element occupying the nuclear position, or in relation to

the type of S.E. the speaker uses. In this context, the reader is referred to the following statements of realization, i.e. statements no. 3 and 4 in the section on phoneme /a/, statements no. 4 and 5 in the section on phoneme /e/, and statements no. 2, 3, 4 and 5 in the section on phoneme /o/.

- 2- In the speech of some British subjects, the [ɹ] in "farm" [fɑɹm], "task" [tɑɹsk], etc. is realized rather weakly and is barely perceptible, while in the speech of others, it is realized as a weak "retroflex liquid" when it occurs finally in a syllable.
- 3- The realization of /r/ in "pos. il" is ostensibly less open than its nuclear realization, e.g. "pair" [pɛɹ], "here" [hiɹ], "dare" [dɛɹ], "poor" [puɹ]. (See also the statements of realization no. 4 and 5 in the section on phoneme /e/).
- 4- A "retroflex" [ɻ], or even a "flapped lingual" [ɾ] (phonetically known as the "linking" [r]) is noticed to occur finally in a form when the immediately following syllable starts with a vocalic element, e.g. "never end" [nɛvɹɹɛnd], "here and there" [hiɹɹɛnd].
- 5- Other minor realizations of phoneme /r/ in the implosive position may be alluded to, e.g. "intrusive" [r], "[r]-colouring", "trilled" [r], etc.

The relationship holding between the different types of

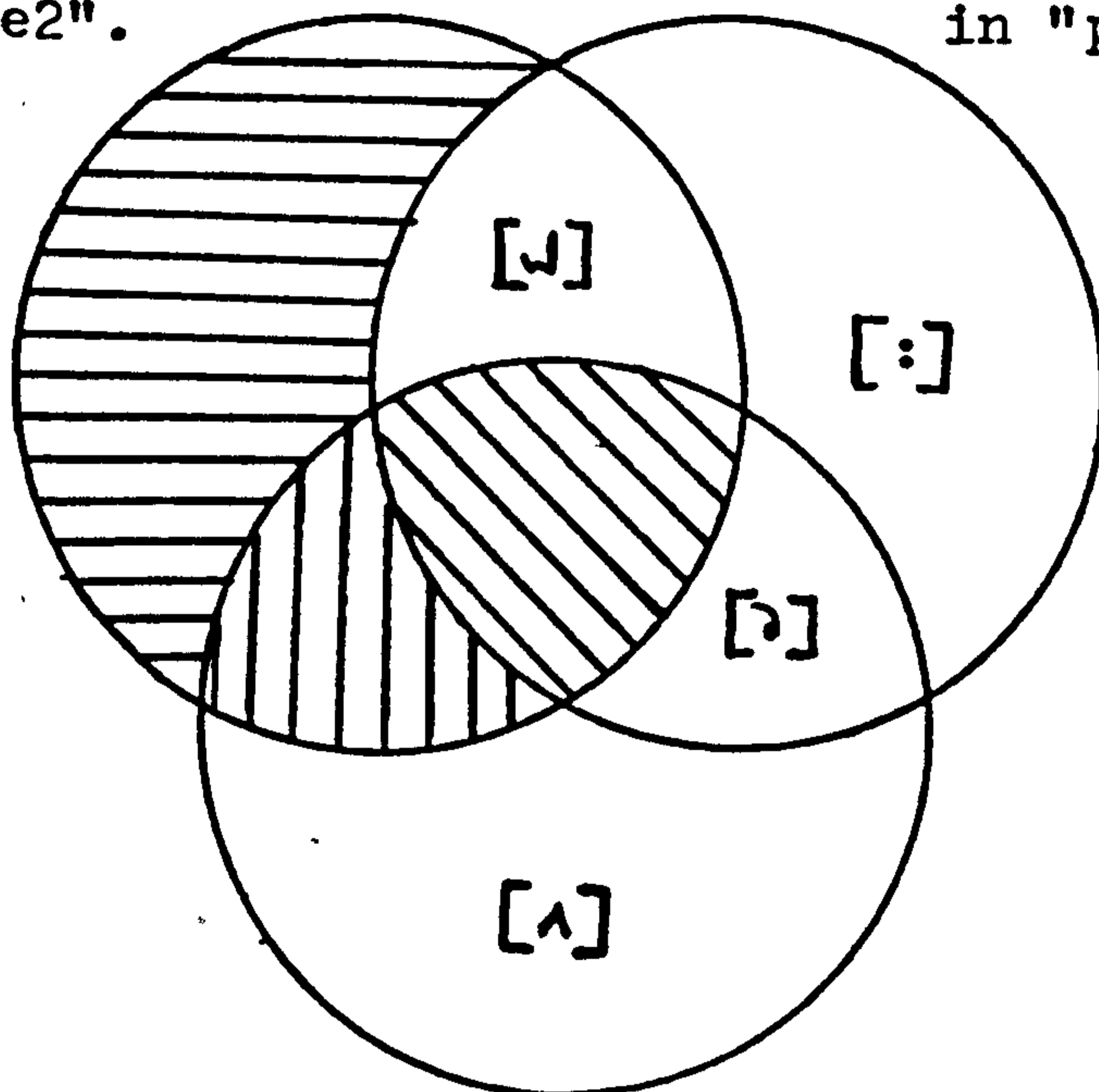
positional realization of phoneme /r/ may be represented by means of the following Venn diagram for three classes³¹:-

Class A:-

Realization of /r/
in "pos. e2".

Class B:-

Realizations of /r/
in "pos. il"



Class C:-

Realizations of /r/ in "pos. n".

(Figure 11)

The phoneme /i/:-

- a) This phoneme belongs to "pos. n", "pos. e2" and "pos. il".
- b) In "pos. n", it commutes with /a, o, r, u, e/.
- c) In "pos. e2", it commutes with /r, u, l, n, F, m, P, T, K, θ, e, ø/.
- d) In "pos. il", it commutes with /r, u, n, v, N, l, k, m, p, b, s, f, d, ʒ, t, g, x, e, ʃ, ø/.
- e) The distinctive function and identity of this phoneme are established by the following comparisons:-

1- i/a

see: a4

- 2- i/e see: e4
 3- i/o see: o4
 4- i/r see: r4
 5- i/u /bil/ "bill" vs. /bul/ "bull"

f) The realizations of /i/:-

(I) Realizations in "pos. n":-

- 1- The standard realization of this phoneme in the nuclear position is as a "front (palatal), unrounded, between close to half-close, and somewhat retracted", or as a "short, front, close, spread (unrounded)" vocalic element. It is usually symbolized as [i], e.g. "pill" [piɫ], "tick" [tik], "wit" [wiɾ].
- 2- In weakly accented final open syllables, a "lower" and "more open" realization can be noticed. In order to highlight the special significance of of this unaccented "open" [i], phoneticians normally mark it with a small tick underneath, e.g. "twenty" [twentiɿ], "naughty" [nɔ:tiɿ], "residuary" [ɹɪzɪdjuəriɿ] (or more accurately [ɹɪzədjuəriɿ]).
- 3- The final "short, open" weak syllables in the above examples are found -in the speech of some English subjects- to be in "free-variance" with the "longer and closer" sequence [i:] in equivalent contexts, where the combination [i:] stands for an implosive reduplication of the semi-vocalic element [i].
 (It should be noted that this statement is also relevant for the realization of archiphoneme /I/).
- 4- The realization of the Standard English /i/ is

always distinguished from the realization of the Scottish English /i/, in the sense that the latter is normally marked by a "shorter, lower, more open and more retracted" realization than its S.E. counterpart. The Scottish English /i/ approximates a [ɨ]-like sound which is symbolized by [i], e.g. "fit" [fɨt], "sit" [sɨt], "kit" [kɨt].

- 5- The Scottish English /i/, symbolized as [i], is roughly equivalent to the "long" [i:] in S.E., e.g. the Standard realization of the following examples, "feet", "seat" and "heat", is [fi:t], [si:t] and [hi:t], respectively, which correspond to [fit], [sit] and [hit], in Scottish English.

(II) Realizations in "pos. e2":-

- 1- In the explosive position, the /i/ is realized as an "unrounded, palatal, close, front" semi-vowel, or as an "unrounded, apico-prepalatal, spirant", symbolized as [j], e.g. "yeast" [ji:st], "yes" [jɛs], "yellow" [jɛlɔw] or [jɛlow], "Yankee" [jɛŋki], "hew" [hju:]. (See also statement no. 3 in the section on phoneme /e/).
- 2- The combination [hj-] in "hew" (above) is replaceable, in the speech of some people, by a single "voiceless, palatal, fricative" sound [ç], e.g. [çu:].
- 3- When explosive /i/ occurs in the vicinity of a preceding "fortis labial, apical, or dorsal occlusive/" element, the realization of /i/ is as a "wholly or partly voiceless" semi-vowel, e.g.

"cue" [kju:] or [kjuw]. (This statement is also relevant for the realization of archiphoneme /I/).

(III) Realizations in "pos. il":-

- 1- The realization of /i/ in the implosive position is similar to that in the explosive position, except that it is "more open" and relatively "weakly" articulated than its explosive realization, e.g. "may" [mej], "say" [sej], "climate" [klojmit] (or more accurately [klojmit]).
- 2- Generally speaking, when the semi-vowel /i/ occurs in any peripheral position, it is normally realized as an "unrounded, dorso-palatal, frictionless" semi-vocalic element. The different realizations of this phoneme are due to the nature of the following or preceding nuclear element. The starting point for [j], for instance, is much "closer" before [i] than before [æ] or [ə].
- 3- When /i/ is syllabic, in the speech of some speakers of English, it is normally symbolized as [i̥], e.g. "labialization" [lejb̥i̥ləjzejʃən].

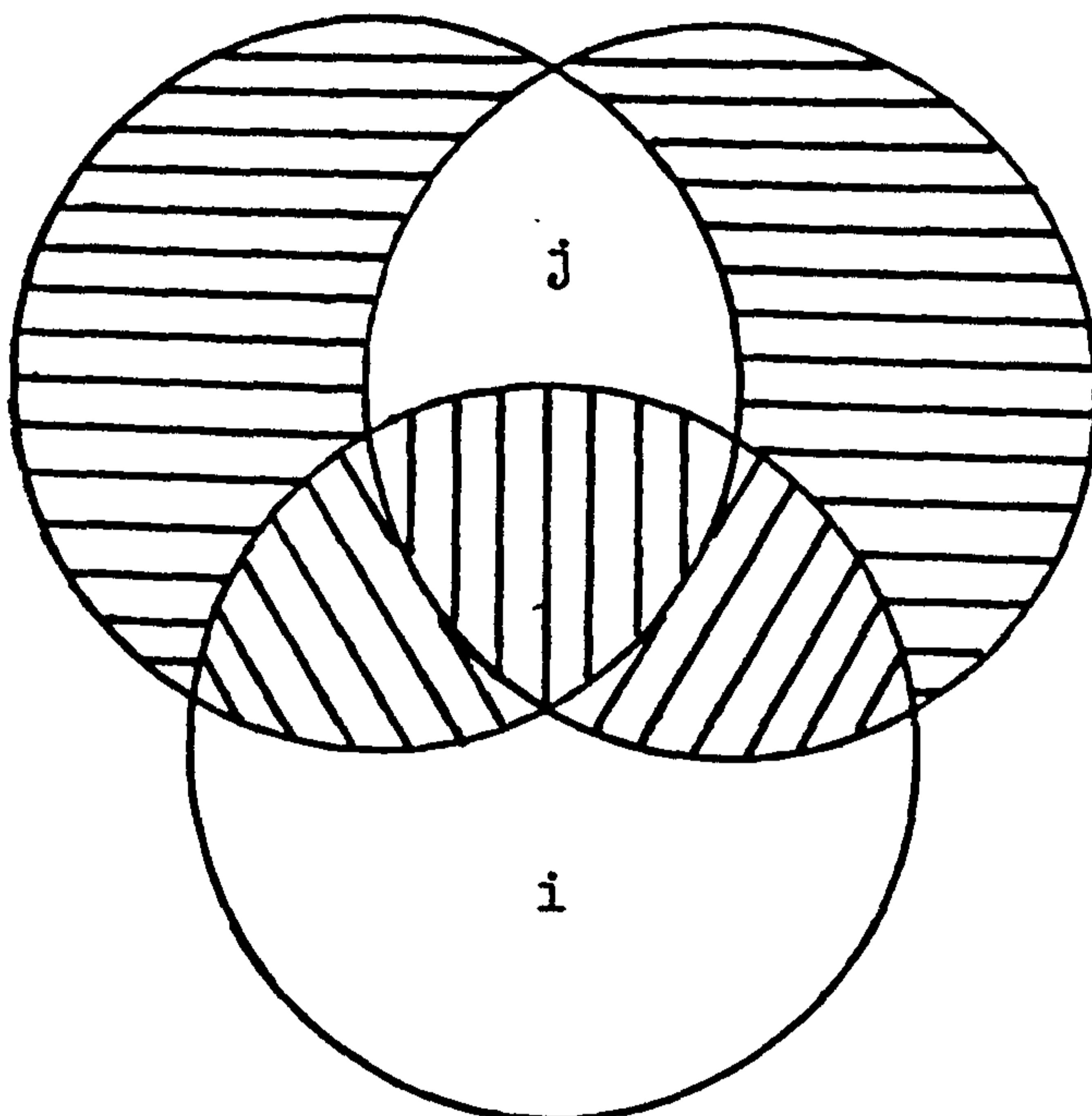
Finally, the relationship holding between the three types of positional occurrence of phoneme /i/ may be represented (after Mulder, 1974) in terms of the following Venn diagram:-

Class A:-

Realization of /i/
in "pos. e2".

Class B:-

Realization of /i/
in "pos. il".

Class C:-

Realization of /i/ in "pos. n".

(Figure 12)

The phoneme /u/:-

- a) This phoneme belongs to "pos. n", "pos. e2" and "pos. il".
- b) In "pos. n", it commutes with /a, e, o, r, i/.
- c) In "pos. e2", it commutes with /r, i, l, n, F, m, P, T, K, θ, e, ø/.
- d) In "pos. il", it commutes with /r, u, n, v, N, l, k, m, p, b, s, f, d, š, t, g, x, e, j, ø/.
- e) The distinctive function and identity of this phoneme are established by the following comparisons:-

1- u/a see: a5

2- u/e see: e5

- 3- u/o see: o5
 4- u/r see: r5
 5- u/i see: i5

f) The realizations of /u/:-

(I) Realizations in "pos. n":-

- 1- The Standard realization of /u/ in the nuclear position is as a "short, rounded, between close and half-close, back" semi-vowel, e.g. "pull" [puɫ], "pudding" [puɔɪŋ], "push" [puʃ], "look" [lʊk].
- 2- The Yorkshire dialectal realization of /u/ is as a "back, half-close, unrounded" semi-vowel, normally symbolized as [ʊ], e.g. "should" [ʃʊd], "took" [tʊk]. (See also statement no. 3 in the section on the nuclear occurrence of phoneme /r/).
- 3- In the type of English spoken in Birmingham and in the northern regions of England, [ʌ] and [u] are not opposed in the nuclear position, thus "cud" and "could", "buck" and "book", "luck" and "look", are identical forms (homonyms), i.e. [kʌd], [bʌk] and [lʌk], respectively.
- 4- In the nuclear position, /u/ can also be realized as a "back, and approximately rounded, between close and half-close" semi-vowel, which ends as a "relatively half-open, central, spread" semi-vowel, i.e. /ur/, e.g. "sure" [ʃʊə], "tour" [tʊə], "your" [jʊə].
- 5- A relatively "half-open half-close" realization is used in the South, i.e. [oɪ], as an alternative to the Standard [uɪ], e.g. "pure" [pjʊə], "sure" [ʃʊə],

"your" [joʊ].

- 6- In Scottish English, the semi-vowel under consideration is most frequently realized as [y], i.e. a sound which lies roughly half-way between so-called cardinal 8 and the phonetic sound of a French [y], e.g. "tour" [tyr], "sure" [ʃyr], "your" [jyr].

(II) Realizations in "pos. e2":-

- 1- The Standard realization of /u/ in the explosive position is as a "labio-velar" or "bilabial voiced" or "bilabial spirant (fricative)" semi-vowel, and is represented by [w], e.g. "wind" [wind], "well" [wɛɹ], "wad" [wɔd], "weasel" [wi:zɛɹ]
- 2- The "lip-rounding" feature is much "closer" when [w] is succeeded by [u] or any of the "back" vocalic elements, but "less close" with the "front" vocalic phonemes, e.g. "woo" [wu:] versus "win" [win].
- 3- A "labio-velar, voiceless, fricative" variety of [w], symbolized as [ʍ], is heard as an alternative in some regions of England and Scotland in forms like "what" [ʍɔt], "which" [ʍitʃ], "when" [ʍɛn], etc.
- 4- In the context of a preceding /fortis apical, labial, or dorsal, occlusive/, the realization of /u/ is mostly as a "voiceless" or "partly unvoiced" semi-vocalic element, e.g. "twice" [twais].

(III) Realizations in "pos. i1":-

- 1- The implosive realization of /u/ is analogous to

its realization in the explosive position, except that it is "opener", e.g. "south" [sawə], "how" [haw], "coat" [kəwt] or [kɔwt], "road" [ɹɔwd] or [ɹowd].

(It is worth pointing out that this statement is also relevant for the realization of the two archiphonemes /A/ and /O/).

2- In the realization of the vocalic combination [u:], as in "soon" [su:n], for instance, the [:] is constantly substituted for [w] by some speakers of S.E., e.g. "moon" [muwn]. (This statement is also relevant for the realization of archiphoneme /I/).

3- In the London area, a wider variety of the vocalic combination [ij] is normally used, i.e. [ɹu] or [iü], to replace the Standard vocalic combination [u:], e.g. [mɹun] or [miün] for "moon". It starts from the centre of the spectrum, somewhat between [ɹ] and [i], and moves towards the realization of the "back" [u] or towards a more advanced [ü], where it ends.

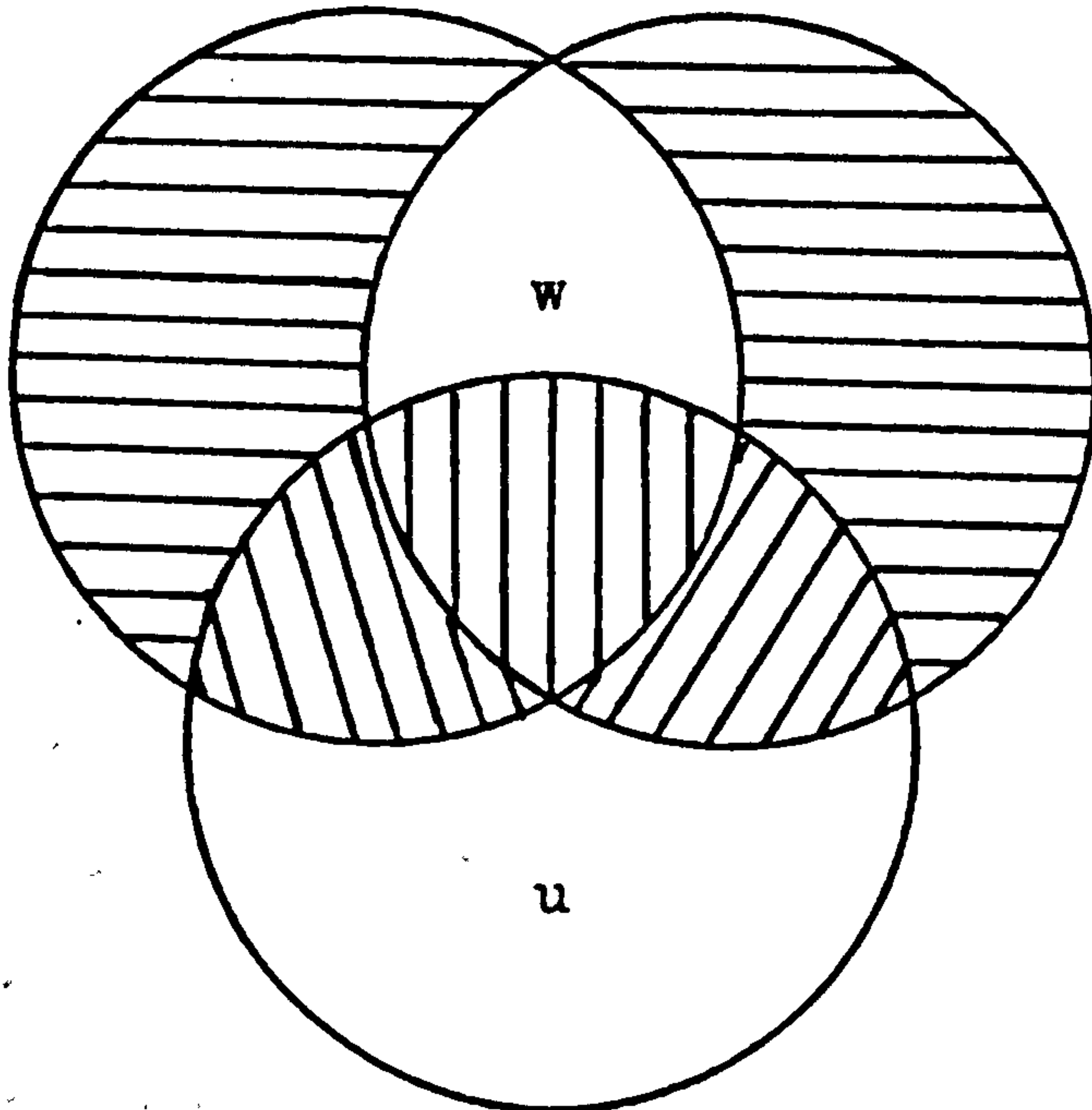
The relationships holding between the Standard realizations of phoneme /u/, in terms of their positional occurrences, can be summed up and represented (after Mulder, 1974) by means of the following Venn diagram for three classes:-

Class A:-

Realization of /u/
in "pos. e2".

Class B:-

Realization of /u/
in "pos. il".

Class C:-

Realization of /u/ in "pos. n".

(Figure 13)

It is obvious from Figures 11, 12 and 13, that the realizational range of phoneme /r/ is wider than either of the phonemes /i/ or /u/. While phoneme /r/ is endowed with four basic Standard realizations, each of the phonemes /i/ and /u/ manifests only two basic Standard realizational manifestations.

The archiphoneme /0/:-

- a) This archiphoneme belongs to "pos. n".
- b) In this position, it commutes with /A, I/.
- c) The distinctive function and identity of this archiphoneme are established by the following comparisons:-

- 1- A/O /rOuz/ "rose" vs. /rAuz/ "rouse"
 2- A/I /rOut/ "wrote" vs. /rIut/ "root"

d) The realizations of /O/:-

- 1- Archiphoneme /O/ represents a neutralization of opposition (in the nuclear position) between /o/ and /e/, only when the immediately succeeding implosive position is occupied by the semi-vowel /u/; otherwise, the two phonemes in question are separate elements. (See also statement no. 1 in the section on the implosive occurrence of phoneme /u/).
- 2- The Standard realization of archiphoneme /O/ is as a "half-closed half-open, back, slightly rounded" vowel, i.e. [o], moving towards the "rounded" position of [w], e.g. "dough" [dow], "no" [now].
- 3- The nuclear element in the vocalic combination [ow] is subject to some realizational differences within the scope of Standard British English, i.e. for some, it is realized as a "back, open" [ɔ], but as a "front, half-open, unrounded (spread)" vowel [ɛ], for others, e.g. "so" is realized by the members of the first category as [sɔw], but as [sɛw] by the members of the second category.
- 4- The Scottish equivalent of the vocalic combination [ow] is a pure "short, half-close, back, rounded" vowel [o].
- 5- Though it is irrelevant for the realization of the archiphoneme under consideration, it is worthwhile pointing out that the starting point of the combination [ow] may vary a good deal with age

and regional pressures; starting from a more retracted beginning point, to a fronter beginning point; from a relatively close realization, to a relatively opener realization; some may even have a more central starting point, etc.

The archiphoneme /A/:-

- a) This archiphoneme belongs to "pos. n".
- b) In this position, it commutes with /O, I, e, o/.
- c) The distinctive function and identity of this archiphoneme are established by the following comparisons:-
 - 1- A/O see: 01
 - 2- A/I /rAut/ "rout" vs. /rIut/ "root"
 - 3- A/e see: e6
 - 4- A/o see: o6
- d) The realizations of /A/:-

(I) Realizations in the context of a succeeding /i/:-

- 1- One should admit that one can not specify the "absolute" Standard realizational nature of the nuclear archiphoneme /A/. However, since we are only dealing with the issue in relative terms, it is important to point out that authorities in the field of "articulatory phonetics" are of the opinion that the Standard realization of archiphoneme /A/ is as a relatively "front, open, unrounded (neutral)" vocalic element, e.g. "try" [tɹaj], "time" [tajm], "die" [daj], "find" [fajnd], which continues towards the "close, front, unrounded" position of [j] with "spread" lips.

As pointed out, the above is in fact an over-simplification of the realization of archiphoneme /A/. We believe that the actual Standard realization of /A/ lies somewhere in the middle between the realization of /a/ and that of /r/.

- 2- A realizational variety of archiphoneme /A/ is noticed to exist in some parts of England which starts as a relatively "unrounded, central, half-open" [ʌ], e.g. "fry" [fɹʌj], "my" [mʌj], "by" [bʌj], and terminates as a "close, front, unrounded (spread)" semi-vowel [j].
- 3- The transition from [a] or [ʌ] to [j] in /Ai/ is achieved via an [e]-like sound, very short with the upper classes, but realizationally longer in dialectal speech.
- 4- In Scottish English, the [a] in the vocalic combination [aj] is normally substituted for a "short, retracted" [ʌ], e.g. "side" [sʌjd], "fight" [fʌjt].
- 5- Beside the realizations [aj] and [ʌj], there exists a dialectal realization [ɔj] which starts roughly as an "open, back" vowel, with "slightly rounded" lips for the onset, as well as for most of the duration of the [a] or [ʌ], then moves towards the "front, closed, unrounded" position of [j], e.g. "try" [tɹɔj], "buy" [bɔj], "shy" [ʃɔj]. In this sense, "try" and "Troy", "buy" and "boy", are homonyms.

6- It should also be remarked that alongside the above realization, archiphoneme /A/ is also realized in some dialects as [a], [ɛ], [ɜ], etc.

(II) Realizations in the context of a succeeding /u/:-

- 1- The Standard realization of archiphoneme /A/ in the context of the semi-vowel /u/ in position "il" is as a "relatively back, open, unrounded (neutral)" vocalic element which continues towards the "close, back, rounded" position for /u/, but falls short of reaching it, e.g. "now" [naw], "row" [ɹaw], "owl" [ɔwɫ]. (See also statement no. 1 in the section on the realization of phoneme /u/ in "pos. il").
- 2- Alongside the above Standard realization, one is bound to encounter (in Scotland and in the Northern regions of England) a more "centralized" realization of the starting point ranging between [ʌ] and [ɔ], e.g. "now" [nʌw] or [nɔw], "house" [hʌws] or [hɔws], "count" [kʌwnt] or [kɔwnt].
- 3- A distinction between the occurrence of /Au/ in prominent syllables, and its occurrence in less prominent syllables has been established by some speakers in the South of England, i.e. [aw] or [ʌw] always occurs in prominent syllables while [ɔw] is used in less prominent syllables, e.g. "housework" [hʌwswɜ:k], but "however" [hɔwevɜ]; "outdate", [ɔwtdejt], but "outhouse" [awthɔws].

The archiphoneme /I/:-

- a) This archiphoneme belongs to "pos. n".
- b) In this position, it commutes with /O, A, e, o/.
- c) The distinctive function and identity of this archiphoneme are established by the following comparisons:-

1- I/O see: O2

2- I/A see: A2

3- I/e see: e7

4- I/o see: o7

- d) The realizations of /I/:-

(I) Realizations in the context of a succeeding /i/:-

- 1- The Standard realization of archiphoneme /I/ in the context of a succeeding /i/ in "pos. il" is as a "close, front, unrounded (spread)" semi-vowel [i] terminating as a "front, open, neutral" [:] or [j], e.g. "be" [bi:] or [bij], "meet" [mi:t] or [mijt]. In terms of a formula, the above realization may be represented as follows:-

$$n, \text{ ---, } /I/ \leftarrow [i] / il, \text{ ---, } /i/$$

which reads as: In the nuclear position, archiphoneme /I/ is mostly realized in S.E. as [i] if succeeded by the semi-vowel /i/ in "pos. il". It is obvious that the Standard realization of the nuclear element is determined to a large extent by the presence of the semi-vowel /i/ in "pos. il". However, if we compare this case with the realization of /I/ in "II, 1" (below), we come to the conclusion that the two realizations are merely cases of "contextual variance".

2- The nuclear element /I/ is realized by some speakers of S.E. as a "short, rounded, between close and half-close, back" vocalic element terminating as a "front, open" semi-vowel with lips "spread", e.g. "be" [buj], "key" [kuj], "see" [suj]. (See also statement no. 3 in the section on the nuclear occurrence of phoneme /i/).

(II) Realizations in the context of a succeeding /u/:-

1- In the context of the semi-vowel /u/ in "pos. il", archiphoneme /I/ is most commonly realized as a "close, rounded, mostly back" vocalic element, which continues towards the position of [w] where it ends, e.g. "do" [duw] or [du:], "soon" [suwn] or [su:n]. This relationship between the nuclear element and its succeeding triggering context may be represented as:-

$$n, \text{ —, } /I/ \leftarrow [u] / \text{ il, —, } /u/$$

which can be reinterpreted to mean: Archiphoneme /I/ is realized in S.E. as [u] when succeeded by /u/ in the immediately adjoining position, i.e. "pos. il". As referred to earlier, the realization of the nuclear element manifests another case of "contextual variance", (see "I, 1", above).

2- A dialectal realization of archiphoneme /I/ is noticed to start from a "relatively front-central" position in the spectrum, somewhat between [i] and [ɔ], and moves towards the "back" position of [u] or towards a "more advanced" position occupied by [ü], where it terminates, e.g. "moon" [miwn], "pool"

[piwɫ]. (See also statement no. 3 in the section on the implosive occurrence of phoneme /u/).

Notes to Chapter 3.

- 1- "Nucleus" or "governing entity" for "entity in nuclear position". Def. 13a; see also Def. 11a.
- 2- "Tactic relations" for "constructional relations (whether ordering or not) between syntagmatic entities, as immediate constituents, in combinations". Note that tactic relations are not necessarily syntagmatic (i.e. ordering) relations, but they are between syntagmatic entities.
 "Immediate constituents" for "constituents that are not constituents of constituents within the combination in question". (See also Def.'s 7f and 7f¹ in the "Postulates".)
- 3- "Direct relation" for "relation between constituents (not necessarily immediate constituents) that is not a relation via other constituents", etc.
- 4- It is worth pointing out that Mulder has overlooked defining the notion of "indirect relation" in any of his printed literature. Consequently, we introduce here a proposed definition which is based on our conception of the notion's signification; thus we have:-
 "Indirect relation" for " relation between constituents (not necessarily immediate constituents) which can be established via other constituents".
- 5- See Def.'s 11a, 13a and 13b for alternative terminology and further explanation.

- 6- In a phonological description of Siamese, a phonologist may find it necessary to establish two nuclear positions in the distributional unit, (Mulder, 1968).
- 7- "Expansion" for "immediate constituent that commutes with zero", Def. 13c.
- 8- "Bound entity" or "actualizer" for "peripheral immediate constituent that does not commute with zero", Def. 13d; see also Def. 13f.
- 9- In a form like /sKeitS/ "skates", for instance, we are in a position to establish the following direct and indirect tactic relations holding between the immediate ordered constituents in the chain, i.e.

$$/s \xrightarrow{2} K \xrightarrow{1} e \xleftarrow{1} i \xleftarrow{2} t \xleftarrow{3} S/$$

By definition, the /e/ in the chain represents the pivot on which the potential presence, in this specific chain, of all the other elements depends; as the absence of the fulcrum reduces the whole structure to nothing.

The arrows we have marked by the superscript "1", in the example, signify "direct tactic relation"; those with "2" denote "indirect tactic relation" of the first degree (which is measured in terms of the relative distance of the element from the nucleus); and lastly, the superscript "3" indicates an "indirect tactic relation" of the second degree. All the elements (obviously with the exception of the nucleus) participating in either of the two types of relation are "peripheral" elements; these are: /s/, /K/,

/i/, /t/ and /S/.

Let us isolate, for simplicity reasons, the form /eit/, which corresponds to the attested example "ate", rather than any of the available alternatives, i.e. /sei/ "say", /kei/ "Kay", /eis/ "ace". We notice that while /s/, /S/ and /K/ are replaceable by "zeros" and, therefore, are legitimately called "peripheral expansions", phoneme /t/ (in contrast with the latter elements) does not tolerate such a substitution, because (as a bound element) it contributes towards the actualization and the self-containedness of the form /ei-/; that is, if we are not prepared to accept the form of the "interjection ay", or the form of the "archaic adverb ay", or even the form of "the name of the letter a", as well-formed and self-contained attested dependencies, but if we do consider either of the above /ei/s as a self-contained structure, then /t/ will unambiguously be an "expansion" and not a "bound entity", and /i/ will be the sole "bound element" in the form.

- 10- "Paradigmatic relations" for "relations of opposition between members of sets".
 "Paradigmatic" for "the oppositional or distinctive aspect of semiotic entities".
- 11- "Syntagmatic relations" for "ordering relations between semiotic entities in combinations".
 "Syntagmatic" for "the ordering aspect of semiotic entities".

- 12- Though the form /uon/ "won" (the standard monetary unit of both Korean states), or the form /uon/ in "won ton" (a Chinese dumpling filled with minced pork, etc.) would provide better examples, we have opted for /uog/ "wog" to avoid any criticism that may be levelled against using forms which are not "wholly attested" in S.E.
- 13- Alternative example would be /rum/ which represents one of the allomorphs of the phonological form of the expression "room".
- 14- Alternative potential example is "Qum" or "Kum", which we reject for being a city name in a foreign country.
- 15- The reader is invited to compare the number of the "vocalic" elements which are established for S.E. by many linguists/phoneticians including Jones, Gleason, Bloch and Trager, Abercrombie, Cohen, O'Connor, to mention but a few, with the number of the "vocalic" phonemes that has been established in this work.
- 16- The terms "vowel", "semi-vowel" and "consonant" are used and explained by Mulder (1968 and 1974), but not defined.
- 17- Phonologically speaking, it may be necessary for certain languages to acknowledge a fourth fundamentally different category of elements which can be called "semi-consonants". The difference between them and the "semi-vowels" can be established on the basis of their positional occurrences

in a unit. To the knowledge of the present author, the phonemes of Standard Arabic can be classified into "vowels", "semi-vowels" and "consonants", but the phonematic systems of most Arabic dialects should potentially include "vowels", "consonants" and "semi-consonants" (rather than "semi-vowels").

18- According to D. Abercrombie (1974) and other authorities in phonetics, the production of a consonantal sound is normally performed with a "stricture" which involves contact of active and passive articulators. These points of contact, which can be accurately pin-pointed, provide the necessary landmarks for the description and classification of the consonants. The situation is somewhat different with respect to the vocalic elements, in the sense that all vocalic sounds are fundamentally produced with "open approximation" of the articulators which do not necessarily involve any contact, and therefore no "stricture" in production. This in fact accounts for the difficulty encountered by most linguists in their attempts to establish coherent and harmonious systems for the description of the vocalic phonemes of S.E.

19- The decision to establish the distinctive features /slack/ vs. /tight/ instead of the more buffeted phonetic features [lax] and [tense] is taken with a view to avoiding confusing the phonological status of our proposed features with somewhat analogous, though probably theoretically different, notions utilized by other linguistic and

phonetic approaches. Furthermore, it is worth pointing out that the two features in the above correlation substitutes for Mulder's (1968 and 1974) and Mulder and Hurren's (1968) misleading features in the /vocalic/ vs. /semi-vocalic/ dichotomy, because the members of Mulder's and Mulder and Hurren's proposed dichotomy refer to certain "distributional" characteristics rather than to distinctive phonematic qualities. Moreover, on further investigation, we have arrived at yet another equally valid hypothetical correlation of distinctive features. This correlation, which takes the "size" of the mouth cavity into consideration, may contain two terms only, i.e. /narrow/ vs. /wide/. The feature /narrow/ accounts for the three "semi-vocalic" elements, and the feature /wide/ accounts for the three "vocalic" elements. However, if we stipulate that either of the features /narrow/ or /slack/ is endowed with the dual function of referring to a certain "size" of the mouth cavity as well as to a certain degree of "tenseness" of the tongue, then either of the two proposed correlations, i.e. /slack/ vs. /tight/ or /narrow/ vs. /wide/, can be used in a consistent and adequate manner.

20- We take it for granted that the reader is familiar with the phonetic realizations of the terms participating in the formation of Set 2. If in doubt, the reader is referred to any phonetic book on the subject.

21- It has been noticed that while the actual realization of the three basic "vowels" is always concomitant with more or

less muscular tension of the tongue, this muscular tension is barely recognizable, if not entirely absent, in the articulation of the three basis "semi-vowels".

Furthermore, the realization of the /tight/ vocalic elements is, as verified by many linguists and phoneticians, relatively longer than the corresponding /slack/ semi-vowels. They are also less spread, less neutral and less rounded than their /slack/ counterparts.

- 22- In articulatory phonetics, the "horizontal" position of the tongue in the mouth cavity refers to the part of the tongue which is raised in the articulation of a certain sound, i.e. "front", "central" and "back". The "vertical" position of the tongue, on the other hand, indicates the height to which that part is raised in the mouth cavity in the production of certain sounds, i.e. "close", "half-close", "half-open" and "open". However, the validity of this traditional classification in terms of "horizontal" and "vertical" tongue positions is disputed by many linguists and phoneticians. A bird's-eye view of the current situation is sufficient to provide us with the necessary evidence against utilizing the oppositional potential of the aforementioned correlations in our present description of the vocalic system of S.E. phonemes. Among those who tackled the above issue were D. Bolinger (1968), C.F. Hockett (1955), Trager and Smith (1942), J. Lyons (1972), J.D. O'Connor (1978), Jakobson, Fant and Halle (1967), Jakobson and Halle (1971), to mention but a few. While D. Bolinger discusses three vertical

positions, C.F. Hockett advocates the establishment of a six-term vertical scale; Trager and Smith talk about seven such vertical tongue positions and J. Lyons is in favour of only two vertical positions and another two horizontal positions; J.D. O'Connor takes a stand which is basically similar to that of Bolinger, i.e. he defends the view of a triadic vertical opposition. Jakobson and his associates, on the other hand, have broken with the "articulatory tradition" and proposed a solution which is mostly based on "acoustic" qualities of sounds. Needless to say that the validity of their approach is highly questionable. In fact, their results are neither widely accepted nor adequately corroborated.

- 23- Compare our obtained results with the results of the following Jakobsonian-type grid:-

	r	i	u	a	e	o
Neutral	+	-	-	+	-	-
Spread	-	+	-	-	+	-
Rounded	-	-	+	-	-	+
Slack	+	+	+	-	-	-
Tight	-	-	-	+	+	+

- 24- It should be noted that Mulder and Hurren's established tables (Figures 6 and 7) have the advantage of interpreting the neutralized features in the case of archiphoneme /0/ in a somewhat different way by using the feature /non-neutral/, which stands for the sum total of

"+ spread" and "+ rounded".

Though the feature /non-neutral/ is not a member-feature of any of the established two sets of distinctive features, it is highly important to point out that the relevance of this specific feature to Mulder and Hurren's second subsystem (Figure 7) is obvious since it partakes in the binary opposition /neutral/ vs. /non-neutral/. However, despite the above interpretation, we believe that the weary and the unattentive reader is bound to question the validity of this feature, to the extent that he may consider it "non-functional".

In order to avoid such a misunderstanding, we have decided not to include the feature /non-neutral/ in our modified classificatory system (Figure 8). It is only when we start evaluating the feature relevance with respect to the established archiphonemes, that the feature /non-neutral/ becomes highly important, because it is the only relevant feature on that dimension. A Jakobsonian-type grid can be used to show that the feature /non-neutral/ is in fact equal, as referred to in the Chapter, to /- neutral/; thus we have:-

	r	i	u	a	e	o	A	I	O
Neutral	+	-	-	+	-	-	+	-	-
Spread	-	+	-	-	+	-	-	+	+
Rounded	-	-	+	-	-	+	-	+	+
Slack	+	+	+	-	-	-	+	+	-
Tight	-	-	-	+	+	+	+	-	+

- 25- The six possible arrangements of the three features in the cartesian matrix and the visual potentiality of these arrangements to account for Mulder and Hurren's archiphonemes can be displayed in the following manner:-

<u>Possible arrangement of the features in the matrix.</u>	<u>Capability to account for</u>	
	<u>/R/</u>	and <u>/O/</u>
/spread-neutral-rounded/	yes	no
/spread-rounded-neutral/	yes	yes
/neutral-spread-rounded/	yes	yes
/neutral-rounded-spread/	yes	yes
/rounded-neutral-spread/	yes	no
/rounded-spread-neutral/	yes	yes

It is obvious that two possible arrangements have failed to account for archiphoneme /O/ in the matrix. However, if a third archiphoneme is added to the list, then the above pseudo-potentiality of the system will be weakened.

- 26- The reader is advised to consult reliable printed literature on the S.E. vocalic system. The writings of those whose names were mentioned in footnote 15 may be considered exemplary in this respect.

- 27- The "intrinsic identity of a distinctive entity is a function of the product of its distinctive functions in the universe of discourse". "It is that complex of functional features which the entity does not share in its entirety with any other (i.e. different) item", Mulder, 1968.

The "extrinsic identity of a distinctive entity is a function of the sum of its distinctive functions in the universe of discourse". "It is the sum of those complexes of functional features which the entity may possess without completely merging its identity with another item", Mulder, 1968.

The "distinctive function of a phoneme is the complement of the sum of all the phonemes with which it commutes, which equals the product of all the oppositions into which it enters", Mulder, 1968. See also Def. 7a³ in the "Postulates".

- 28- The "intrinsic identity of a distinctive entity equals the upper limit (of its distinctive function in the universe of discourse) and its extrinsic identity equals the lower limit (of the entity's distinctive function in the universe of discourse). Below the lower limit its distinctive (or contrastive) function and therefore its separate identity is totally suspended. Below the upper limit, but within the lower limit, its distinctive (or contrastive) function and therefore its identity is partially suspended", Mulder, 1968.
- 29- It is worth pointing out that only "formula 1" and its extended versions can account for the vocalic archiphonemes, as well as for any other vocalic combinational possibility, i.e. combinations each one of which is composed of a vocalic nuclear element and a semi-vocalic phoneme in "pos. 11".

30- For the distinction between "position classes" and "commutation classes", the reader is referred to Mulder, 1968.

31- See J.W.F. Mulder, 1974.

Supplement to Chapter 3.

The question of what constitutes a "nuclear" element (i.e. syllabic nucleus in some theories) is rather very tricky and daunting. Even trickier is the question of whether "nuclear" elements commute with "zeros", or not. Our main concern here will be centred on the A.F. viewpoint with respect to the second question.

It is worth pointing out in this context that although Mulder has very successfully coped with the first issue, his position with respect to the second question is neither sound nor convincing. For, nowhere in his printed material does Mulder make himself explicit or clear. In fact, some of his theoretical definitions in relation to this issue seem to be ambiguous. His definition of the notion "nucleus" in the "Postulates" (1980), for instance, runs as follows:-

Def. 13a: "Nucleus" or "governing entity" for "entity in nuclear position (see Def. 11a)". In symbols $\underline{b} \longrightarrow \underline{a}$, $[\underline{b}] \longrightarrow \underline{a}$, or $\underline{a} \longleftarrow \underline{b}$, or $\underline{a} \longleftarrow [\underline{b}]$, in which \underline{a} is the nucleus. The nucleus is the "identity element" in the chain in question, i.e. the tactic functions of all other elements depend on their relation towards the nucleus.

Since the "nuclear" element is the "identity element" in a structure, it is hard to envisage how the "tactic functions" and "relations" of the other elements in a structure can be established and measured if it is possible to have a structure without a "nucleus", or if it is possible to replace it by

a "zero".

Though there is nothing in the definition of the notion "nucleus" to suggest the above conclusion, the full definition of the notion "position" bears sufficient evidence to that effect, i.e.

Def. "positions" for "divisions within a chain (...), such that in every such division an entity, as an immediate constituent of that chain, can stand and alternate (i.e. commute) with other entities, or with zero". Alternative definition: "points on a chain (...) corresponding to relata of direct tactic relations" and "points of intersection between paradigms (visualized as a vertical straight line, called paradigmatic axis) and a chain (visualized as a horizontal straight line, called syntagmatic axis)".

In general, therefore, all elements in these positions (inclusive of elements in the nuclear position) can potentially commute with other entities, or with "zero".

However, by checking Def. 11a referred to in the definition of the notion "nucleus", we have:-

Def. 11a "Relation of sub-ordination" or "determination" for "direct tactic asymmetrical relation of functional dependency (see direct relation ...)". Its converse is super-ordination or "government". This is perhaps, the only type of tactic relation there is in phonology. If a and b are in a direct tactic relation, and a is

for its tactic function (i.e. "position") dependent on b, but not vice versa (in symbols: a \longrightarrow b), a is said to be sub-ordinate to b, and b super-ordinate to a. Furthermore, a is said to be standing in peripheral, and b in nuclear position in the chain (i.e. the self-contained bundle of positions).

The only positive conclusion that we can indirectly deduce from this definition, and from the subsequent distinction between "nuclear" and "peripheral" positions, is that there can never be a case of "relation of sub-ordination" without the presence of a non-zero element in the "nuclear" position.

In fact, such a positive conclusion finds implicit support from Mulder in his joint venture with Hervey, i.e. Strategy of Linguistics (1980), where he states that:-

[...] As the nucleus is the dominating entity in a sub-ordinate syntagm, i.e. the entity that characterises the syntagm, predetermines its distribution in higher level syntagms, and is the identity element for all syntactic relations in the syntagm in question, it follows that it cannot be an expansion.

Since a "nucleus" is the "dominating entity" which predetermines the distribution of the other elements, and since a "nucleus" can not be an "expansion" (i.e. a peripheral expansion is always commutable with zero), it follows that the "nucleus" constitutes a prerequisite for the

well-formedness and the self-containedness of any syntagm (or phonotagm, for that respect). In other words, though it is possible to have "zeros" occupying certain peripheral positions, the "nuclear" position, logically speaking, should always be filled by a non-zero element, as the presence of a "zero" nucleus is bound to render a combination phonologically incomplete. This is true for most languages checked by the present author.

Despite this, in his descriptive account of Mandarin Chinese, Mulder (1968) establishes the "quasi-phoneme" /e/, which is said to commute with /zero/ in a position which is equivalent to the nuclear position. Though it is not our main concern in this thesis to work out the reasons and the logical ramifications of such a decision, it is sufficient to remark that if it is true that the quasi-phoneme /e/ can be a parasitic element, and can commute with "zero" in the "nuclear" position, then we are confident that the element in question has at best a phonetic, but certainly not a phonological, status similar to that of the parasitic sound [ɿ] in the S.E. phonetic form [kɑ:sɿʔ] "castle", phonologically /karsl/.

However, so far as S.E. is concerned, such a phonological possibility is functionally rejected. Our theoretical position with respect to S.E. can be summed up in the following:-

The presence of a non-zero element in the nuclear position is a prerequisite for the well-formedness and

the self-containedness of any phonotagm in S.E.

Finally, the sole reason behind the seemingly ambiguous and controversial circumstances of having "zero" in the nuclear position lies in the fact that the founder of the theory of A.F. has so far resisted all attempts to include, in the structure of the theory, an axiom (or even a reference) denying a "zero" from occurring in the nuclear position. His justification for rejecting such a contemplation is based on the assumption that such an axiom, which is bound to clash with other parts of the theory, will not be universally applicable.

CHAPTER 4.Major Phonotagms in S.E. and Their
Underlying Basic Structure.

Before any A.F. phonotactic description of a language could be pronounced complete, it must account consistently and adequately for the distribution and the distributional characteristics of all established formal elements of that language. In the approach we have been following so far, this is optimally and most appropriately carried out within the domain of an established distributional unit, as we shall presently see. Yet, before we could possibly launch any of our hypotheses, it is necessary (for strategic reasons) to re-investigate and clarify the phonological status of the Mulderian concept of "semi-cluster".

The "One-Phoneme-One-Position" Hypothesis: The Problem of
"Semi-Clusters" in S.E.:-

Perhaps one of the issues which has not been satisfactorily worked out in present-day phonology is whether /t^Ń/ and /d^Ń/ in S.E. should be interpreted "monophonematically" or "biphonematically". Put differently, should the so-called S.E. [affricates] [t^Ń] and [d^Ń] be considered as singular phonemes, i.e. /t^Ń/ and /d^Ń/, or as sequences of two phonemes each, i.e. /t + Ń/ and /d + Ń/, whenever and wherever they occur in a construction?

It should be stressed in this context that it is not our intention to discuss (either in detail or in general outline) the adequacy of the numerous available solutions to the problem.

Nevertheless, it is worth pointing out that though the issue under consideration has received special treatment from leading linguists/phoneticians including Trubetzkoy (1969), Martinet (1969 et al), Cohen (1965), Jones (1962), Pike (1971), Gimson (1978), Malmberg (1963), Gleason (1969), O'Connor (1978), Bloomfield (1973), Chomsky and Halle (1968), Jakobson, Fant and Halle (1967), Trager and Smith (1951), Carl-Gustaf Söderberg (1959), to mention but a few, no concensus of opinion on how to deal with the issue can be established or formulated. However, despite the theoretical differences between the approaches of the aforementioned linguists/phoneticians, the fact remains that all of them (with the exception of Cohen, who is in fact the odd one out) share the common belief that /t^Y/ and /d^Y/ (alternative representation /č/, /ǰ/, /t /, /t^Y/, /t^Y/, etc. and /g/, /ǰ/, /dž/, /dž/, /dž/, etc., respectively) should unequivocally be treated as single phonemes in S.E. whenever and wherever they occur in forms of words. (Cohen, by the way, considers /t^Y/ and /d^Y/ as sequences of two phonemes each in all positions and contexts).

Suffice it to emphasize here (without going into detail) that the criteria which the above linguists/phoneticians propose for resolving the monophonematic unity and identity of /t^Y/ and /d^Y/ are:-

- either a- arbitrarily thought out and formulated,
- or b- based wholly or partly, directly or indirectly, on criteria of phonetic similarity, i.e. on properties of realization.
- or c- a combination of both a and b.

According to Mulder (1968, p.201), a "semi-cluster" is "a cluster when regarded from the point of view of the over-all system, but a single phoneme when considered from the point of view of the sub-system in question", (my emphasis). Obviously then, a "semi-cluster", in its capacity as a single phoneme, is not expected to extend over more than one position in the distributional unit. In consequence, Mulder establishes two semi-clusters for S.E., i.e. /t^Y/ and /d^Y/, whose occurrences, we are told, are restricted only to the "explosive section" of the distributional unit. However, what should interest us here is not merely the establishment of the two semi-clusters per se, but the proposed method for their identification and establishment and its consistency and adequacy. Not surprisingly, the only place where such criteria could be found is in Mulder, 1968. Since Mulder has done with the whole affair in less than two pages, it is therefore feasible to reintroduce in the following the essentials of the argument according to their logical order. Thus, to quote Mulder (ibid, pp.200-1):-

"The phonological status of the realizations [d^Yz, ts, d^Yz̄, t^Ys̄] is a problem to be solved on the basis of my definition of the notion 'phoneme'. Let us assume that they do not extend over more than one position. It then remains to be investigated whether each of the items is a simultaneous bundle of distinctive features or not. If it is, it is a single phoneme; if it is not, it is a cluster. We can present our investigation in the following way. The entries 'yes', 'no' and 'marginally' indicate the possibility of occurrence.

	<u>explosive</u>	<u>implosive</u>
[ts]	marginally	yes
[st]	yes	yes
[dz]	marginally	yes
[zd]	no	yes
[t [̣] s]	yes	yes
[[̣] st]	no	yes
[d [̣] z]	yes	yes
[[̣] zd]	no	yes

Because all these sequences occur, they represent from the point of view of the over-all system sequences of phonemes, i.e. clusters. The same is true from the point of view of the 'implosive' sub-system.

In the 'explosive' sub-system, however, matters are different. Against the occurrence of [t[̣]s, d[̣]z] stands the non-occurrence of [[̣]st, [̣]zd]. From the point of view of this sub-system, therefore, [t[̣]s] and [d[̣]z], phonematically /t[̣]/ and /d[̣]/, represent single phonemes. I shall call them 'semi-clusters'.

... As to the question whether - if one leaves such marginal cases as 'tsetse-fly' and 'Tsar' out of consideration - also /sT/ is a semi-cluster the answer is 'no', because this cluster extends over more than one position in the chain."

Before we embark on disputing the consistency and adequacy of Mulder's hypotheses, it is worthwhile remarking that under rigorously constructed axiomatic theories, so-called "exceptions" can never be tolerated or allowed to exist in a description. In other words, there should be a rule for each and every

aspect of the system in order to avoid having unaccounted for "residues" or "exceptions"; as otherwise, the consistency and adequacy of the descriptive account would be threatened.

Let us now consider Mulder's proposed solution. Mulder has made it clear from the very outset that the solution to the problem optimally rests on his definition of the notion "phoneme". This is meaningful if and only if we are told (or even shown) how to approach the problem from the view-point of the definition of the notion in question. Since Mulder does not elaborate on the issue any further, we shall try to figure out how this can be performed.

As we already know from preceding Chapters, the concept of "phoneme" is defined as a "simultaneous bundle of one or more distinctive features". Such a "simultaneous bundle", we also know, does not extend over more than one position; as otherwise, we are dealing with sequences of phonemes. In other words, the notions of "phoneme" and "position" seem to be closely intertwined. If we now analyse Mulder's monophonematic elements /t^V/ and /d^V/ into their constituent distinctive features, we get the following:-

/t^V/ is equal to /apical, occlusive, fortis, hushing/
and /d^V/ is equal to /apical, occlusive, lenis, hushing/

It is obvious from the analysis that each of the proposed monophonematic elements is described as possessing the total "positive" values (as well as the total "negative" and "neutral" values, which are not mentioned) of two phonemes, i.e. those of /t/ and /S^V/ in the case of /t^V/, and those of /d/ and /S^V/ in the case of /d^V/.

Knowing that the features /apical/ and /hushing/ are opposed to one another (i.e. they do not contract positive relationship with each other) in the same dimension (Chapter 1), we find it implausible and cryptic to accept the phonological status of the admittedly "marginal" phenomena of "semi-clusters". The reason why the theoretical possibility of neutralizing the contrastive functions of the above two features in "Dimension 1" has not been seriously contemplated to resolve the monophonemic identity of /t^Y/ may be primarily attributed to a number of reasons, among these one can mention:-

- 1- /t^Y/ and /d^Y/ are not the only candidates for identification as "semi-clusters" in S.E., (see below).
- 2- If neutralization of contrast is postulated between the two features /apical/ and /hushing/ in the system, then analogous neutralizations should also be postulated to account for the other candidates.
- 3- Even if all such neutralizations of contrast are postulated, there is no guarantee whatsoever which would ensure that all of them are consistently and adequately established, e.g. if /dl/ is established as a "semi-cluster", then the feature /l-ness/ (which belongs to the overall distinctive-feature system, but not to the system proper of the features in question, i.e. it is not a dimensional feature) would necessarily be allowed to contract some form of positive relationship with the dimensional feature /apical/ in order to postulate a neutralization of contrast for /dl/.
- 4- The postulation of any number of neutralizations of contrast in the S.E. system will only make nonsense of

the notion "dimension" as the locus of opposition/contrast, i.e. the whole concept of "basic dimensions" would, as a result, be meaningless and should be abandoned.

With hindsight, it should be clarified that Mulder uses two basic principles for resolving the monophonemic identity of /t^V/ and d^V/, namely, "permutation" and "systemic/sub-systemic analogy". None of the two principles, we believe, has been properly and faithfully applied, and none of them has been thoroughly investigated. For, if we examine Mulder's consonantal combinations in the given table, we come to the conclusion that the possible pre-nuclear combinations in S.E. are not restricted to /d^S, t^S, t^V, d^V, s^T/. An exhaustive study of the language under consideration will produce results incompatible with Mulder's assertions. If these results are mapped onto certain organized paradigms, we get the following wholly attested phoneme-combinations (note that all remaining marginally attested phoneme-combinations are listed in "Footnote 1" for the convenience of the reader and to facilitate the argument in certain cases):-

Fully attested pre-nuclear
phoneme-combinations

/kl/

/kr/

/ku/

/ki/

/pl/

/pr/

Fully attested post-nuclear
phoneme-combinations

/kl/-/lK/

/rk/

/uk/

/ik/

/pl/-/lp/

/rp/

/pi/	/ip/
/ti/	/it/
/tr/	/rt/
/tu/	/ut/
/t ^Y /	/t ^Y /-/ ^Y t/
/sm/	/sm/-/ms/
/sn/	/sn/-/ns/
/su/	/us/
/si/	/is/
/s ^T /	/s ^T /-/ ^t S/
/sl/	/sl/-/ls/
/s ^F /	/s ^F /-/ ^f S/
/s ^P /	/s ^P /-/ ^p S/
/s ^K /	/s ^K /-/ ^k S/
/di/	/id/
/dr/	/rd/
/du/	/ud/
/d ^Y /	/d ^Y /-/ ^Y z ^T /
/vi/	/iv/
/vr/	/rv/
/ ^Y sr/	/ ^Y rs/
/ ^Y sm/	/ ^Y sm/-/ ^Y ms/
/ ^Y su/	/ ^Y us/
/fr/	/rf/
/fl/	/fl/-/lf/
/fi/	/if/
/br/	/rb/
/bl/	/bl/-/lb/
/bi/	/ib/
/mi/	/im/

/gl/	/gl/-/lg-/-/lK#/
/gr/	/rg/
/gu/	/ug/
/gi/	/ig/
/ni/	/in/
/θr/	/re/
/θu/	/ue/
/θi/	/ie/
/hu/	⌘
/hi/	⌘
/smi/	/ism/-/ims/
/sTr/	/rsT/-/rtS/
/sTi/	/isT/-/itS/
/sPl/	/sPl/-/lpS/-/pSl/-/plS/
/sPr/	/rsP/-/rpS/
/sPi/	/isP/-/ipS/
/sKu/	/usK/-/ukS/
/sKl/	/sKl/-/lkS/-/lsK/-/kls/-/ksl/
/sKr/	/rsK/-/rkS/
/sKi/	/isK/-/ikS/

(List 1)

If we now examine the findings of the above paradigms, we may categorically state as a generalization that pre-nuclear phoneme-combinations of the form "consonant + semi-vowel" are by definition non-permutable. This leaves us with the problem of deciding whether relations of "simultaneity" or "ordering" prevail among the constituents of all the other consonantal combinations. However, if "simultaneity" can be positively

proven to exist between any two constituent elements in a presumed monophonematic complex, then this evidence should be taken to constitute a sufficient (though by no means a necessary) condition in favour of confirming the monophonematic status of the proposed complex. (The converse of the argument is equally valid). Put differently, if the relationship between the constituents of any pre-nuclear consonantal combination are shown not to be opposed in the same environment to the reverse of the given order, then the difference between the alternative possibilities is not functional, but realizational. All this is in fact implied in Mulder's earlier argument which is entirely based (as pointed out) on the principle of "permutation".

On the other hand, Mulder's second principle of "systemic/sub-systemic analogy" seems to offer him pseudo-evidence in support of his monophonematic treatment of /t^V/ and /d^V/. This latter principle may be interpreted to imply reference to the "overall phonematic lattice" as well as to the "pre-nuclear" and/or to the "post-nuclear" sub-systems. The way in which [d^Vz̄] is treated by Mulder provides us with an illuminating example in this respect. Both [d] and [z̄^V] in [d^Vz̄] are attested in the overall phonematic lattice to constitute separate phonological elements, i.e. /d/ and /z̄^V/. However, while in the pre-nuclear sub-system the occurrence of [d^Vz̄] (but not of [z̄^Vd]) has been corroborated by direct evidence from attested forms, the occurrence of both [d^Vz̄] and [z̄^Vd] can unequivocally be attested in the post-nuclear sub-system.

If we apply similar arguments to the consonantal combinations in the paradigms of "List 1", we are bound to identify and establish a huge number of so-called semi-clusters for S.E. Yet, despite the superficial consistency of such a solution, the establishment of "17" semi-clusters for S.E. seems to violate the principles of "adequacy" and "economy".

Let us now approach the problem from a different point of view, i.e.

- 1- by applying the commutation test to the constituent elements of the two semi-clusters /tʃ/ and /dʃ/,
- and 2- by attempting to reverse the order of the constituent elements of the (pseudo-) complexes in question.

If the commutation test is firstly applied to the constituents of the two presumed monophonemic complexes, we get:-

/tʃ/	in	"cheap"
/dʃ/	in	"sheep"
/tθ/	in	"team"
/tr/	in	"treat"
/dʒ/	in	"jeep"
/dθ/	in	"deep"
/dʒ/	in	"jupon"
/dr/	in	"dream"
etc.		

If we also take into consideration the status quo of S.E. (as different from D. Jones' idiosyncratic and fossilized version of English which is ultimately based on his own personal pronunciation), we notice that in principle (at least)

the monophonematic identity and unity of /t^v/ is refuted by the possible presence in S.E. of the reverse pre-nuclear order /s^vT/ as in "gestalt", "Stuttgart", "Steiner", etc. Other marginally identified pre-nuclear consonantal combinations of the types /s^vP/ in "spiel", "spieler", etc., /s^vl/ in "schlep", "schlieric", "schlieren", "schlock", etc., /s^vn/ in "schnapps", "schnetzel", etc., /s^vm/ in "schmuck", "schmo", etc., /p^v/ in "pshaw", etc. may also be used to refute the monophonematic identification and establishment of /t^v/ (and by analogy of /d^v/) as "semi-clusters" in S.E., (see the marginally attested phoneme-combinations in footnote "1"). Accordingly, one may claim that the concept of "position" can never be of any significance in this context, because the constituent elements of /t^v/ and those of the possible combination /s^vT/ belong a priori to different positions. In other words, the difference between /t^v/ and /s^vT/ is functional, not realizational. Also, the foregoing argument has proved beyond any shadow of doubt that the commutation test can not by itself be considered as a sufficient criterion for determining the "monophonematicness" of /t^v/ and /d^v/. Consequently, /t^v/ in S.E. can not be shown to occur in one single position in the distributional unit. (Note that the same argument understandably applies to its correlate /d^v/).

Even if /t^v/ were to be treated arbitrarily as a single phoneme in certain sub-systems, there could be no guarantee whatsoever which would ensure the presence of "simultaneous relations" between its constituent distinctive features. We recall from earlier arguments that the pre-nuclear phonematic /t^v/, according to Mulder, combines the total positive values

of the two phonemes /t/ and /ṣ̌/, i.e. /apical, occlusive, fortis, hushing/. However, in view of the definition of the concept "simultaneity", the order in which the features in question are arranged is theoretically irrelevant as it is not expected to generate other possible formal elements. This is not exactly the case. For, if the above distinctive features are rearranged as

/hushing, apical, occlusive, fortis/

we shall get four possibilities, i.e.

/ṣ̌t/, /ṣ̌ṭ/, /ṣ̌ṭ̣/, /ṭṣ̌/,

which is rather confusing. If anything at all, this confirms that it is tactic, rather than simultaneous, relations which count in this context.

If we now put the totality of the above argument into a new perspective, we may emphasize that "permutation" in the same pair of positions does not seem to operate properly at all. What really counts in the end is "permutability" in general, i.e. permutability in the whole system, and not only in certain parts of it. This global view of "systemic permutability" constitutes, of course, a sufficient condition, but not a necessary one. Consequently, if /t/ and /ṣ̌/ can, in some contexts be ordered /t/ → /ṣ̌/, and in others /ṣ̌/ ← /t/, then they must be mapped as a cluster, and not as a semi-cluster. Thus, one comes to the realization that ordering relation is not the logical opposite of simultaneity, but rather "tactic"² ~ "simultaneous". For, what is implied here is that because the constituents of the two /ṭṣ̌/ segments in the form /ṭṣ̌rṛṭṣ̌/ "church", for instance, do not stand in the same order (i.e. same type of dependence, not sequence), e.g.

$/t \longrightarrow \check{S}/ - /t \longleftarrow \check{S}/$, they demonstrate different relations.

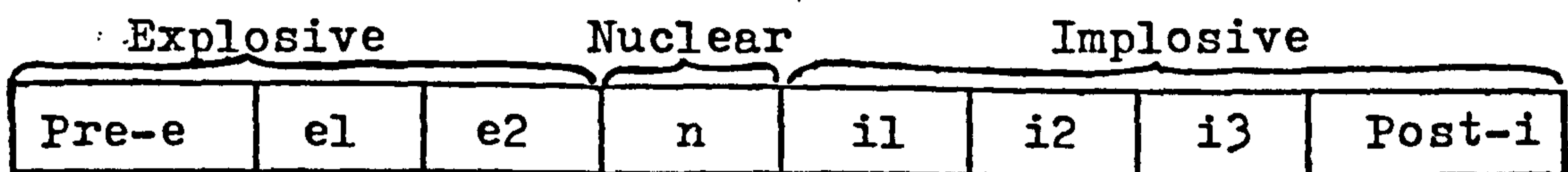
In terms of the attested dependencies, the relationship between the constituent elements of the form $/t\check{S}r\check{r}t\check{S}/$ may be re-represented as $/t \longrightarrow \check{S} \longrightarrow r \longleftarrow r \longleftarrow t \longleftarrow \check{S}/$, (see Footnote 9 to Chapter 3 of PART II). The equivalent type of dependency to the pre-nuclear $/t\check{S}/$ in "church" is the post-nuclear $/s\check{T}/$ in "pushed", where $/s\check{V}/$ and $/T/$ demonstrate exactly the same type of tactic relation (dependency), i.e. $/s\check{V} \longleftarrow T/$.

Finally, in view of the above argument and conclusions, we reject the "monophonematic" interpretation of $/t\check{S}/$ and $/d\check{S}/$ as "semi-clusters". $/t\check{S}/$ and $/d\check{S}/$ will appear in the rest of this work as sequences of two phonemes each, i.e. $/t + \check{S}/$ and $/d + \check{S}/$, in the "pre-" and "post-" nuclear sub-systems of the distributional unit. The exact positional occurrences of these phoneme-clusters in the established distributional unit will be resolved in due course of the argument.

Mulder's Pioneering Attempt at the Establishment of a Major Distributional Unit for S.E.:-

The earliest attempt to apply the theoretical concept of "distributional unit" to the description of S.E. phonotagms was carried out by Mulder (1968) and further emphasized by Mulder and Hurren (1968). According to these early accounts, the investigation of the bases of attested S.E. examples like "twelfths", "strengths", "sprinkles" and "scrambles" - phonologically (with some modification to suit our established archiphonemic rules): $/tuelf\theta S/$, $/stren\theta S/$, $/sPrInk1S/$ and $/sKraNblS/$, respectively - has led to the conclusion that the maximum extension of an adequate prototype distributional unit

for S.E. should be comprised of eight positions and divided into three identifiable sections, i.e. an explosive section, a nuclear section and an implosive section. The explosive section is said to be composed of the first three positions in the unit, the nuclear section "n" is said to be comprised of one position only, and the implosive section is presumed to embrace the remaining four post-nuclear positions. Put together, the three sections may be represented as:-



(Figure 1)

If the aforementioned four forms are now mapped onto this established descriptive model, the following picture will emerge:-

Pre-e	e1	e2	n	i1	i2	i3	Post-i
s	K	r	a	N	b	l	S
s	P	r	i	N	k	l	S
∅	t	u	e	l	f	θ	S
s	T	r	e	ŋ		θ	S

(Figure 2)

(The "∅" in the chart signifies the potential absence of a phoneme, and the area which is occupied by /ŋ/ indicates an "archiposition". Both of these A.F. concepts, which have been explained in PART I, Chapters 5 and 7, will be relevant to the forthcoming discussion).

As it currently stands, the model raises significant questions concerning, among other things, the degree of the correlational relationship between the "descriptive model" and the "facts" it is expected to account for. These questions - which are open for various theoretical interpretations - will neither be investigated nor discussed in the present context. It is sufficient for the immediate purposes of our discussion to point out that the foregoing relationship between "models" and "facts" is generally viewed in the theory of A.F. to be as "transparent" and "simple" as possible. Presumably, this could be understood to imply that a "model" which happens to represent both structure and actual realization should be constantly granted priority over a logical alternative which, while paying special emphasis to representing structural relations, accounts for the realizational aspect of these relations in a tacit and indirect manner. Be that as it may, we shall presently restrict ourselves to highlighting the negative aspects in Mulder's method of representing distributional units. This is of course necessary since one cannot suggest any alternative proposition before refuting the adequacy of what it is about to replace.

Basically, the most serious flaw in the traditional A.F. method of representing distributional units (Figures "1" and "2") lies mainly in the fact that the "centripetal" quality of the visual representative device is being diluted not only by the way the positions are numbered, but also by the subsequent use of unrefined phonetic terminology. For, though the "centripetal" aspect of distributional models is duly emphasized in the definitions of the concepts of "nucleus"

and "peripheral", and though the "occurrence dependency"-type of relationship underlines the connection between the two, the immediate impression which one obtains from examining the particulars of the established model in "Figure 1" (and, by implication, of "Figure 2") may be visually summed up as follows:-

$$\text{pre-e} \leftarrow \text{e1} \leftarrow \text{e2} \leftarrow \text{n} \leftarrow \text{i1} \leftarrow \text{i2} \leftarrow \text{i3} \leftarrow \text{post-i}$$

The reason why the "occurrence dependency"-type of relationship which holds between the "nucleus" and its left-hand "peripheral" dependants has not been adequately accounted for in the model may be attributed to the numbering system which is used to designate the three left-hand peripheral positions. Instead of giving the logical impression of a "centripetal" movement, the left-hand section of the Figure in question actually gives the misleading impression of a "centrifugal" movement. However, this problem could very easily be rectified if the naming of the left-hand positions (and their order) is changed from "pre-e - e1 - e2" to "pre-e - e2 - e1". The significance of this simple realignment process is not of course exhausted by merely emphasizing the "centripetal" movement of the respective positions in the left-hand section, but it also extends to ensure the correlative "symmetry" between the two peripheral sections of the distributive model, i.e. by forcing them to mirror each other's centripetal orientation.

Alongside the foregoing, one may also emphasize that the deliberate use of unrefined primitive phonetic terminology in naming the positions in the model may be considered responsible for equating (not "correlating") the descriptive model with the

actual realization of phonetic syllables in the minds of many A.F. and non-A.F. researchers. Since, however, the theory of A.F. distinguishes between the "phonological syllable" and its "phonetic counterpart", the two types of syllable can not therefore be said to stand in a one-to-one relationship with one another. Theoretically speaking, the two types of syllable belong a priori to two different spheres of ontological existence. This, of course, has nothing to do with the problematic question of whether either of the two types of syllable, or both of them, could/should be represented "linearly"/"sequentially", or not, as much as in emphasizing the fact that while a "phonological syllable" (i.e. "phonotagm") is conceived in A.F. as signifying an instance of a "field of constructional tactic relations", a "phonetic syllable" is generally used (in articulatory phonetics) with reference to, more or less, the plurality of the perceptual phonetic differences which accompany the production of phonetic segments according to their actual sequential order; (c.f. Saussure, 1974). Yet, despite their ontological differences, direct and/or indirect relationships may/must be postulated and established between these respective types of syllable. This direct/indirect correlational evidence must be subsequently manipulated to corroborate the material adequacy of the descriptive model without endangering its uniqueness and ontological status.

Finally, it has been emphasized on many occasions (Chapters 1 and 3) of this PART that a model which is capable of potentially containing and transmitting more information in a compact and straightforward manner should be promoted to replace

a model which either fails to render such additional information readily observable, or can only do so in a way which is not free of a certain degree of ambiguity. These issues will become clearer in the course of arguing the advantages of our new method of representing distributional units in the succeeding section.

An Alternative Proposal for Representing Distributional Units:-

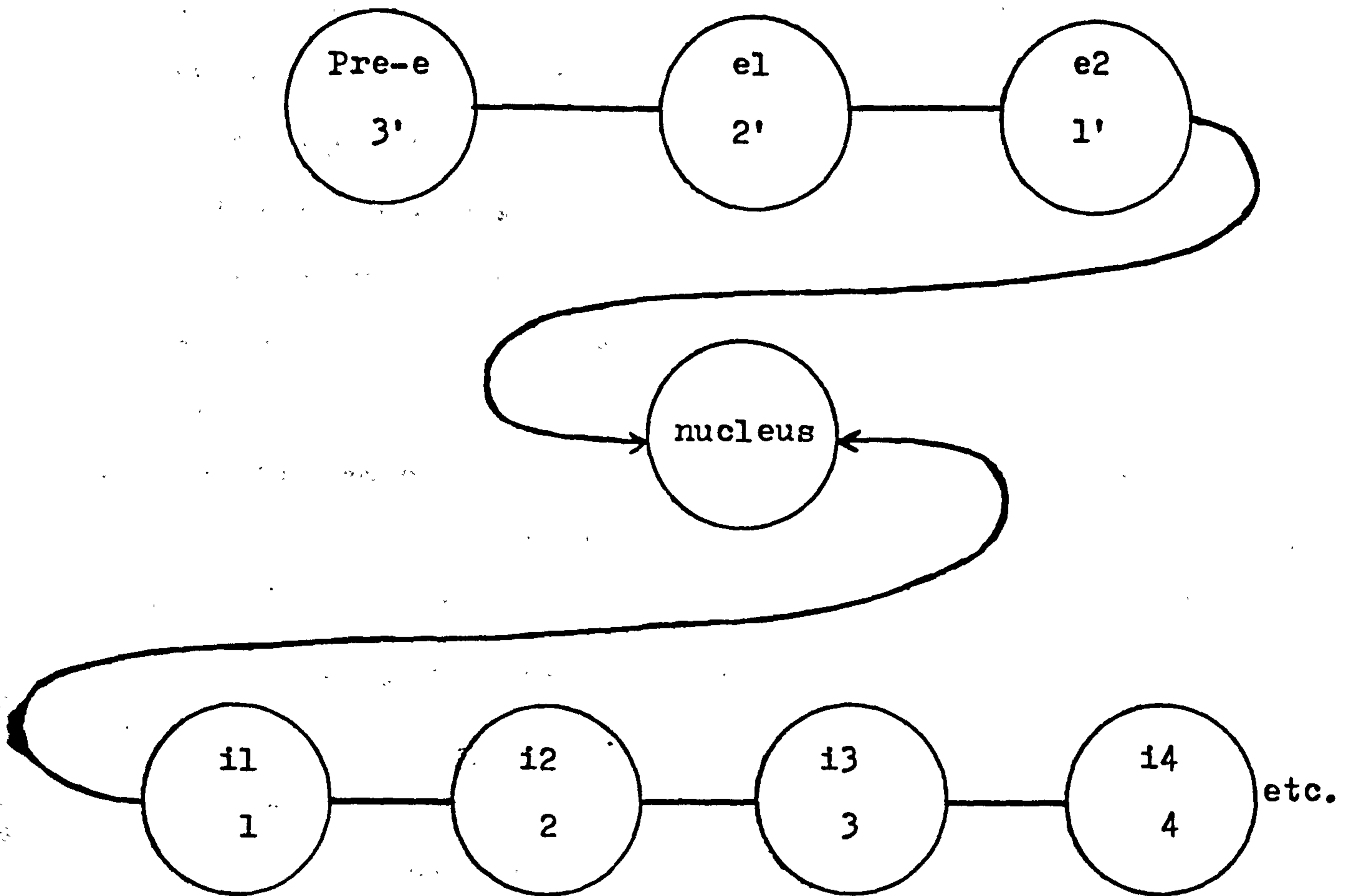
In this section, a new phonologically-orientated representational proposal will be briefly promoted. The decision as to whether this representational device is theoretically more logical and descriptively more adequate than Mulder's (Figure 1) will be left to the reader to take and formulate. Suffice it to point out, before we present our proposal, that the following guidelines should be taken into consideration in order to ensure the correct understanding of the constructional formation of the proposed structure, i.e.

- 1- each "circle" in the device represents a "position";
- 2- because the peripheral circles (positions) are distributed on both sides of the central pivotal circle, it is worth distinguishing between those which precede the pivot from those which succeed it by means of a new convention, i.e. each of the preceding circles will be identified by a conjunction of a "number" and an associated "' ", e.g. "2'", and each of the succeeding circles will be identified in terms of pure "numbers" (without associated "' "s), e.g. "3". The primary advantage of using this type of identifying the respective positions lies mainly

in its potentiality to account for both the formal and the realizational aspects of the unit (thus killing two birds with one stone). It is a virtual mid-of-the-way proposition which is not even matched by the original method of representing distributional units (i.e. Figures "1" and "2");

- 3- the larger the number inside a given circle, the farther the circle is removed from the centre (i.e. nucleus), and vice versa;
- 4- the farther the circle (i.e. position), the weaker becomes its relationship with the nucleus of the unit, and vice versa;
- 5- "direct relations" can only be established between consecutive members of a chain;
- 6- "indirect relations" of varying degrees can be established between non-adjoining members of a chain (c.f. "Footnote 9 " to Chapter 3 of PART II).

Thus, our proposal (which owes a lot to the modified mathematical conception of "distributive lattices" (c.f. Chapter 1 of PART II) may be constructed in the following manner:-



(Figure 3)

The connecting line which links the numbered circles may be considered optional. It is merely used as a convenient device for demonstrating the unity of the distributional unit and its realizational manifestation. It of course does so in terms of the "direct relationships" which hold (or can be established) between the consecutive circles/positions within the unit. On the other hand, the varying degrees of "indirect relationships" which may be established between any two non-adjointing circles/positions can very easily be accounted for (if necessary) by using "dotted lines" with "numbers" superscripted on their tops. However, the inclusion of all this information in the basic structure of the established

distributional model ultimately depends on whether the additional information is really relevant and necessary, or not. Compared with the manoeuvrable potential which characterizes the new method of representing distributional units is the rigid and static nature of the original model. In no way is the original model capable of accounting for the indirect relations in a simple and straightforward manner within the scope of its own borders. Since the new representational device will be manipulated for descriptive purposes in this Chapter, it seems necessary to outline in brief its major virtues. Among these, one may mention that:-

- 1- while this type of representation lays more emphasis on the "structural aspect" of the distributional unit, it is nevertheless still capable of tacitly accounting for the "realizational" aspect which accompanies it, i.e. via the movement of the two connecting arrows. (Note also that the realizational aspect of the new model becomes more evident if the circles are indicated linearly alongside a common horizontal axis);
- 2- by isolating between the three identified sub-systems in the unit, i.e. "preceding", "succeeding" and "pivotal", the distributional and strategic differences between these three compartments seem to have been adequately highlighted and constantly preserved;
- 3- the decreasing scale of numbering the circles/positions is sufficient to manifest clearly the centripetal movement (which is based on the degree of peripheralness) from the periphery towards the pivotal centre;
- 4- the established archpositions can be accounted for

and accommodated in the unit in a very simple and transparent manner; (see further below).

Mulder's Pioneering Attempt Revisited:-

The adequacy of Mulder's and Mulder and Hurren's proposed 8-position distributional unit for S.E. remained descriptively valid until 1980 when the present author refuted its adequacy;³ (see Mulder, forthcoming).

For, if forms like /f0ukS1S/ "forecastles", /sarNp1T/ "sampled", /kAunslS/ "councils", /drrnd1S/ "dirndles", /arN1TS/ "Arnold's", etc. are mapped onto Mulder's and Mulder and Hurren's established 8-position distributional unit (as outlined in Figure 2), we get the following picture:-

Pre-e	e1	e2	n	i1	i2	i3	Post-i	
∅	f	∅	0	u	k	S	l	S
s	∅	∅	a	r	N	p	l	T
∅	k	∅	A	u	n	s	l	S
∅	d	∅	r	r	n	d	l	S
∅	∅	∅	a	r	n	l	T	S

(Figure 4)

It is obvious that the presence of certain unaccounted-for elements outside the overall framework of Mulder's and Mulder and Hurren's distributional unit constitutes sufficient evidence for refuting the "self-containedness" of the unit in question, and consequently its adequacy with respect to

the facts. The only immediate solution which readily presents itself to set the record straight seems to be the addition of a new position to accommodate the extra elements. However, it will be seen from the given evidence in succeeding sections that even the addition of an extra position would not adequately resolve the problem. The reasons for that will be shortly discussed and clarified.

Methodology for the Establishment of a Major Distributional Unit:-

It has been emphasized on many occasions that the establishment of adequate descriptive models for any language can be determined only when a thorough and exhaustive investigation of the facts of the language concerned has been completed. This is logical since hasty descriptions (which do not take the totality of language into consideration) most frequently (though not necessarily) lead to partially adequate conclusions.

However, in order to arrive at an adequate basic distributional model to account for all major phonotagms in S.E., and in the interest of simplifying a rather complicated issue, it is necessary to divide the argument into examining

1- attested pre-nuclear clusters

separately from

2- attested post-nuclear clusters.

Since the first type of cluster has already been referred to and discussed on many previous occasions in the work (the last of which has been in one of the preceding sections), the establishment of the maximum extension of the pre-nuclear

sectional model should not by now pose any difficulty. However, a quick examination of the last 10 clusters of the previously given list in this Chapter (i.e. "List 1") is presumed sufficient to provide us with conclusive evidence in support of our claim which maintains that the maximum extension of pre-nuclear combinational possibilities can never exceed the total of three elements at any one time. In view of this, one may correctly conclude that an adequate pre-nuclear sectional model should comprise no more and no less than three positions. These three positions are represented in "Figure 3" by the three uppermost circles, i.e. those which are marked by the symbols "3'", "2'" and "1'", respectively. This logically leads us into investigating in detail the maximum extension of attested post-nuclear combinational possibilities.

Post-Nuclear Clusters and Their Underlying Sectional Model:-

The determination of the maximum extension of the post-nuclear section of the distributional unit for S.E. requires the examination of the post-nuclear clusters of the given examples and forms in the following list:-

regental	/ rIid ^Y Snt1/
falchions	/ forlt ^Y Snz/
simpletons	/ siNplTnz/
bumbledoms	/ brNblTmz/
singletons	/ siNglTnz/
Stevenson's	/ sTIivnsnz/
Charleston's	/ t ^Y SarlsTnz/

Michelson's /mAiklSnz/

Urmston's /rrmsTnz/

etc.

etc.

(List 2)⁴

If the forms of the given examples in the above List are now projected onto a modified Mulderian-type model, the following picture will emerge:-

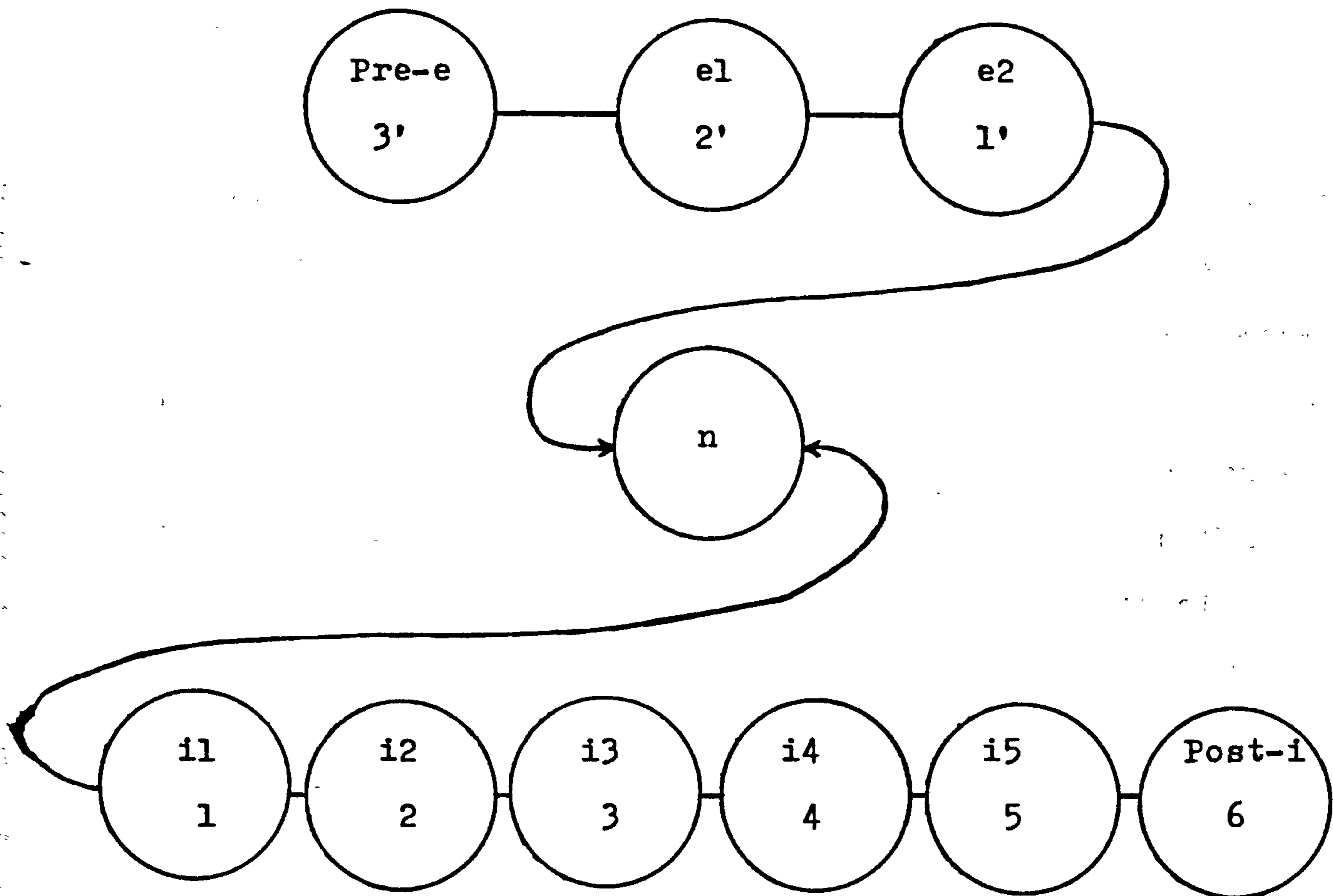
Pre-nuclear	Nuclear	Post-nuclear					
		i1 (1)	i2 (2)	i3 (3)	i4 (4)	i5 (5)	Post-i (6)
r	I	i	d	ŋ	n	t	l
f	o	r	l	t	ŋ	n	z
s	i	N	p	l	T	n	z
b	r	N	b	l	T	m	z
s	i	N	g	l	T	n	z
sT	I	i	v	n	s	n	z
tŋ	a	r	l	s	T	n	z
m	A	i	k	l	S	n	z
∅	r	r	m	s	T	n	z

(Figure 5)

In view of the evidence which the above Figure provides, we may come to the conclusion that a maximum extension of 6 positions is sufficient to account adequately and exhaustively for the distribution of all post-nuclear phoneme-combinations in S.E.

The Major Distributional Unit for S.E.:-

Now, if the conclusions which have been obtained from the discussions in the latter two sections are brought together to form (understandably with the nuclear section which is composed of a single position) one overall major (basic) distributional unit, we arrive at a unified pattern which may be set up in terms of our new method of representing distributional units as:-



(Figure 6)

Note that the above model (which may be said to represent the maximum extension frame underlying all basic phonotagms in S.E.) is itself extrapolated from attested data. The descriptive and material adequacy of this proposed distributional

model could only be demonstrated if both /sKraNblS/ and /siNplTnz/, for instance, could be mapped onto it (which they can, as shown in preceding sections).

Variations to the Major Distributional Unit: The Establishment of Archipositions - (General):-

As far as the A.F. phonological description of a language is concerned, the establishment of the maximum extension of a major distributional frame is but the first necessary step (which is required by the theory) for an adequate description of the distribution of formal elements in attested constructions.

However, because the combinatory possibilities of formal elements in constructions vary proportionally with respect to the types of element involved, some additional complications are seen to evolve. The effect which these complications have on the established model will be shortly investigated in succeeding sections. (It should be pointed out in this context that the theoretical nature of these types of complication as well as the way to tackle them have been appropriately explained in PART I, Chapter 7).

In brief, the proper method for the identification of the peculiar characteristics of certain elements and their ensuing repercussions on the abstract model is by,

- 1- mapping well-formed and self-contained attested phonotagms onto the established underlying structure,
- 2- examining the combinational and distributional characteristics of the elements involved,

3- making generalizations to specify the mapping in an economical way.

Since it is strategically more appropriate to deal with the issues in an organized and simple manner, we propose dividing the argument into two sections, the first of which

1- investigates pre-nuclear clusters and their effect on the corresponding underlying pre-nuclear sectional model,

and the second,

2- investigates post-nuclear clusters and their effect on the respective underlying post-nuclear sectional model.

It is only after all these operations have been successfully performed and their conclusive conclusions have been abstracted and established, that the interrelationship as well as the mutual correspondence between "constructions" and "model" (in its varying forms) may be said to have been consistently, adequately and exhaustively worked out.

Pre-Nuclear Clusters in Relation to Their Underlying Pre-Nuclear Sectional Model:-

In order to investigate this type of relationship in an orderly manner, it is best to approach it from the view-point of the attested clusters in the following Sets of columns. (Note that the information which is given under the different Sets is ultimately based on the abstracted conclusions of "List 1"). However, to facilitate the correct reading of the information provided, the following conventions have been

used, i.e.

"slant lines", i.e. /.../, enclose "attested clusters",
 "empty spaces" signify "impossible" clusters".

Thus, we have:-

Set "1"	Set "2"
/sKi sPi sTi smi /	/si ki gi bi pi ti di mi /
/sKr sPr sTr /	/su ku gu tu du /
/sKl sPl /	/ kr gr br pr tr dr /
/sKu /	/sl kl gl bl pl /
	/sm /
	/sT /
	/sP /
	/sK /

Set "3"	Set "4"
/fi θi hi vi ni/	/sn, sF/
/fr θr ṽr vr /	
/fl /	Set "5"
/ θu hu ṽu /	/z̄, z/
/ ṽm	
	Set "6"
	/t̄, d̄/

The strategic significance of this type of arrangement will be gradually revealed as the argument progresses.

If we now conflate the contents of Sets "1" and "2" and map their fused results onto the pre-nuclear sectional model,

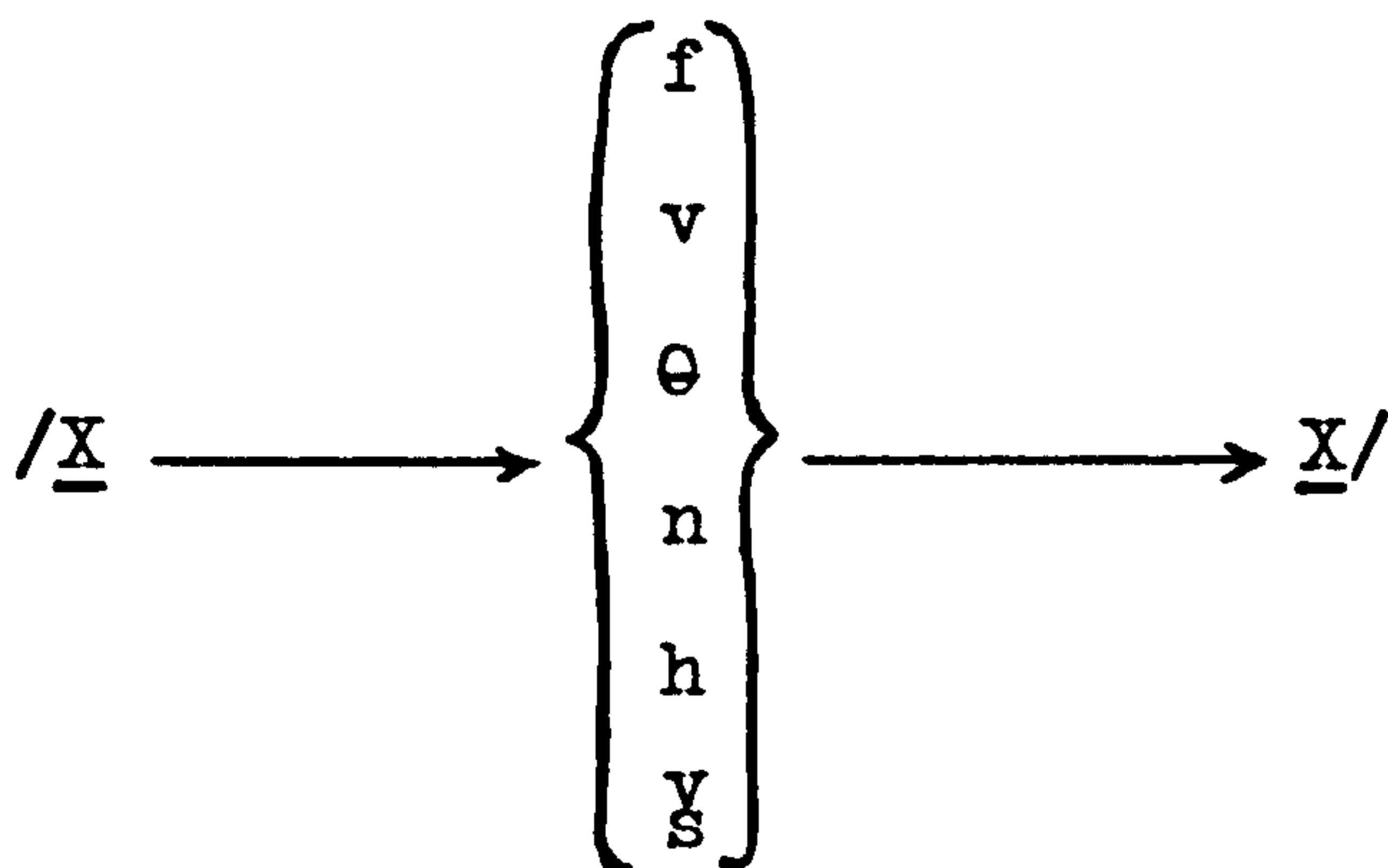
we get the following decisive distributional conclusions:-

<u>A</u>			<u>B</u>			<u>C</u>			<u>D</u>		
pre-e	e1	e2	pre-e	e1	e2	pre-e	e1	e2	pre-e	e1	e2
(3')	(2')	(1')	(3')	(2')	(1')	(3')	(2')	(1')	(3')	(2')	(1')
s	T	r	s	P	r	s	K	r	s	m	i
s	T	i	s	P	i	s	K	i	s	m	∅
s	T	∅	s	P	l	s	K	l	∅	m	i
s	∅	i	s	P	∅	s	K	u	∅	m	∅
s	∅	u	s	∅	i	s	K	∅	s	∅	∅
s	∅	r	s	∅	u	s	∅	i	∅	∅	i
∅	t	r	s	∅	r	s	∅	u	∅	∅	∅
∅	t	i	s	∅	l	s	∅	r			
∅	t	u	∅	p	i	s	∅	l			
∅	t	∅	∅	p	r	∅	k	i			
∅	∅	i	∅	p	l	∅	k	u			
∅	∅	r	∅	p	∅	∅	k	r			
∅	∅	u	∅	∅	i	∅	k	l			
∅	d	r	∅	∅	r	∅	k	∅			
∅	d	i	∅	∅	u	∅	∅	r			
∅	d	∅	∅	∅	l	∅	∅	i			
∅	∅	∅	∅	b	i	∅	∅	u			
			∅	b	l	∅	∅	l			
			∅	b	r	∅	g	i			
			∅	b	∅	∅	g	u			
			∅	∅	∅	∅	g	r			
						∅	g	l			
						∅	g	∅			
						∅	∅	∅			

(The functional "zeros" stipulate the functional absence of a filler).

In view of the above distributional results, one may categorically emphasize that all the positions in the sectional model are fillable by the constituent phonemes of the given clusters in Sets "1" and "2". In other words, there is no functional possibility or necessity for contemplating the establishment of any archiposition. (It should be pointed out that the above conclusions are relevant to the succeeding Chapter which deals with the distribution of the consonant phonemes and archiphonemes of S.E. and their major realizations).

However, the situation is entirely different with respect to the clusters mentioned in Set "3". For here, clusters which demonstrate a capability to comply with an underlying structure of the form:-



(where "X" stands for any phoneme in positions "pre-e" (3') and "e2" (1'))

are neither attested nor considered well-formed in S.E. The maximum attested clustering involving, for instance, a /labial, fricative/ or an /apical, nasal/ pre-nuclearly seems to be always restricted to either of two specific forms, i.e.

1- /s \longrightarrow $\left\{ \begin{array}{l} \text{labial, fricative} \\ \text{apical, nasal} \end{array} \right\} /$ (see Set "4")

$$2- \quad / \left\{ \begin{array}{l} \text{labial, fricative, lenis;} \\ \text{labial, fricative, fortis;} \\ \text{apical, nasal;} \end{array} \right\} \longrightarrow \underline{X}/$$

(For the actual values of "X" in relation to the preceding phonemes, the reader is referred to the attested clusters of Set "3").

If the attested clusters of Set "3" are now mapped onto the pre-nuclear sectional model, we get the following distributional information:-

	<u>E</u>	
pre-e	e1	e2
(<u>3'</u>)	(<u>2'</u>)	(<u>1'</u>)
f		i
f		r
f		l
v		i
v		r
θ		i
θ		r
θ		u
n		i
h		i
h		u
<u>v</u> <u>s</u>		r
<u>v</u> <u>s</u>		u
<u>v</u> <u>s</u>		m

It is obvious from the above diagram that the positional occurrence of /f, v, θ, n, h, v/s/ is admittedly indeterminate.

It is not clear whether they should be located non-arbitrarily in position "pre-e" (3'), or in position "el" (2').

Distributionally speaking, they belong to neither, simply because,

- 1- no element has been attested to precede any of them (i.e. in pos. pre-e (3')) in the given contexts;
- 2- filling pos. pre-e (3') with / \emptyset / is not possible since it implies that pre-nuclear clusters of the type $\bar{x}/s\bar{s}r/$, $\bar{x}/s\theta u/$, $\bar{x}/shi/$, to mention but a few, are well-formed and self-contained in S.E., which is a false assumption;
- 3- no element has been attested as intervening between them and any of their succeeding elements in the given clusters, i.e. forms of the type $\bar{x}/f\bar{x}i/$, $\bar{x}/\theta\bar{x}r/$, $\bar{x}/\bar{v}\bar{x}m/$, $\bar{x}/h\bar{x}u/$, to mention but a few, are precluded by the phonological rules of S.E.

In view of the above, the only functional solution which conforms properly with the three major criteria of "consistency", "adequacy" and "simplicity" is to establish an archiposition to accommodate /f, v, θ , n, h, \bar{v} /. As explained in PART I, Chapter 7, this proposed archiposition results from the suspension of contrastive function between the element standing in position "pre-e" (3') and that standing in position "el" (2'). This specific archiposition will be represented by the symbol "E¹". The reason why we shall basically operate with two capital letters only (with numbers superscripted) to signify archipositions may be attributed to the fact that the more capital letters are used in such a context, the greater

becomes the possibility of confusing them with archiphonemes. (Obviously, this demonstrates a clear-cut case of "adequacy of symbolization"). Consequently,

"E" will be used to designate all pre-nuclear archipositions, and, "Z" will be used to signify the post-nuclear ones.

However, before we start assessing the situation concerning the clusters of Set "4", it is worth pointing out that whenever an /apical, fricative/ element is succeeded (in the pre-nuclear section of the frame) by a "semi-vowel" in position "e2" (1'), then the normal representation of it is that of an archiphoneme, i.e. /θ/. On the other hand, if position "e2" (1') is filled by a "zero", then either of the two /apical, fricative/ phonemes, i.e. /e/ and /ʃ/, may occur in archiposition "E¹". (See "Neutralization-rule 8" in Chapter 2).

Let us now examine the distributional characteristics of the two clusters in Set "4". The best way to perform this task and at the same time obtain correct distributional conclusions is by mapping the clusters in question onto the pre-nuclear sectional frame in the following way:-

	<u>F</u>	
pre-e	e1	e2
<u>(3')</u>	<u>(2')</u>	<u>(1')</u>
s		F
s		n

As the results of the above distribution indicate, the positional allocation of the elements which are situated in

the middle (between pos. "e1" (2') and pos. "e2"(1')) is equally indefinite and inconclusive. Put differently, none of the two elements can be assigned non-arbitrarily - and in fact not without direct inconsistency with the data, - to either of the two given positions, i.e. the hypotheses of assigning them to either one or the other of the two positions are refuted. They both imply something that is manifestly not true in S.E., namely, that "Ø" can be replaced by some phoneme. This tacitly implies that:-

- 1- no phoneme is allowed to succeed /F/ or /n/ in pos. "e2" (1'), i.e. clusters of the form /sFX/ or /snX/ are not well-formed in S.E.
- 2- no phoneme is attested to intervene between the constituent members of any of the given clusters, i.e. clusters of the form /sXF/ or /sXn/ are precluded by the phonological rules of the language.

In consequence, we establish a second pre-nuclear archiposition, i.e. "E²", to accommodate the two elements /F/ and /n/. The neutralized terms of this archiposition are pos. "e1" (2') and "e2" (1').

Before this section could be brought to its end, the pre-nuclear positional distribution of the phonemes mentioned in Sets "5" and "6" should be properly investigated.

Investigating the positional allocations of the elements in Set "5" does not seem to pose any problems since none of the elements involved has been attested to demonstrate a capability for combining with other elements in the pre-nuclear

section of the established model. In other words, combinational possibilities of the form $/\underline{y}xx/$, $/x\underline{y}x/$, $/xx\underline{y}/$, $/x\underline{y}/$ and $/\underline{y}x/$ are not only not attested but are in fact rejected by the phonological rules of S.E. (Note that the same applies to $/z/$). Accordingly, the most consistent and adequate solution to the positional occurrences of phonemes $/\underline{y}, z/$ would be the establishment of a third archiposition. This archiposition, whose neutralized terms are positions "pre-e" (3'), "e1" (2') and "e2" (1'), will be represented by the symbol "E³".

As for the pre-nuclear phonological distribution of the clusters which are classified in Set "6", the situation is admittedly more complicated and problematic because we are dealing here with clusters of two elements, each, and not with single elements (as it has been the case with respect to the information given in Set "5"). Obviously, the problem could never have arisen hadn't the monophonemic nature of the two so-called "semi-clusters" $/t\underline{y}/$ and $/d\underline{y}/$ been challenged and refuted. This being the case, one should subsequently be prepared to resolve this problem in a consistent and adequate manner. The best approach to deal with the issue in hand is by examining the results of mapping the two clusters onto the pre-nuclear sectional model in the following fashion, noting especially that the "long solid lines" signify the established archipositions and each of the "lower-case letters" (alongside each section of the diagram) represents a single solution:-

	<u>G</u>		
	pre-e	e1	e2
	(3')	(2')	(1')
"a"	{ <u>X</u> <u>X</u>	t d	S̄ S̄
"b"	{ t d t d	X̄ X̄ S̄ S̄	S̄ S̄ X̄ X̄
"c"	{ t d	S̄ S̄	
"d"	{ <u>t</u> <u>d</u>		S̄ S̄
"e"	{ <u>tS̄</u> <u>dS̄</u>		

On functional examination of the given information, one may very easily reject the proposed solutions which are indicated alongside "a" and "b" for clashing with two of the previously formulated basic descriptive statements, i.e.

a- the only occupants of position "pre-e" (3') are /s/ and /∅/;

and, b- the only elements which have so far been attested to figure in position "e2" (1') are /i, r, u, l, m/, and no others.

Accordingly, one can not with a substantial degree of certainty and accuracy allocate the immediate constituent phonemes of the two clusters /t^v/ and /d^v/ to any of the three established pre-nuclear positions as options "a" and "b" suggest. (Note that the consistency and adequacy of the foregoing statement could be consistently maintained as long as the very marginal types of pre-nuclear cluster - which are classified in "Footnote 1" - are continuously excluded). Moreover, the same argument which has been used against the manipulation of the solutions in "a" and "b" may also be used - as evidence - to refute the consistency and adequacy of the proposed alternatives in "c" and "d", as well. Basically, these latter alternatives seem to advocate either the assignment of /^v/ to archiposition "E²" (proposal "c"), or the allocation of the two phonemes /t/ and /d/ to archiposition "E¹" (proposal "d"). Needless to say that whichever option one is prepared to accept in this respect, it will only be arbitrarily and inconsistently conceived and formulated.

As a matter of logical fact, the preclusion of the foregoing four proposed solutions virtually leaves us with only one possibility to investigate, i.e. the assignment of the entirety of /t^v/ and /d^v/ -qua complex clusters - to the previously established archiposition "E³". It will presently be demonstrated that this solution not only happens to be more consistent and more adequate than all the other alternatives, but it also seems to be sufficiently corroborated, justified and in fact predicted by many theoretical tenets in A.F. For if the wording of the definitions of the notions "phoneme",

"position" and "archiposition" (c.f. Chapters 2 and 7 of PART I) are functionally re-examined, we may note the following logical remarks:-

- a- the analysis of /t^V/ and /d^V/ into their "immediate constituents" does not coincide with their final analysis into "ultimate constituents". (Note that this theoretical stand lends further credence to our "biphonematic" analysis of the clusters in question into two phonemes each);
- b- though the definition of the notion "position" appears not to tolerate the occurrence of two phonemes in one position (a stipulation which is only consistent with the concept of "immediate constituency", but not with that of the concept of "ultimate constituency"), it does not in fact contain any restrictions which would prevent such an occurrence from ever taking place in an archiposition (which ipso facto represents the suspension of opposition between two or more positions);
- c- unlike the definition of the notion "position", the way the definition of the concept of "archiposition" is conceived and formulated in A.F. renders the concept in question highly insensitive and neutral with respect to the number of elements which could virtually occur and alternate within its scope.

Now, if the above abstracted logical remarks are conflated onto the conclusions which have been obtained a short while ago from investigating the proposed solutions in "a", "b", "c" and "d", we may conclude that the two clusters /t^V/ and

/dS/ should, by logical inference, be unequivocally assigned to archiposition "E³"; and they do.

However, it is worth commenting in passing - without laying much emphasis on the findings of the subsequent discussion - that the consistency and adequacy of allocating both /tS/ and /dS/ to archiposition "E³" seems to be corroborated by the type of relationship which is attested to hold between the constituent elements of each cluster, i.e. that of "co-ordination" within the scope of the archiposition in question. Originally, the relational concept of "co-ordination" - which is conceived by Mulder (1974, et al) to be of a purely syntactic nature - is rigorously defined as:-

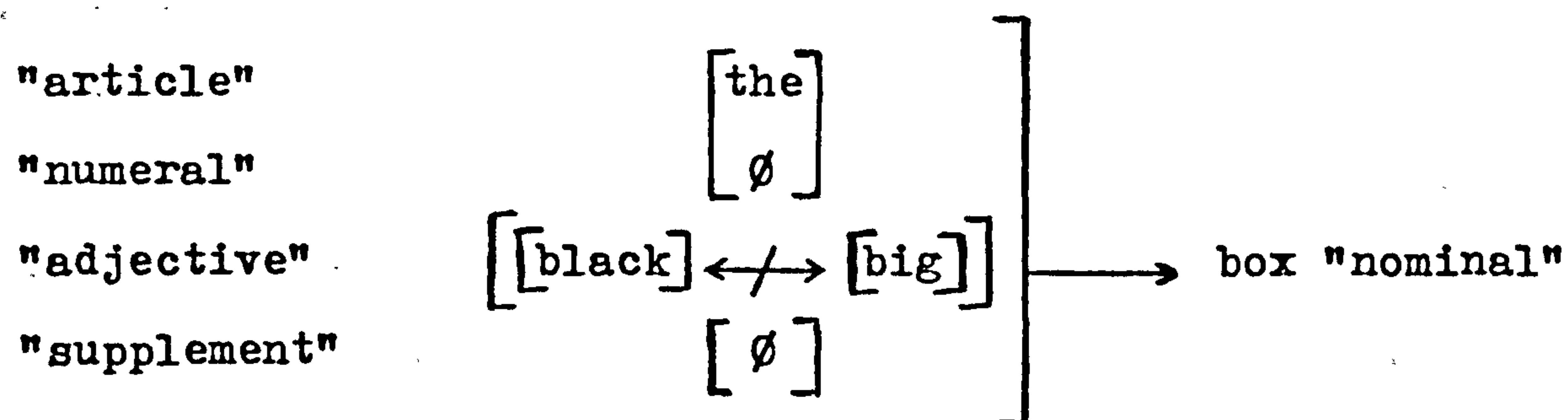
Def. 11b "Relation of co-ordination" for "direct tactic (by implication: symmetrical and, therefore, simultaneous) relation of mutual functional independency". Alternative definition "direct tactic relation of bilateral functional independency",

and further explained in the following terms:-

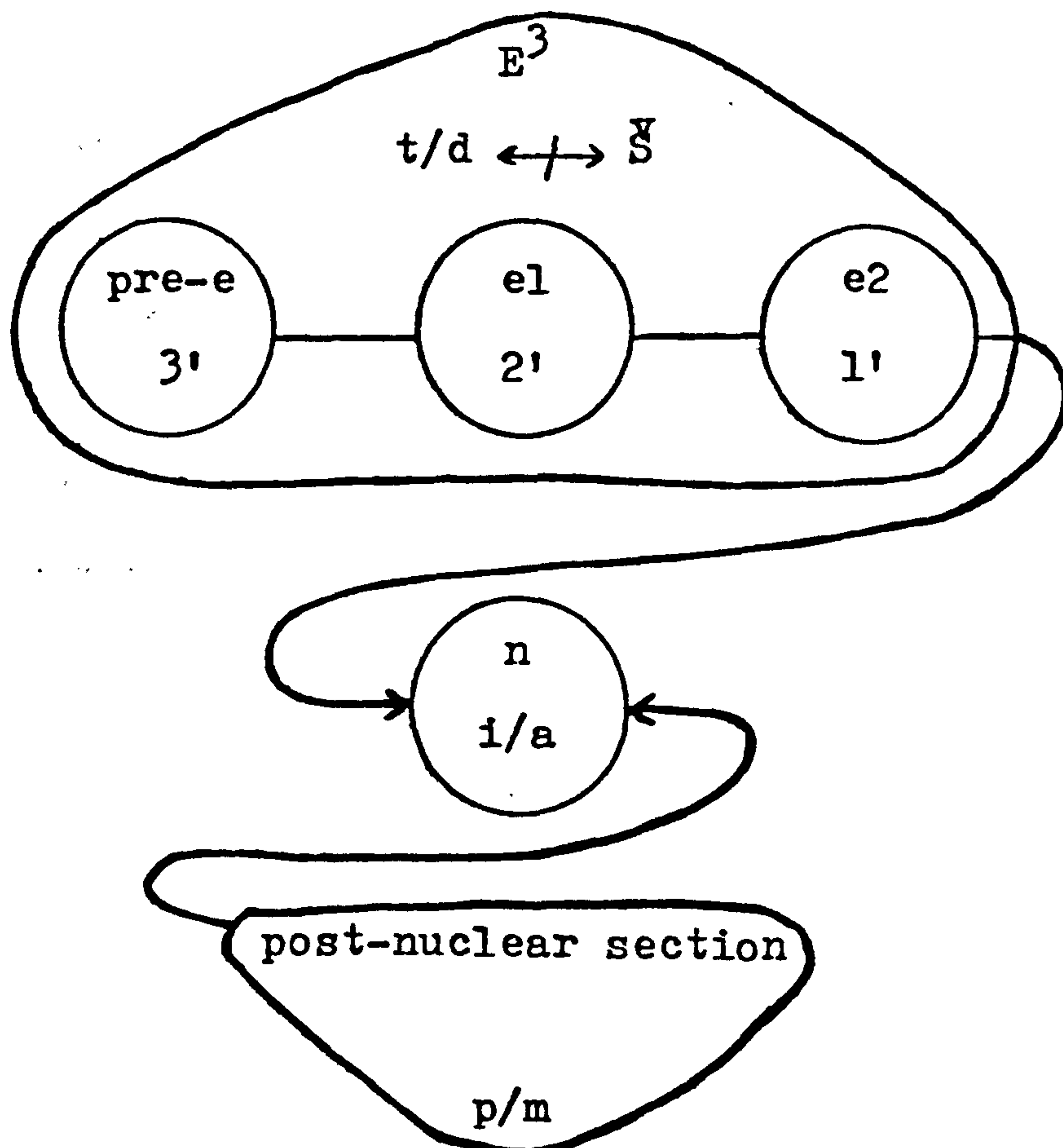
"If a and b are in a direct tactic relation, and a for its tactic function (i.e. position) independent of b, and vice versa, a and b are said to be co-ordinated (in symbols: a \longleftrightarrow b)".

In short, this theoretical conception has consistently been applied in A.F. descriptive accounts to cases which demonstrate distributional uncertainty and indeterminacy. Among the most obvious cases where the application of the concept of

"co-ordination" has successfully contributed towards providing a consistent and adequate solution is the one which deals with the distribution of the constituents of "black big" in the nominal syntagm "the black big box", for instance, to their respective positions in the model which underlie the syntagm in question. According to Mulder (ibid), the syntactic representation of the "nominal" syntagm "The black big box" should consequently be as follows:-

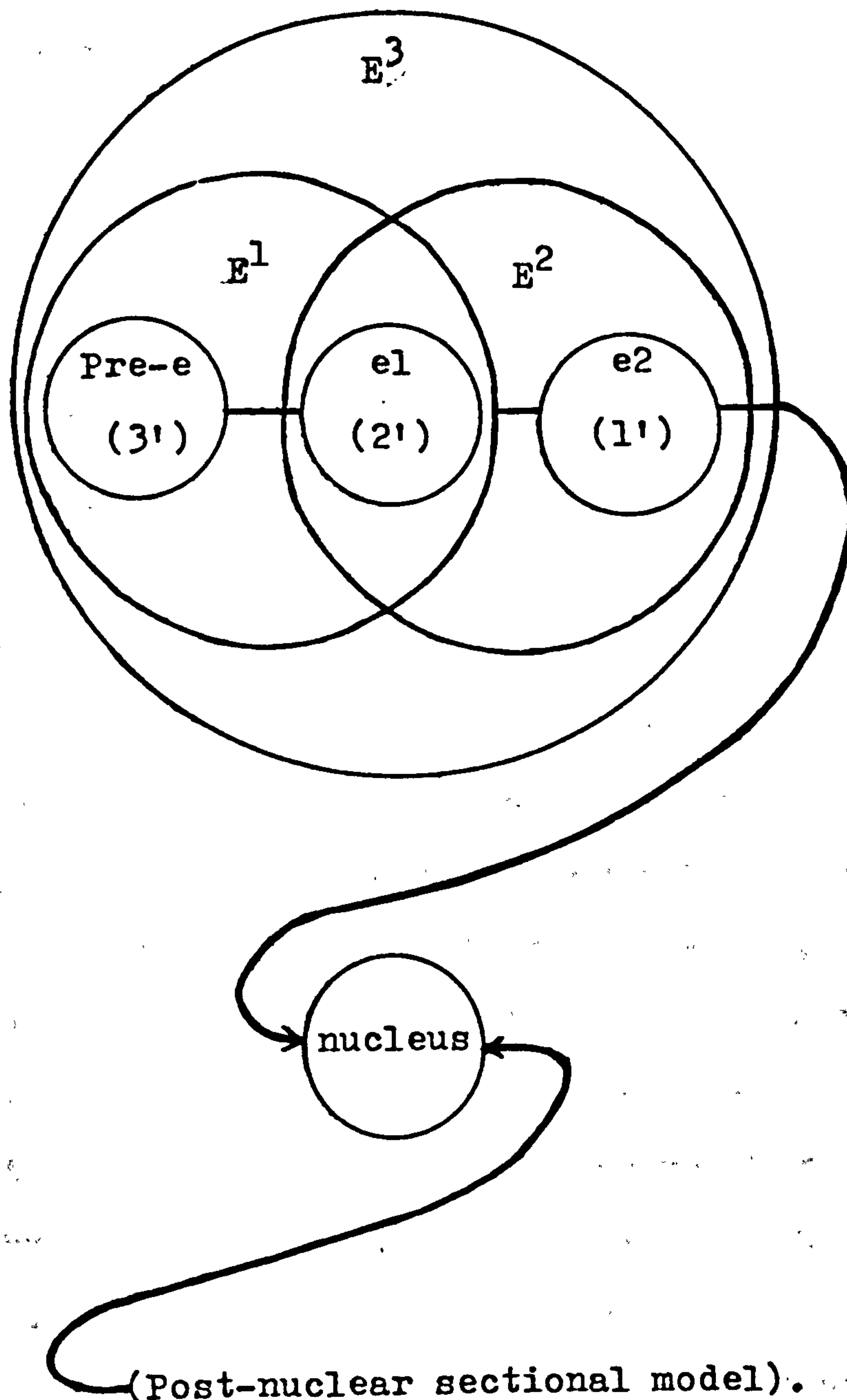


By analogy, if the foregoing logic is extended and applied to the distribution of /t^v/ and /d^v/ in phonotactic constructions like /t^vip/ and /d^vam/, "chip" and "jam", respectively, we may get the following picture:-



Significant enough, though the identification and establishment of a "co-ordination" relationship between the constituents of /t[̄]/ and /d[̄]/ is implicitly and explicitly favoured by some A.F. and non-A.F. linguists (e.g. S. Hervey, D. Roberts, to mention but a few), the founder of the theory of A.F. - as far as we know - is bitterly opposed to conflating syntactic relations onto phonological constructions. The reasons and the exact nature of these differences of opinion do not concern us in this context as we do not intend to pursue the matter beyond this point. Suffice it to point out that in view of the absence of any extensive and mature study of the issue, we consider the significance of the identification of a "co-ordination" relationship between the constituents of /t[̄]/ and /d[̄]/ to assume the status of a supplementary tentative evidence which could only be used in association with the previously cited logical conclusions for the purpose of assigning /t[̄]/ and /d[̄]/ - as phonotactic complexes - to archiposition "E³".

Summing up, one may emphasize that a consistent and adequate description of all pre-nuclear clusters in S.E. can be appropriately performed by means of the three original positions and the three established archipositions. The overall picture of the pre-nuclear sectional model - inclusive of the recent modifications - may now be set up in terms of our proposed method of representing distributional units as follows:-



(Post-nuclear sectional model).

(Figure 7)

In view of the preceding discussion and on the basis of the above sectional model, the following "position classes"⁵ can be established:-

Position class "pre-e" (3') includes /s, \emptyset /.

Position class "e1" (2') includes /T, t, d, P, p, b, K, k, g, m, \emptyset /.

Position class "e2" (1') includes /r, i, u, l, m, \emptyset /.

Position class "E¹" includes /f, v, θ, ʃ, e, n, h, ʒ, ø/.

Position class "E²" includes /n, F, ø/.

Position class "E³" includes /ʒ, z, tʒ, dʒ, ø/.

Post-Nuclear Clusters in Relation to Their Underlying Post-Nuclear Sectional Model:-

As phonemes in the post-nuclear section are more liberal in their combinability, and the clusters they form are ultimately more elaborate and diversified than their pre-nuclear counterparts, the establishment of post-nuclear "archipositions" is admittedly engulfed in problems and controversy. It will presently be seen that the sound logical justifications which contributed towards the identification and establishment of pre-nuclear archipositions are barely noticeable in the post-nuclear section. This, however, should not be taken to mean that the outlined theoretical approach for the establishment of archipositions in PART I, Chapter 7, is erroneous, but that the combinational possibilities of the S.E. phonemes post-nuclearly are so complicated that the formulation of strictly precise logical decisions/solutions to regulate the phenomena does not seem to be feasible in the strictest possible sense of the word. Since no decisive solutions/decisions could be formulated, appropriate (though relatively arbitrary) proposals may consequently be granted access to facilitate the descriptive account. A brief discussion of the post-nuclear combinational possibilities and distributional occurrences of phoneme /l/, for instance, will bear out our contention most adequately. The discussion, it should be emphasized, is ultimately based on a thorough

investigation of the facts of S.E. Its results, the reader should be warned, assume the status of temporary generalizations since they are not meant to account for the specifics of particular cases. These will be dealt with in a succeeding Chapter. However, in order to regulate and simplify the argument, it is worth approaching the issue from the view_{point} of the underlying post-nuclear types of structure. Underneath each given type, the phonemes which have been attested to occur in each of the respective positions will be indicated. Among themselves, the phonemes of any one position form a "position class" and are enclosed within "braces", i.e. { }. Members of any one "position class" are allowed to contract (within certain limits) positive and meaningful relationships with members of "preceding" and/or "succeeding" "position classes" to form clusters. (The reader may, in this respect, compare the resultant clusters with those which have been attested and classified in the "Supplement" to this Chapter). Note also that each "X" in the given underlying structures theoretically signifies a given set of one or more phonemes, "n" stands for "nucleus" and the "arrows", i.e. "←", represent "dependencies". Furthermore, "slant lines", i.e. / /, are used in the following formulae to enclose the phonemes as well as the attested cases of dependency. Thus, we have:-

1- $n; \leftarrow / 1 \leftarrow \emptyset /$, e.g.

$n; \leftarrow / \{1\} /$

2- $n; \leftarrow / 1 \leftarrow \underline{X} /$, e.g.

$$n; \leftarrow / \{1\} \leftarrow \left\{ \begin{array}{ccccc} s & z & t & d & S \\ g & k & p & b & \theta \\ v & f & m & n & K \end{array} \right\} /$$

3- $n; \leftarrow / \underline{X} \leftarrow l/$, e.g.

$$n; \leftarrow / \left\{ \begin{array}{ccccc} n & \eta & m & f & v \\ S & Z & z & s & i \\ b & p & d & t & r \\ k & g & e & j & u \end{array} \right\} \leftarrow \{1\} /$$

4- $n; \leftarrow / l \leftarrow \underline{X} \leftarrow \underline{X}/$, e.g.

$$n; \leftarrow / \{1\} \leftarrow \left\{ \begin{array}{ccccc} t & d & b & p & g \\ n & m & s & z & \theta \\ k & S & f & v & \end{array} \right\} \leftarrow \left\{ \begin{array}{ccccc} m & n & S & \theta & l \\ z & s & d & t & S \\ K & T & S & & \end{array} \right\} /$$

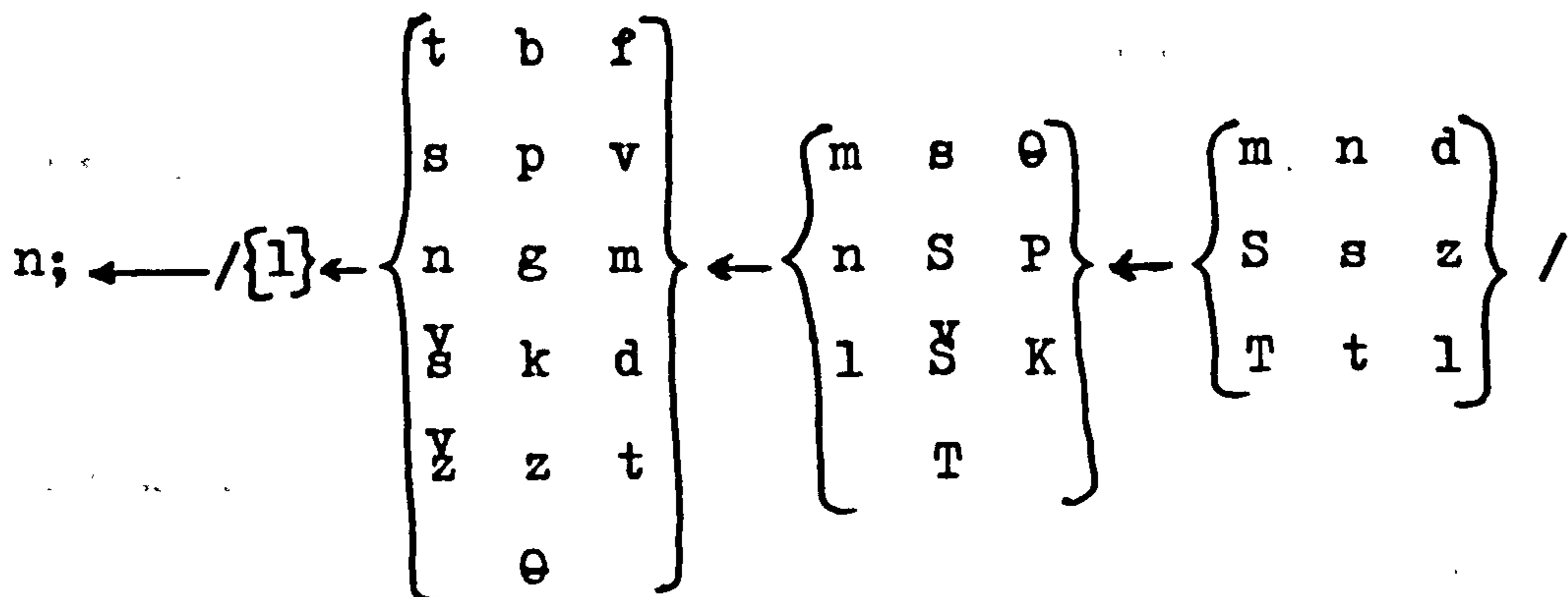
5- $n; \leftarrow / \underline{X} \leftarrow l \leftarrow \underline{X}/$, e.g.

$$n; \leftarrow / \left\{ \begin{array}{ccccc} b & p & S & d & t \\ e & u & r & i & n \\ m & \eta & k & g & s \\ z & f & v & & \end{array} \right\} \leftarrow \{1\} \leftarrow \left\{ \begin{array}{ccc} m & K & t \\ n & \theta & d \\ S & s & p \\ z & T & \end{array} \right\} /$$

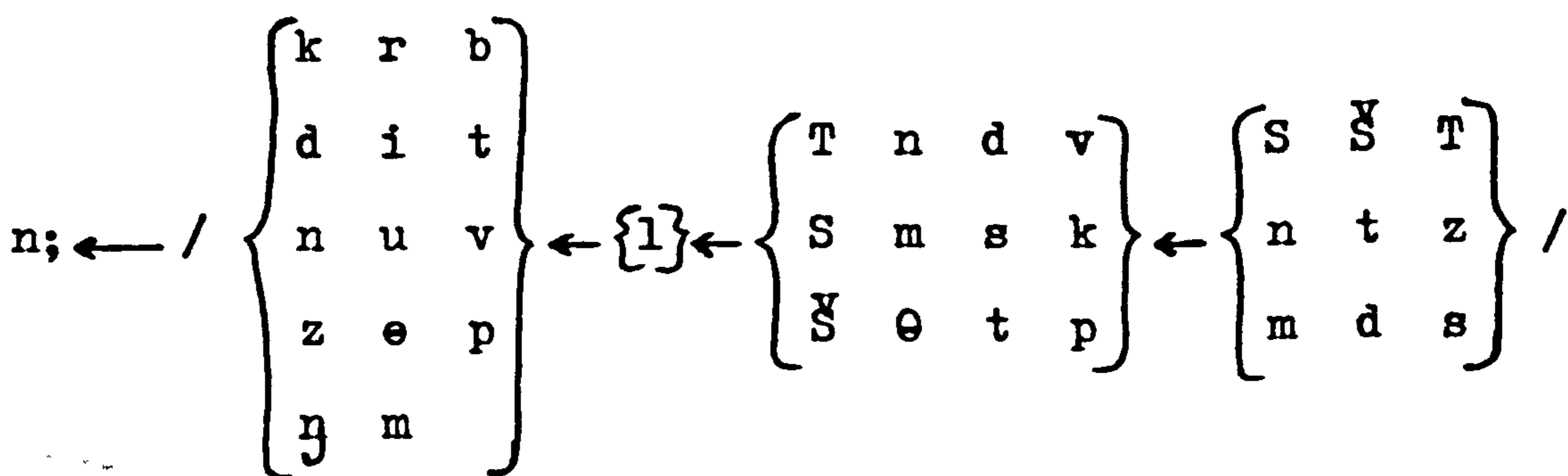
6- $n; \leftarrow / \underline{X} \leftarrow \underline{X} \leftarrow l/$ e.g.

$$n; \leftarrow / \left\{ \begin{array}{ccccc} u & r & i & t & d & g \\ N & n & p & k & S & Z \\ \eta & m & l & s & f & z \end{array} \right\} \leftarrow \left\{ \begin{array}{ccccc} d & s & z & n & t \\ Z & S & v & f & F \\ b & p & g & k & K \\ S & S & m & j & e \\ T & \theta & P & & \end{array} \right\} \leftarrow \{1\} /$$

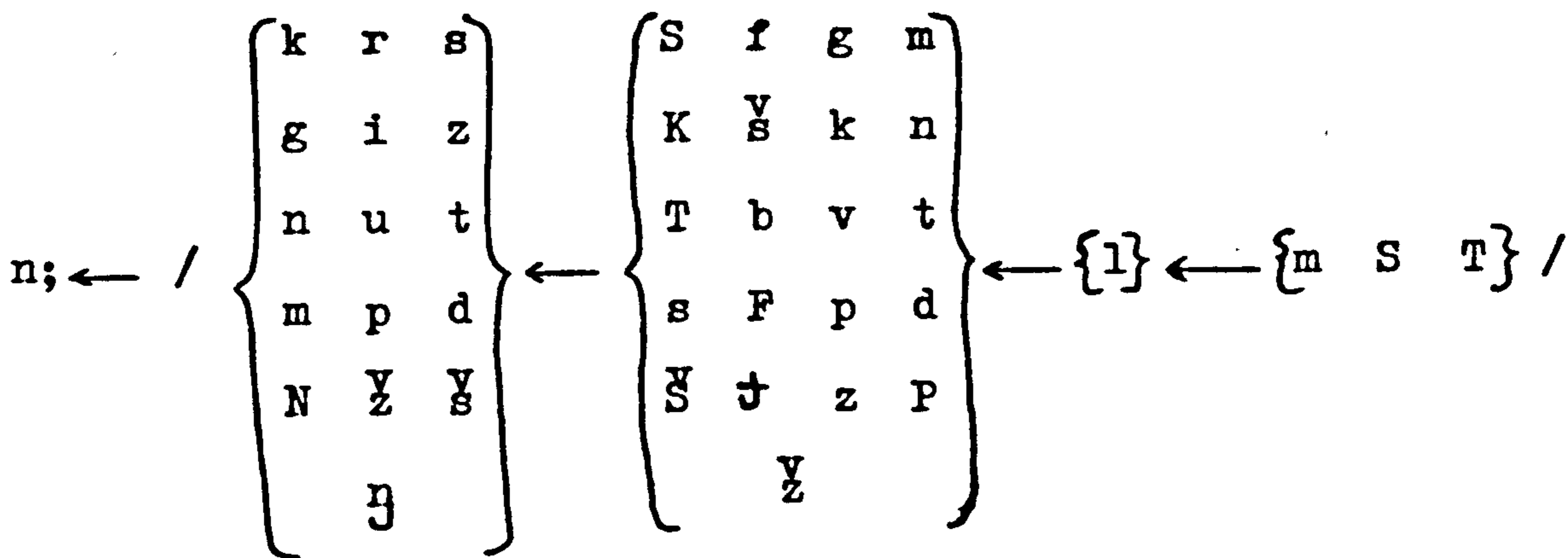
7- $n; \leftarrow / \underline{l} \leftarrow \underline{X} \leftarrow \underline{X} \leftarrow \underline{X} /$, e.g.



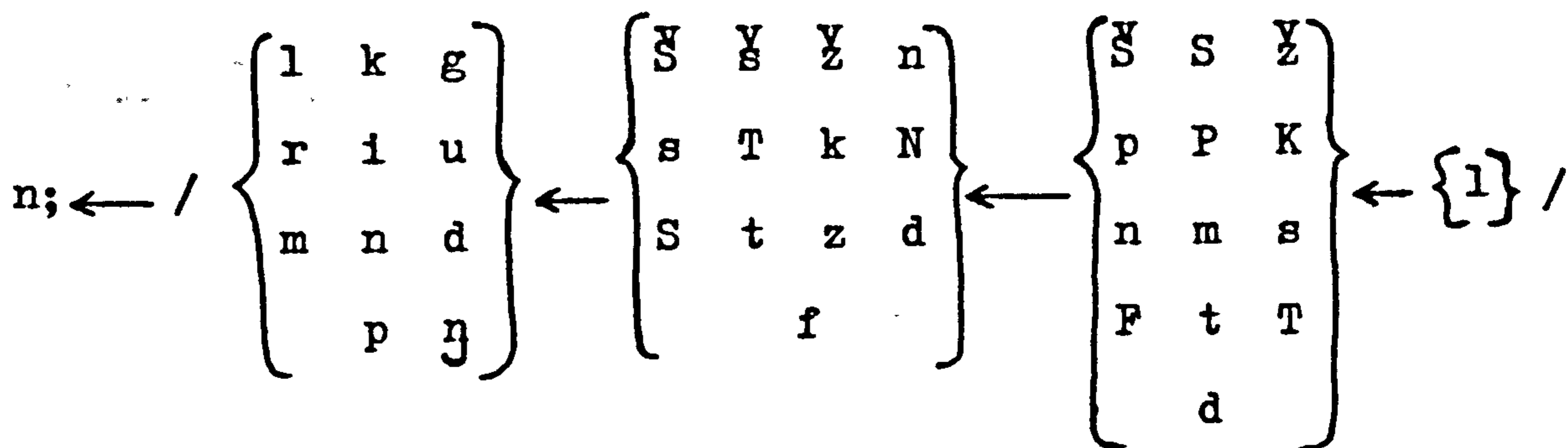
8- $n; \leftarrow / \underline{X} \leftarrow l \leftarrow \underline{X} \leftarrow \underline{X} /$, e.g.



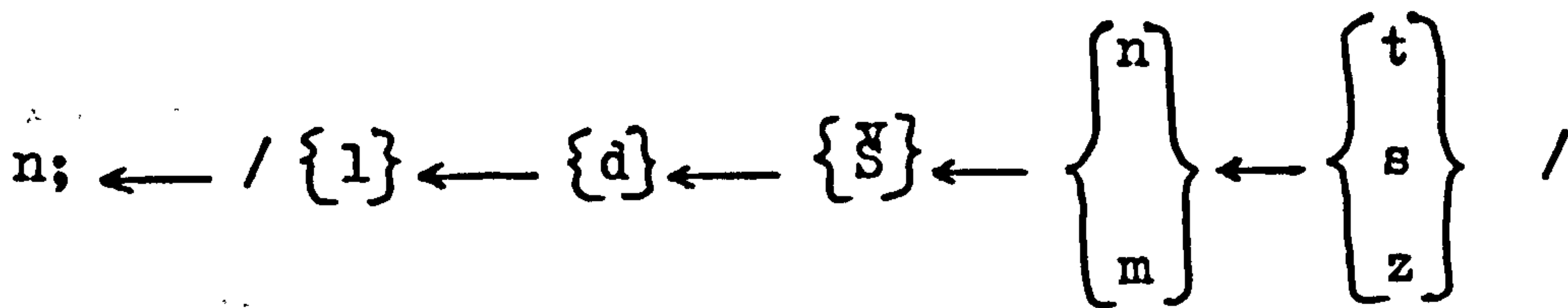
9- $n; \leftarrow / \underline{X} \leftarrow \underline{X} \leftarrow l \leftarrow \underline{X} /$, e.g.



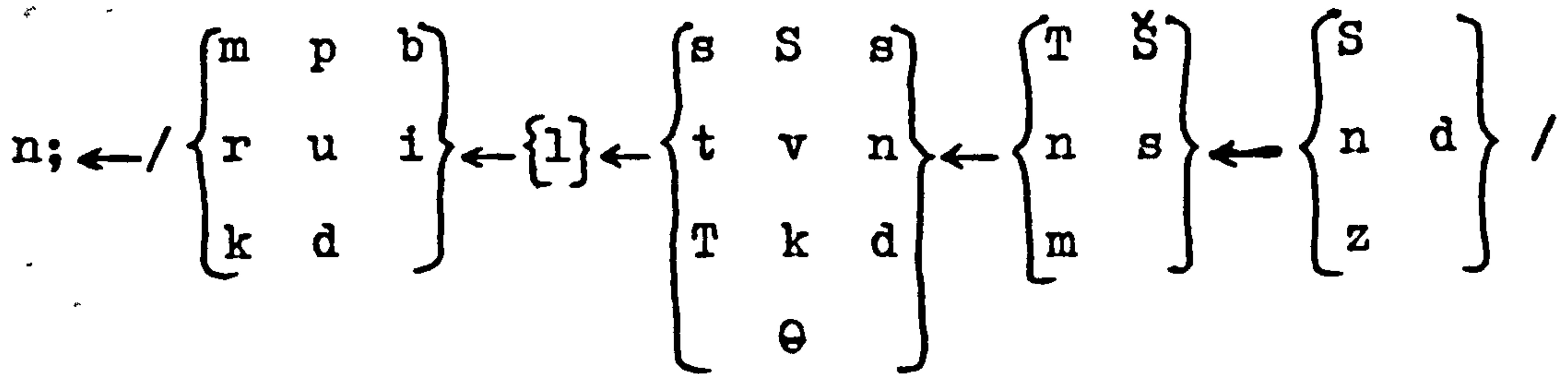
10- $n; \leftarrow / \underline{X} \leftarrow \underline{X} \leftarrow \underline{X} \leftarrow l /$, e.g.



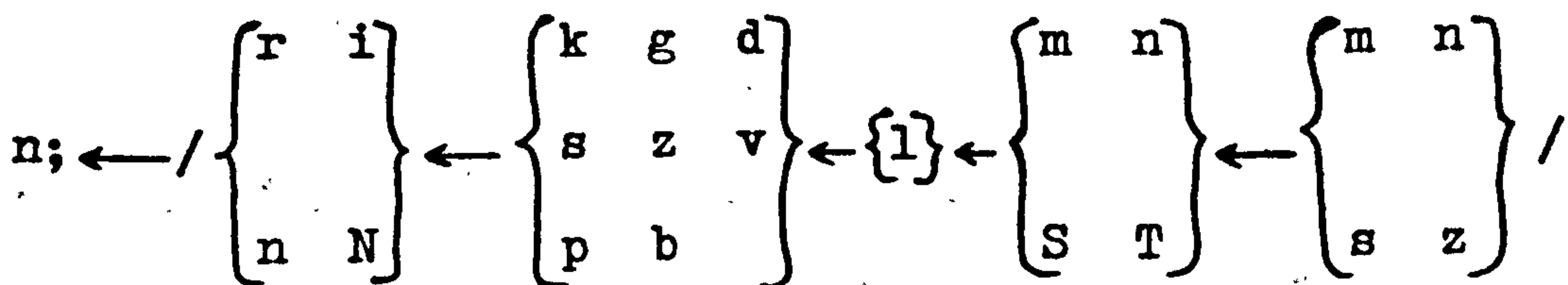
11- n; ← /l ← X ← X ← X ← X/ , e.g.



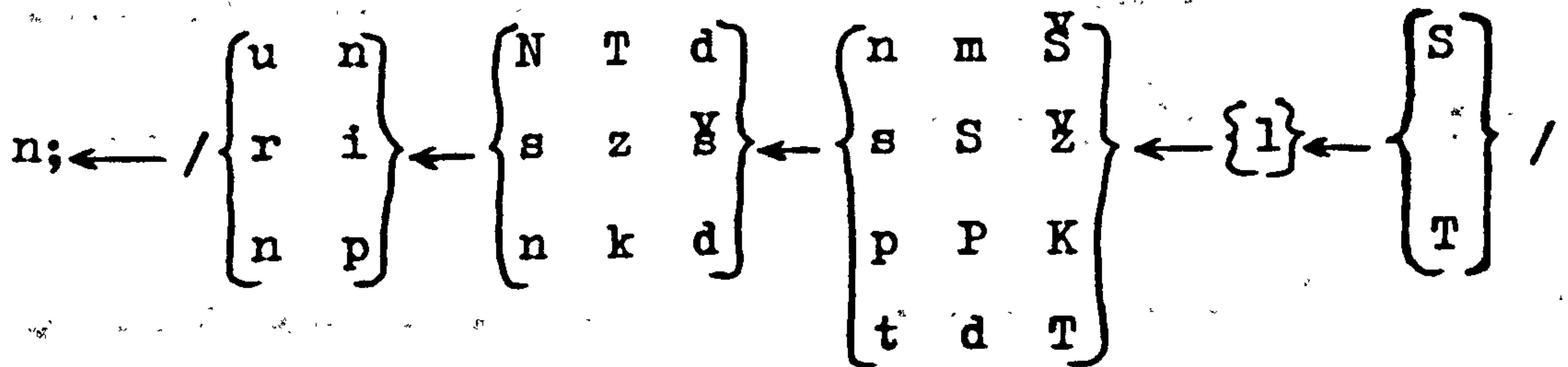
12- n; ← /X ← l ← X ← X ← X/ , e.g.



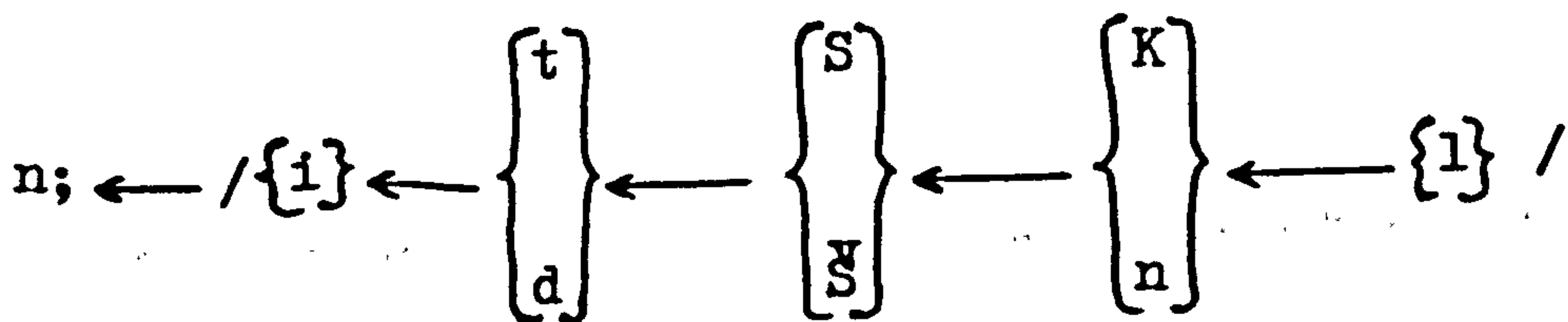
13- n; ← /X ← X ← l ← X ← X/ , e.g.



14- n; ← /X ← X ← X ← l ← X/ , e.g.



15- n; ← /X ← X ← X ← X ← l/ , e.g.



16- $n; \leftarrow / \underline{l} \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} /$, e.g.

$n; \leftarrow / \{l\} \leftarrow \{d\} \leftarrow \{S\} \leftarrow \{n\} \leftarrow \{s\} \leftarrow \{T\} /$

17- $n; \leftarrow / \underline{x} \leftarrow l \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} /$, e.g.

$n; \leftarrow / \begin{Bmatrix} u \\ r \end{Bmatrix} \leftarrow \{l\} \leftarrow \begin{Bmatrix} n \\ s \\ t \end{Bmatrix} \leftarrow \begin{Bmatrix} d \\ T \\ S \end{Bmatrix} \leftarrow \begin{Bmatrix} S \\ n \end{Bmatrix} \leftarrow \begin{Bmatrix} n \\ z \end{Bmatrix} /$

18- $n; \leftarrow / \underline{x} \leftarrow \underline{x} \leftarrow l \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} /$, e.g.

$n; \leftarrow / \begin{Bmatrix} i \\ n \\ N \end{Bmatrix} \leftarrow \begin{Bmatrix} k & b \\ d & g \\ p \end{Bmatrix} \leftarrow \{l\} \leftarrow \begin{Bmatrix} S \\ T \end{Bmatrix} \leftarrow \begin{Bmatrix} n \\ m \end{Bmatrix} \leftarrow \{z\} /$

19- $n; \leftarrow / \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow l \leftarrow \underline{x} \leftarrow \underline{x} /$, e.g.

$n; \leftarrow / \{ \} \{ \} \{ \} \{l\} \{ \} \{ \} /$

20- $n; \leftarrow / \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow l \leftarrow \underline{x} /$, e.g.

$n; \leftarrow / \{i\} \leftarrow \{t\} \leftarrow \{S\} \leftarrow \{K\} \leftarrow \{l\} \leftarrow \{S\} /$

21- $n; \leftarrow / \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow \underline{x} \leftarrow l /$, e.g.

$n; \leftarrow / \{i\} \leftarrow \begin{Bmatrix} n \\ d \end{Bmatrix} \leftarrow \begin{Bmatrix} S \\ S \end{Bmatrix} \leftarrow \{n\} \leftarrow \{t\} \leftarrow \{l\} /$

If the unattestedness of /l/ in a cluster of the type mentioned in "19" is treated as a case of defective distribution, i.e. accidental gap, and if all these types of underlying structure are mapped onto one another, we may

conclude that the phoneme /l/ virtually demonstrates a capability for occurring in all post-nuclear positions.

However, this does not in any way imply that (by comparison) all the other phonemes are endowed with such frequency and freedom of occurrence. Far from it, because if we consider the distribution of the phoneme /p/, for instance, and compare the results with those which are obtained for the phoneme /l/, we shall be able to detect significant differences.

If we now apply the above approach to the treatment of the combinational and distributional possibilities of the phoneme /p/ (exclusive of the archiphoneme /P/), we get the following:-

1- $n; \leftarrow /p \leftarrow \emptyset/$, e.g.

$n; \leftarrow / \{p\} /$

2- $n; \leftarrow /p \leftarrow \underline{X}/$, e.g.

$n; \leftarrow / \{p\} \leftarrow \begin{Bmatrix} S & \emptyset \\ n & m \\ T & l \end{Bmatrix} /$

3- $n; \leftarrow / \underline{X} \leftarrow p/$, e.g.

$n; \leftarrow / \begin{Bmatrix} r & i \\ u & l \end{Bmatrix} \leftarrow \{p\} /$

4- $n; \leftarrow /p \leftarrow \underline{X} \leftarrow \underline{X}/$, e.g.

$n; \leftarrow / \{p\} \leftarrow \begin{Bmatrix} S & \underline{S} & \emptyset \\ n & m & l \\ F & T \end{Bmatrix} \leftarrow \begin{Bmatrix} T & t & d \\ S & s & z \\ n & m & l \end{Bmatrix} /$

5- $n; \leftarrow / \underline{X} \leftarrow p \leftarrow \underline{X} /$, e.g.

$n; \leftarrow / \begin{Bmatrix} u & r \\ i & l \\ N \end{Bmatrix} \leftarrow \{p\} \leftarrow \begin{Bmatrix} n & T \\ F & S \\ n \end{Bmatrix} /$

6- $n; \leftarrow / \underline{X} \leftarrow \underline{X} \leftarrow p /$, e.g.

$n; \leftarrow / \begin{Bmatrix} u \\ r \\ i \end{Bmatrix} \leftarrow \{l\} \leftarrow \{p\} /$

7- $n; \leftarrow / p \leftarrow \underline{X} \leftarrow \underline{X} \leftarrow \underline{X} /$, e.g.

$n; \leftarrow / \{p\} \leftarrow \begin{Bmatrix} S & l \\ T & \theta \\ n & S \end{Bmatrix} \leftarrow \begin{Bmatrix} s & T \\ n & m \\ l & S \end{Bmatrix} \leftarrow \begin{Bmatrix} s & S & z \\ t & d & T \\ l & n \end{Bmatrix} /$

8- $n; \leftarrow / \underline{X} \leftarrow p \leftarrow \underline{X} \leftarrow \underline{X} /$, e.g.

$n; \leftarrow / \begin{Bmatrix} r & i \\ u & N \\ l \end{Bmatrix} \leftarrow \{p\} \leftarrow \begin{Bmatrix} l & S \\ n & T \\ S \end{Bmatrix} \leftarrow \begin{Bmatrix} S & t \\ T & n z \\ d & s \end{Bmatrix} /$

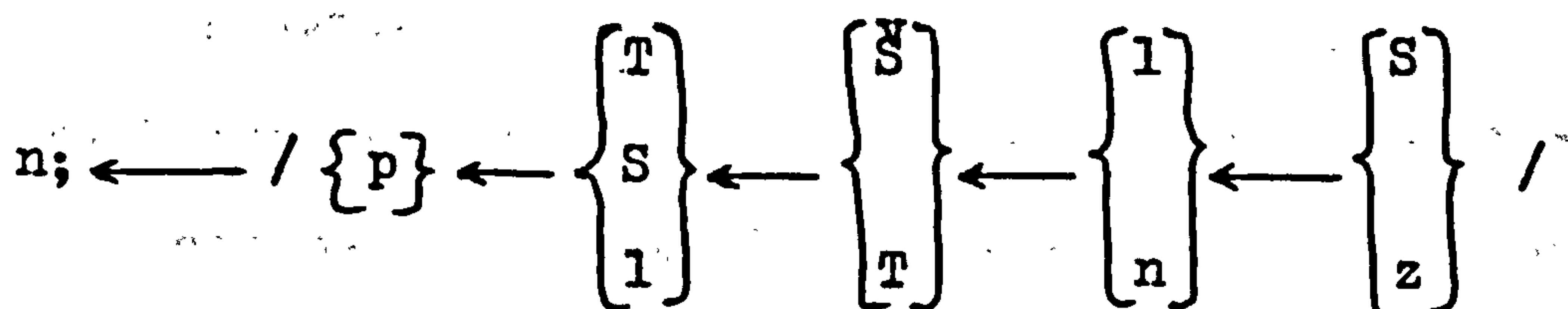
9- $n; \leftarrow / \underline{X} \leftarrow \underline{X} \leftarrow p \leftarrow \underline{X} /$, e.g.

$n; \leftarrow / \begin{Bmatrix} r \\ i \\ u \end{Bmatrix} \leftarrow \begin{Bmatrix} N \\ l \end{Bmatrix} \leftarrow \{p\} \leftarrow \begin{Bmatrix} S \\ n \\ l \end{Bmatrix} /$

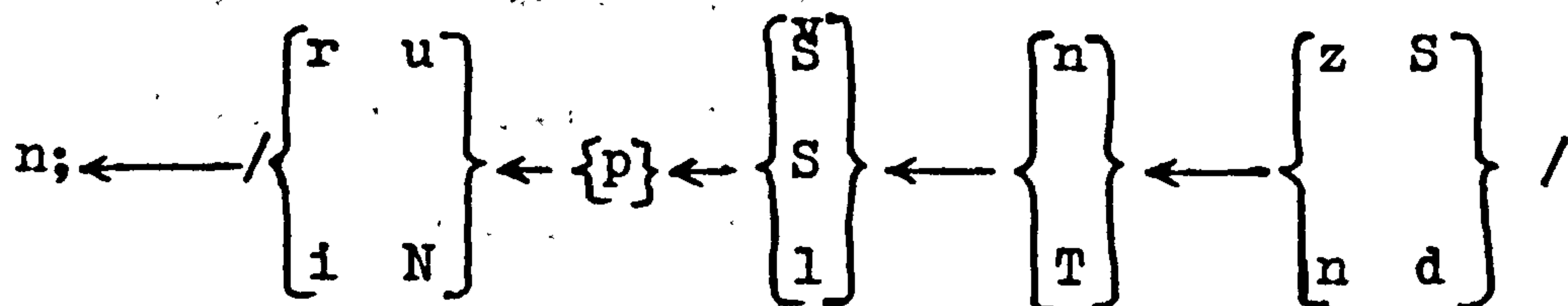
10- $n; \leftarrow / \underline{X} \leftarrow \underline{X} \leftarrow \underline{X} \leftarrow p /$, e.g.

$n; \leftarrow / \{ \} \leftarrow \{ \} \leftarrow \{ \} \leftarrow \{p\} /$

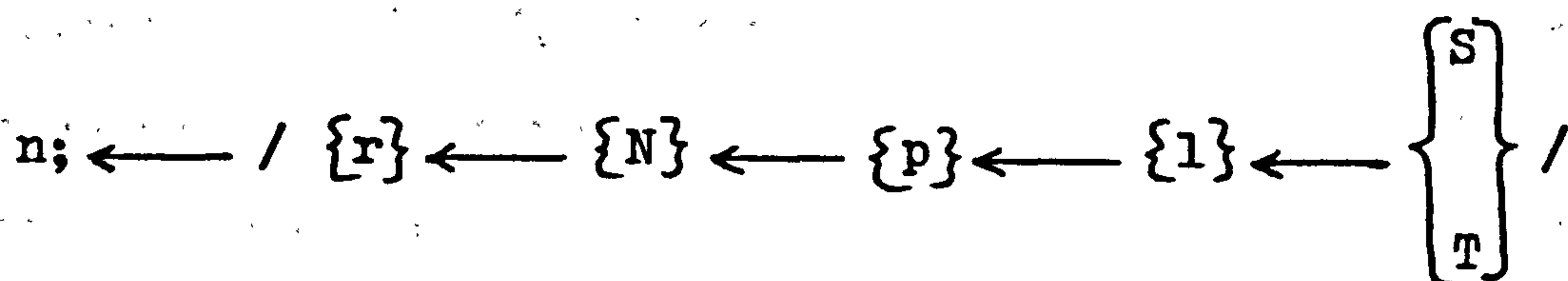
11- $n; \leftarrow / p \leftarrow \underline{X} \leftarrow \underline{X} \text{ --- } \underline{X} \text{ --- } \underline{X} /$, e.g.



12- $n; \leftarrow / \underline{X} \leftarrow p \leftarrow \underline{X} \leftarrow \underline{X} \leftarrow \underline{X} /$, e.g.



13- $n; \leftarrow / \underline{X} \leftarrow \underline{X} \leftarrow p \leftarrow \underline{X} \leftarrow \underline{X} /$, e.g.



Now, if the above results are mapped onto those which have been obtained for /l/, we may draw a number of interesting conclusions; primarily that:-

- 1- Compared with the relative freedom of combinability and occurrence of the phoneme /l/, the manoeuverability of the phoneme /p/ seems to be severely restricted.
- 2- While the phoneme /l/ has been attested to occur in all six post-nuclear positions, it is unlikely that the phoneme /p/ will ever be attested to occur as the fourth element in clusters of the type mentioned in number "10".
- 3- Set against the maximum number of "21" types of combinational possibilities for /l/, is the modest "12"

possibilities for /p/ (that is if type "10" is logically eliminated as inadmissible).

- 4- Irrespective of the discrepancies between the combinational possibilities and distributional occurrences of the two phonemes in question, one may formulate a significant observational statement which applies to both phonemes in the above given contexts, i.e. the larger the cluster, the fewer become the combinational choices.

Though the above conclusions represent generalizations which are primarily obtained from a huge number of attested clusters involving /l/ and /p/, they are incapable of distinguishing between expandable clusters and non-expandable clusters, i.e. between clusters which demonstrate readiness for allowing other elements to intervene between their constituent elements, precede them, or succeed them in a form, and clusters which do not. In certain cases, the addition of an element to a given formal cluster virtually closes the potentiality of the form and prevents any further appendaging, e.g. the cluster /d^vŠ/, for instance, may be expanded to form phoneme-combinations of the following types:-

rd ^v ŠlS	rd ^v Šns	rd ^v Šnd	
id ^v ŠlS	rd ^v Šnt	rd ^v Šnz	
<u>id^vŠnl</u>	<u>id^vŠnt</u>	id ^v Šnd	<u>id^vŠntl</u>
ld ^v Šmz	id ^v Šns	id ^v Šnz	
	ud ^v Šnt	ud ^v Šnd	
	ud ^v Šns	ud ^v Šnz	
	<u>ld^vŠnt</u>	<u>ld^vŠnd</u>	<u>id^vŠnsT</u>
	ld ^v Šns	ld ^v Šnz	

If these phoneme-combinations are mapped onto one another, one may conclude that since the underlined clusters only are capable of being expanded to reach the maximum of "6" phoneme-combinations, the way the other clusters are constructed and the presence of certain final elements at the end of certain formal combinations actually impede them from being expanded beyond specific limits. Accordingly, one has to contemplate establishing archipositions to resolve such problematic issues. However, the first impressionistic conclusions which one gets from re-examining the distribution of the elements in the latter set of phoneme-combinations may be summed up as follows:-

Position "i1" (1) is either occupied by a "semi-vowel" or by an /l/.

Positions "i2" (2) and "i3" (3) seem to be always reserved for /d/ and /S/, respectively.

When /r/ or /u/ are in position "i1" (1), the initial elements of /nt/, /ns/, /nd/, /nz/, /lS/, follow immediately and occupy position "i4" (4) (i.e. without allowing other elements to intervene) leaving the positional affiliation of the second elements, i.e. /t/, /s/, /d/, /z/ and /S/, undecided. This may be taken to mean the establishment of an archiposition to accommodate them. (Note also that when /l/ is in position "i1" (1), the two final clusters which go with it, i.e. /nz/ and /mz/, seem to close the form of the whole cluster).

Yet, reasonable counter-arguments may also be formulated to question the adequacy of an archiposition whose terms are said to include positions "i5" (5) and "post-i" (6). They would

correctly point out that since nothing could ever occur between the elements in position "i1" (1) and position "i2" (2), nor between those of "i2" (2) and "i3" (3), there should be nothing against establishing an archiposition whose terms are "i2" (2) and "i3" (3) to accommodate the elements which immediately follow those in position "i1" (1). These proposals could have been equally adequate had there been no other possibility. In fact, a third such possibility actually exists. It stipulates the establishment of an archiposition to represent the suspension of contrast between "i3" (3) and "i4" (4).

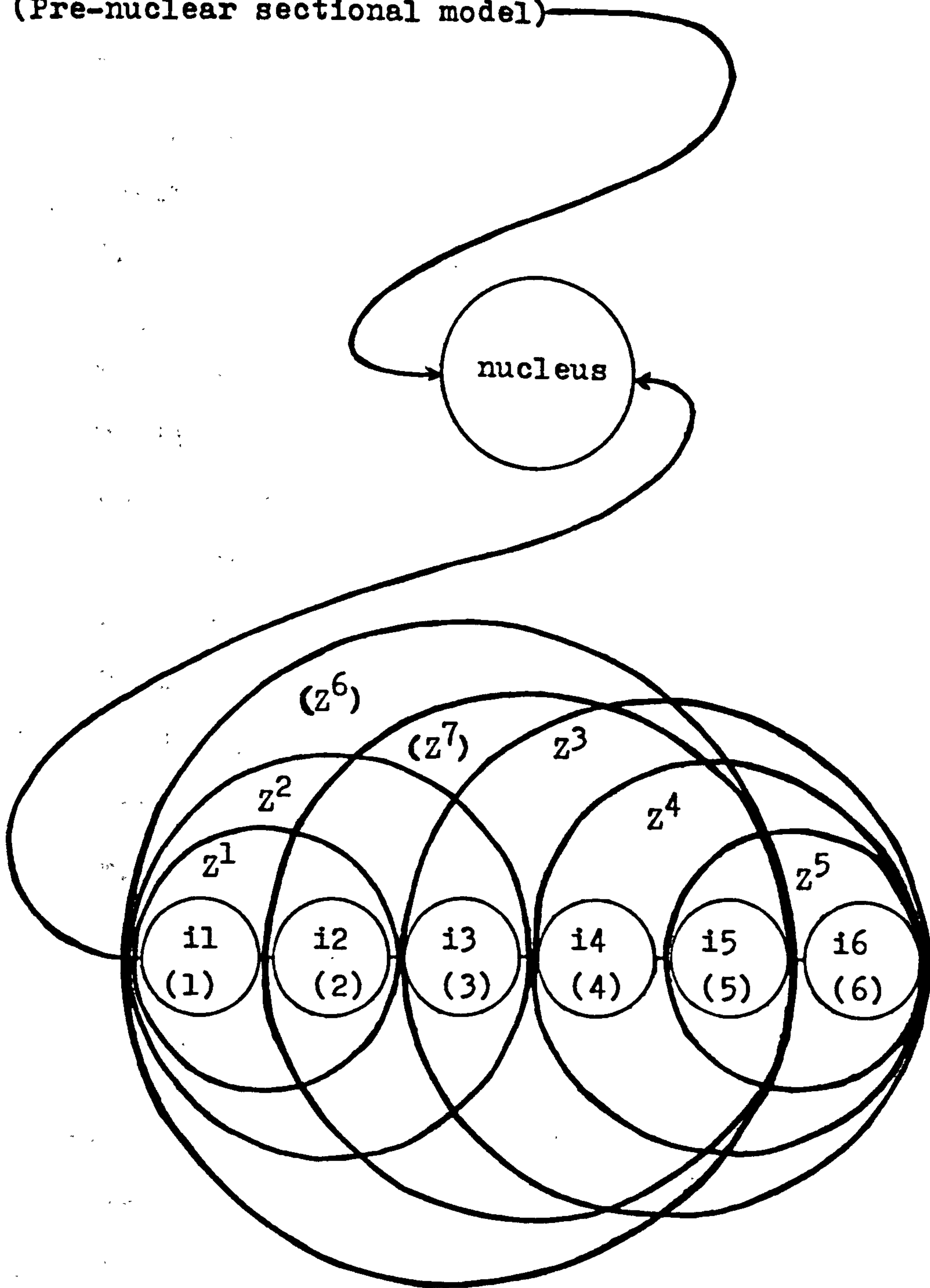
However, irrespective of whichever decision one is likely to adopt, there seems to be no adequate logical justification to support it. In other words, all the proposed solutions are arbitrarily formulated. Yet, since a single choice is required to resolve the problem in order to facilitate the description, one naturally opts for the solution which demonstrates the least degree of arbitrariness and the highest degree of adequacy. Functionally speaking, if all distributional factors are kept equal, an element is as close to the nucleus as the alternatives allow. In consequence, one tends to prefer the first solution because it provides us with some form of (probably weak) reasoning to justify the establishment of an archiposition whose terms are positions "i5" (5) and "post-i" (6).

It should be remarked in this context that the above reasoning applies only to the establishment of all post-nuclear archipositions except those involving the phoneme /ŋ/. For,

the occurrence of the phoneme /ŋ/ in S.E. is always restricted to a position which is nearest to the nucleus,⁶ i.e. to position "il" (1), or to one or more archpositions whose terms necessarily include the aforementioned position. It is also worth pointing out - before we start launching our hypotheses - that the "Supplement" to this Chapter includes what is believed to constitute most of the attested types of post-nuclear phonotactic combinational possibilities in S.E. The ultimate aim of the "Supplement" is to provide the reader with the information which is deemed necessary for the purpose of checking the consistency and adequacy of our descriptive account.

Hence, the overall view of the post-nuclear sectional model - inclusive of the proposed archpositions, of course - may now be set up in terms of the following constructional device as follows:-

(Pre-nuclear sectional model)



(Figure 8)

If all the attested post-nuclear phonotactic combinations (see the "Supplement") are mapped onto the above distributional model, we may set up the following (distributional) position classes:-

Position class "i1" (1) includes /u, i, r, n, N, m, v, f, l, k, g, p, b, d, \bar{v} , t, e, j, \emptyset /.

Position class "i2" (2) includes /P, k, l, t, d, N, v, s, m, n, p, b, g, S, K, \bar{S} , e, z, f, F, T, \bar{S} , θ , \bar{Z} , j, \emptyset /.

Position class "i3" (3) includes /S, n, k, l, \bar{S} , \bar{Z} , \bar{S} , s, T, t, p, d, P, k, v, e, m, θ , g, F, \emptyset /.

Position class "i4" (4) includes /T, d, n, S, s, K, \bar{S} , t, l, m, e, \emptyset /.

Position class "i5" (5) includes /n, S, s, T, l, t, m, \emptyset /.

Position class "post-i" (6) includes /z, T, l, S, n, \emptyset /.

Position class "Z¹" includes / η , \emptyset /.

Position class "Z²" includes / η , \emptyset /.

Position class "Z³" includes /T, \bar{S} , l, F, m, \bar{S} , S, n, z, K, d, p, P, θ , \emptyset /.

Position class "Z⁴" includes /S, z, s, T, d, t, \bar{S} , l, n, m, \emptyset /.

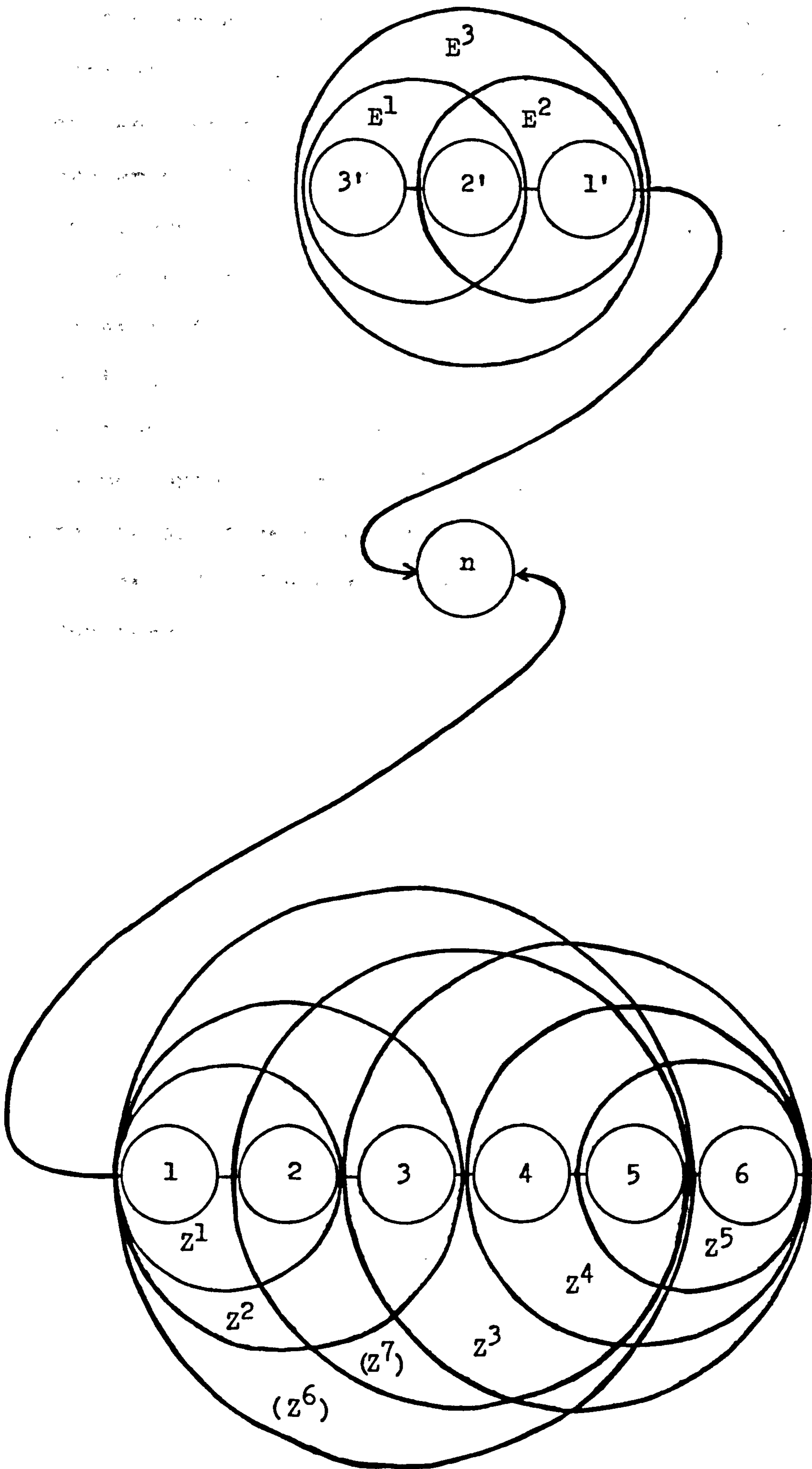
Position class "Z⁵" includes /S, s, z, T, d, t, m, n, \emptyset /.

(Position class "Z⁶" includes /x, \emptyset /.

(Position class "Z⁷" includes /x, \emptyset /.

In conclusion, it should be remarked that the pre-nuclear sectional model or any of its sub-models may combine with the post-nuclear sectional model or any of its sub-models to form underlying structures which would account consistently and adequately for any given attested monophonotagmic form in S.E.

Now, if the three established sectional models - inclusive, of course, of their positions and archipositions - are brought together to construct the ultimate form of the major distributional unit for S.E., we arrive at the following model:-



(Figure 9)

The overall model in Figure 9 may now be pronounced adequate and complete to account for all attested well-formed and self-contained major phonotagms in S.E. However, a proper examination of the facts of the language under consideration is sufficient to tell us that because S.E. is not composed solely of major phonotagms, it may be necessary to establish other types of structure to account for the distribution of certain minor-type phonotagmic constructions which are not qualified, for phonological reasons, to be mapped onto the established basic distributional unit. The nature of these minor-type phonotagms which do not figure in the major frame will be investigated in the following two Chapters.

Notes to Chapter 4.

1- Alongside the fully attested pre-nuclear combinational possibilities in S.E. and their corresponding post-nuclear correlates, there exists in the language a subsidiary subsystem whose pre-nuclear clusters are mainly abstracted from coinages borrowed from other systems. As such, they deserve to be treated separately from the rest of the fully attested data. Only later, the results of the two independent operations may be conflated to create what may be identified as the "extended" phonology of S.E. However, because this work is devoted to the establishment of the phonology of S.E. (in the strictest sense of the word), we find it implausible to complicate the description by integrating lexical items which are not appropriately considered "generalized" English. Accordingly, we shall contend ourselves in the following by merely listing these marginally attested clusters for the convenience of the reader. Thus, we have:-

Marginally attested
pre-nuclear phoneme-
combinations.

Attested post-nuclear
phoneme-combinations.

/kF/	(in "kvass", etc.)	?/fK/-?/kF/
/kn/	(in "cnidarian", "Cnidus", "cnidoblast", "Cnossus", "knish", etc.)	/kn/-/NK/
/km/	(in "Khmer", etc.)	/km/-/NK/
/kS/	(in "Xi", etc.)	/kS/-/sK/
/pT/	(in "Ptah", etc.)	/pT/-?/tP/

/pS/	(in "psi", etc.)	/pS/-/sP/
/p ^Y S/	(in "pshaw", etc.)	/p ^Y S/-/s ^Y P/
/pu/	(in "pueblo", "Puerto Rico", etc.)	/up/
/tI/	(in "Tlingit", etc.)	/tI/-/It/
/tS/	(in "tsetse fly", "tsar", etc.)	/sT/-/tS/
/sθ/	(in "sthenic", "Stheno", etc.)	/sθ/-/eS/
/sr/	(in "Sri Lanka", etc.)	/rs/
/dS/	(in "dziggetai", etc.)	/dS/-/sT/
/vI/	(in "vlei", "Vlach", etc.)	/vI/-/Iv/
/vu/	(in "voil", "voire dire", "voix céleste", etc.)	/uv/
/i ^Y S/	(in "hachure", "nicotiana", etc.)	/i ^Y S/
/s ^Y n/	(in "schnaps", "schnitzel", "schnook", "schnorkle", etc.)	/s ^Y n/-/n ^Y s/
/s ^Y I/	(in "schlep", "Schlieffen", "schlieren", "schlock", etc.)	/s ^Y I/-/I ^Y S/
/s ^Y F/	(in "schwa", "Schweitzer", etc.)	? /s ^Y F/-/f ^Y S/
/s ^Y P/	(in "spiel", "spieler", etc.)	/s ^Y P/-/p ^Y S/
/s ^Y T/	(in "Stuttgart", "gestalt", "Steiner", etc.)	/s ^Y T/-/t ^Y S/
/fθ/	(in "phthalein", "phthalic", "phthalocyanine", "phthisic", etc.)	/fθ/-/?/eF/
/fu/	(in "Fuegian", etc.)	/uf/

/bu/	(in "Buick", "buibui", etc.)	/ub/
/mu/	(in "moire", "armoire", "moire", "Mweru", etc.)	/um/
/li/	(in "lieu", "paludal", "solute", etc.)	/il/
/zu/	(in "zwounds", etc.)	/uz/
/zi/	(in "caesura", "cynosural", "Zeus", etc.)	/iz/
/zl/	(in "zloti", etc.)	/zl/-/lz/
/ŷu/	(in "bourgeois", "joual", etc.)	/uŷ/
/gn/	(in "gnocchi", etc.)	/gn/-/NK/
/nu/	(in "noyau", "noir", etc.)	/un/
/pST/	(in "pistachio", "psst",	/sPT/-/pTS/-/sPT/- ?/sPT/-?/tSP/-?/tps/
/sFr/	(in "sphragistics", etc.)	/rsF/-/rfS/
/snt/	(in "St. Andrews", etc.)	/sTn/-/tns/-/nsT/- /snt/-/ntS/-/tSn/
/sni/	(in "'s new" (for "it's new"), etc.)	/ins/-/isn/
/tSu/	(in "Tswana", etc.)	/utS/-/usT/
/tŠu/	(in "Botswana", etc.)	/utŠ/-/ušt/

2- See footnote 2 to Chapter 3 of this PART.

3- The refutation of the adequacy of certain descriptive issues was proposed by the present author in a seminar which he gave in 1980. The main issues which were raised and discussed at the time will appear in the University Echo journal (which is published by the NUSS of the University

of Tishreen, Syria) under the title "A Note On The Descriptive Adequacy Of Some Established Models".

However, the members of staff in the Linguistics Department pointed out to the author that the reason why the adequacy of Mulder's distributional unit for S.E., for instance, remained unchallenged was due to the fact that "almost everyone ignored them". This may probably be true; yet, one should not overlook the fact that the results of such incomplete and partial investigations (which do not adequately account for the facts, as shown throughout this work) were extensively used for tuition purposes over many years. Also, these results were published in international periodicals and quoted by many researchers.

- 4- On the basis of the given data, it seems probable that S.E. phonology furnishes forms not only for ordinary lexical signs, but also for specifically English proper names (which are not, in fact, proper symbols). However, since the forms of some proper nouns and other potentially possible phoneme-combinations derive their attestedness from the established phonological system itself (but not vice versa), they may, therefore, be taken into consideration alongside the forms of lexical items, (List 2). On the other hand, if the inclusion of such forms in the description would either complicate the description, or bring diminishing returns, then the forms in question should be totally overlooked. Accordingly, forms like

regental(s) /rIid^NntlS/

Maidenstone's /meidnsTnz/

Rowlandson's /rOulndSnz/

will definitely not be taken into account when considering the establishment of the post-nuclear sectional model (see the succeeding "Supplement"). Nevertheless, if the above objections were to be brushed aside (for one reason or another), then the established sectional model should be extended to include an extra single position to accommodate the final elements in the above three forms, i.e. /S/ and /z/. This position (whose status is understandably "marginal") may be appropriately identified as "position-in-reserve". In other words, the established 6-position post-nuclear sectional model may be extended (if necessary) to form a 7-position distributional model. It is also worth remarking that the incorporation of any additional position in the model will necessarily have repercussions on the established archipositions in the post-nuclear section.

- 5- "Position class" is defined by Mulder (1968) as "set of items which can occur in the same position or archiposition".
- 6- The descriptive statement is only adequate if some dubious non-anglicized forms of the type

$$/n/ \longleftarrow /S^v/ \longleftarrow /ŋ/$$

(whereby, "n" stands for "nucleus" and "S^v" for "semi-vowel")

are excluded from our overall consideration, e.g. /bIuŋ/ "boong", /tarlAinŋ/ "Talaing", /larlarnŋ/ "lalang", /larŋlAuf/ "langlauf", etc.

Supplement to Chapter 4.

In order to keep the reader well-informed, and at the same time help him check the adequacy of our postulations and established models, we, hereby, give what we believe constitutes the overall set of post-nuclear clusters in S.E. These clusters, it should be emphasized, have contributed positively towards

- 1- corroborating the hypothesis concerning the maximum extension of the post-nuclear sectional model,
- and, 2- assisting in formulating or modifying hypotheses concerning the establishment of an adequate number of archipositions in the respective model.

Needless to say, that the proposed conclusions have been based on a thorough investigation of S.E. phonology, and have been abstracted, literally speaking, from a huge body of data. In view of this, and despite all the necessary precautions which were taken in the descriptive process, one should probably be prepared to accept the possible presence of a low margin of error (if irregularities are encountered and, beyond any shadow of doubt, identified as being so, or if regular attested clusters are noticed to be missing in any section of the overall set).

Hence, for easy reference and clarity of exposition, all attested post-nuclear clusters will be arranged and presented as follows:-

2-element post-nuclear clusters

3-element post-nuclear clusters

4-element post-nuclear clusters

5-element post-nuclear clusters

6-element post-nuclear clusters

7-element post-nuclear potential clusters.

Thus, we have:-

2-element post-nuclear clusters:-

This sub-set includes the following:-

/bS, bT, bn, bm, bl, kS, kT, kn, km, kl, k^VS, k^Vθ, dS, dn, dm, dl, d^VS, d^Vθ, tS, tn, tm, tl, t^VS, t^Vθ, rs, rt, rd, rz, rn, rm, rl, r^VS, r^VZ, re, rk, rg, rp, rb, rf, rv, r^VJ, rx, ^VS^VT, ^VS^Vn, ^VS^Vm, ^VS^Vl, ^VS^VK, ^VS^VP, xS, xT, xn, is, it, id, iz, in, im, il, i^VS, i^VZ, ie, ik, ig, ip, ib, if, iv, i^VJ, ix, zT, zn, zm, zl, zP, ^VZ^VT, ^VZ^Vn, ^VZ^Vm, ls, lt, ld, lz, ln, lm, l^VS, l^Vθ, l^VK, lp, lb, lf, lv, gS, gT, gn, gm, gl, eS, eT, en, em, el, ns, nt, nd, nz, nm, nl, n^VS, n^Vθ, N^VZ, NK, NP, NF, ns, nt, nz, nd, nm, nl, n^VS, n^Vθ, ^VJ^VS, ^VJ^VT, ^VJ^Vn, ^VJ^Vm, ^VJ^Vl, pS, pT, pn, pm, pl, p^Vθ, sT, sn, sm, sl, s^Vθ, s^VK, s^VP, s^VF, fS, fT, fn, fm, fl, f^Vθ, vS, vT, vn, vm, vl, us, ut, ud, uz, un, um, ul, u^VS, u^VZ, ue, uk, ug, up, ub, uf, uv, u^VJ, ux, ms, mt, md, mz, mn, ml, m^VS, m^Vθ/.

3-element post-nuclear clusters:-

This sub-set includes the following:-

/blS, blT, bnz, bnd, bnt, bns, blm, bln, bmz, bmd, bSn, bTn, Nbl, Npl, Ngl, Nkl, N^VZT, Nkm, Nvl, Nfl, NfS, N^VZl, Npn, Nbn, Nkn, Ngn, N^VZn, NfT, NpF, xnz, xTS, uls, ult, uld, ulz, unz, ut^Vθ, und, unt, uns, ulm, uln, umz, umd, usn, utn, ubl, upl, ugl, uNF, ukl, u^VZT, u^VS^VT, uvl, ufl, u^Vsl, u^Vzl, upn, ubn, ukn,

u^vsn, u^vzn, ulK, ugn, ukm, ufS, uft, utS, ut^vS, ust, us^o, usl,
 uzl, unl, utl, uNK, udl, uml, ujl, usm, uen, uem, utm, uzn,
 uvn, ufn, udn, ujn, uNP, uxn, uxm, ugm, udm, uzm, u^vsm, ueS,
 uel, ujs, ujt, uzT, udS, un^o, upt, upS, ud^vS, ukS, ukT, usK,
 uN^vZ, ubS, ubT, ugS, ugT, ul^o, um^o, uvS, uvT, ulp, uxS, uxT,
 usP, usP, un^vS, uf^o, dSm, kls, klT, uk^vS, knz, knd, knt, kns,
 kln, kmz, kmd, kSn, kTn, kFl, k^vSl, k^vSn, kTS, kT^vS, kST, kS^o,
 kSl, knl, kTl, kSm, k^on, kTm, ^vslS, ^vslT, ^vsnz, ^vsnd, ^vsnt, ^vsns,
^vsmz, ^vsmd, ^vSTn, ^vSTS, ^vsnl, dlS, dlT, dnz, dnd, dnt, dns, dlm,
 dln, dmz, dmd, dSn, d^vT, dFl, d^vSl, d^vSn, dST, dnl, dml, d^vSm,
 d^oS, plS, plT, pnz, pnd, pnt, pns, pln, pmz, pSn, pTn, pFl,
 p^vSl, p^vSn, pTS, pST, pSl, pnl, pTl, pSm, pFn, p^oS, rls, rlt,
 rld, rlz, rnz, rnd, rnt, rns, rlm, rln, rmz, rnd, rsn, rtn,
 rbl, rpl, rgl, rkl, r^vT, r^vT, rvl, rfl, r^vSl, r^vzl, rpn, rbn,
 rkn, r^vsn, r^vzn, rgn, rkm, rfS, rft, rtS, rt^vS, rst, rs^o, rsl,
 rzl, rnl, rtl, rdl, rml, rjl, rsm, ren, rem, rtm, rzn, rvn,
 rfn, rdn, rjn, rgm, rdm, rzm, r^vsm, reS, reT, rel, rjs, rjt,
 rzT, rdS, rpt, rpS, rd^vS, rkS, rkT, rsK, rN^vZ, rbS, rbT, rgS,
 rgT, rvS, rvT, rlp, rxS, rsp, rn^vS, rt^o, rNF, rk^vS, rm^o, rNP,
 rNK, rlK, tls, tlT, tnz, tnd, tnt, tns, rn^o, tlm, tln, tmz,
 tmd, tSn, t^vT, tFl, tKn, t^vSn, tST, tSl, tSm, t^oS, tSK, ils,
 ilt, ild, ilz, inz, ind, int, ins, ilm, iln, imz, imd, isn,
 itn, ibl, ipl, igl, ikl, i^vT, i^vT, ivl, ifl, i^vSl, i^vzl, ipn,
 ibn, ikn, i^vsn, i^vzn, ign, ikm, ifS, ifT, itS, it^vS, ist, is^o,
 isl, izl, inl, itl, idl, iml, ijl, ism, ien, iem, itm, izn,
 ivn, ifn, idn, ijn, ixm, igm, idm, izm, i^vsm, ieS, ieT, iel,
 ijs, ijt, izT, idS, ipt, ipS, id^vS, ikS, ikT, isK, iN^vZ, ibS,
 ibT, igS, igT, ilo, ivS, ivT, ixS, ixT, iNP, iNF, im^o, in^o,
 ik^vS, it^o, ^vslS, ^vslT, ^vsnz, ^vsmz, ^vstn, ^vst^vsn, ^vsts, ^vsn, ^vstT, ^vsn,

ŋdn, ŋdm, ŋzm, ŋθS, ŋdS, lnz, lnd, lnt, lns, lmz, lmd, lsn,
 ltn, lpl, lgl, lkl, ibl, l^YST, lvl, lfl, l^YSl, lpn, lbn, lkn,
 l^YSn, lgn, lfS, lft, ltS, lt^YS, lst, lsl, lzl, ln1, ltl, ldl,
 lml, ljl, lsm, len, lem, ltm, lzn, lvn, lfn, ldn, lgm, ldm,
 lzm, l^YSm, lθS, lzT, ldS, lpT, lpS, ld^YS, lkS, lkT, lsK, lbS,
 lbT, lgs, lgt, lvS, lvT, ln^YS, lfθ, nls, nlt, nmz, nmd, nsn,
 ntn, n^YST, n^YSl, n^YSn, ntS, ntS, nsT, nsl, nzl, ntl, ndl, ntl,
 nθm, ntm, nzn, ndn, ndm, njn, nzm, n^Ysm, nθS, nθT, nθl, njS,
 njT, nzT, ndS, nsK, nsF, glS, glT, gnz, gnd, gnt, gns, gTn,
 gTS, gSn, gnl, ^Yznd, ^Yznz, ^Yznl, slS, slT, snz, snd, snt, sns,
 slm, sln, smz, smd, sTn, spl, skl, sfl, spn, skn, skm, sTS,
 s^YTS, snl, stl, sml, sθl, sTm, sPT, sPS, sKs, sKT, flS, flT,
 fnz, fnd, fnt, fns, flm, fln, fTn, fSn, fTS, fnl, fθS, fSK,
 elS, elt, enz, end, ent, ens, elm, eln, eSn, jlS, jlt, jnz,
 jnd, jnz, jmd, zls, zlt, znz, znd, znt, zns, zlm, zln, mzm,
 zmd, zTn, zPn, zTS, znl, zml, zTm, znθ, vls, vlt, vnz, vnd,
 vnt, vns, vln, vST, vnθ, mls, mlT, msn, mtn, m^Ysn, mtS, mST,
 msl, mzl, mnl, msm, mtm, mzn, mdn, msK/.

4-element post-nuclear clusters:-

This sub-set includes the following:-

/k^YSns, k^YSnt, kSlS, kSlT, knlS, knlT, kSTS, kθS, k^YSnz, kSnt,
 kSnd, k^YSnl, kTns, kTnz, kTnt, k^YSnd, kTlS, kFlS, kFlT, kSnz,
 kSns, kFST, klnz, kSmz, k^YSlS, kθnz, knsn, kTmz, klSn, klTS,
 kntl, Npns, Nbnd, Npnt, N^Yznz, NflS, NflT, NblS, NblT, NplS,
 NplT, NglS, NglT, NklS, NklT, NvlS, NvlT, Npnd, Npnz, Nknz,
 Nknd, Nbnt, Nbns, N^YZns, N^YZnt, Nblm, Nbnz, N^YZlS, Nvnt, Nvns,
 Nknt, Nkns, Nkmz, Nfnt, Nfns, Ngnz, Ngnd, Ngns, Ngnt, dSTS,
 d^YSnz, d^YSnd, dFlS, dFlT, d^YSlS, dSTn, d^YSns, d^YSnt, d^YSmz, dmlS,

dlTn, nslS, nslT, nsTS, n^Vsnz, nsnt, nsnd, n^Vsnl, ntns, ntnz,
 ntnt, n^Vsnd, nt1S, nsnz, nsns, nlnz, nsmz, n^Vs1S, nθnz, ntmz,
 nsTn, nlTS, n^Vsnt, n^Vsnz, n^Vs1T, nlTn, nd1S, nd1T, nt1T, ndnz,
 ndnd, nθmz, ndnt, ndns, ndmz, nz1S, nz1T, nznz, nznd, nsPl,
 ntnd, nsKS, nsmd, nzmz, nzmd, nlT^VS, nlnd, nθnd, rs1S, rs1T,
 rn1S, rn1T, rsTS, r^Vsnz, r^Vznz, rsnt, rsnt, rsnd, r^Vsnl, rtns,
 rtnz, rtnt, r^Vsnd, rt1S, rf1S, rf1T, rsnz, rsns, rlnz, rsmz,
 r^Vs1S, renz, rnsn, rtmz, rlsn, rsTn, rldS, rblS, rblT, rglS,
 rglT, rklS, rklT, rv1S, rv1T, rpnd, rpnz, rknz, rknd, rbnt,
 rbns, r^Vznz, r^Vznt, r^Vsnt, r^Vsnz, r^Vs1T, rbnz, r^Vz1S, rvnt, rvns,
 rknt, rkns, rkmz, rfnt, rfns, rpnt, rgnz, rpTn, rp^Sn, rpSn,
 r^Vsmz, r^Vsmd, rmlS, rlt^Vn, rd1S, rd1T, rt1T, rdnz, rdnd, remz,
 rdnt, rdns, rdmz, rz1S, rz1T, rznz, rznd, rtnd, rsKS, rsmd,
 rzmz, rzmd, rlt^VS, rt^VST, rsKT, rd^VST, rn^VST, rnsT, r1sT, rsnl,
 rsPS, rsPT, rfTS, rNpl, rns1, rt^VSn, rnd1, r1tS, rmθS, rpns,
 rgnd, rkTS, rk^VSn, r^VJnz, rt^VS1, rd^VSn, rsKl, rkSm, rlmz, rlmd,
 rzTS, rvnz, rNgS, rvnd, r1kT, r1kS, r^VSTs, r^VST^V, rsTl, rtSn,
 r1kn, r1sm, rntn, rsPn, rpTS, rgmz, rlnt, rlms, rldn, rlvn,
 rl^VSn, rlnd, rfnz, rfnd, rlθm, rgSn, r^VJnd, rd^VS1, rbnd, rldm,
 rsKl, rtnl, rpST, rn^Vsn, rnθS, rN^VZ1, rN^VZT, rtθS, rtmd, rzml,
 rfnl, r^Vznd, r^Vznl, rmsn, rtFl, rznz, rznt, rt^VSm, rzn1, rvl^Vn,
 rv^VSm, rfTn, rdnl, rndS, rndm, rlθS, rlpS, rkS1, rndn, rtnθ,
 rbSn, r^VJ1S, r^VJ1T, rlpn, rxnz, rgnt, rsFl, rntl, zTnz, zlnz,
 zTmz, zPnz, zmlS, fnsn, fSKS, eSnz, olnz, ^Vzn1S, is1S, is1T,
 in1S, in1T, isTS, i^Vsnz, i^Vznz, isnt, isnd, i^Vsnl, itns, itnz,
 itnt, i^Vsnd, it1S, if1S, if1T, isnz, isns, ilnz, ismz, i^Vs1S,
 ienz, insn, itmz, ilns, isTn, ildS, ib1S, ib1T, iplS, iplT,
 ig1S, ig1T, ik1S, ik1T, iv1S, iv1T, ipnd, ipnz, iknz, iknd,
 ibnt, ibns, i^Vznz, i^Vznt, i^Vsnt, i^Vsnz, i^Vs1T, ibnz, i^Vz1S, ivnt,

ivns, iknt, ikns, ikmz, ifnt, ifns, ipnt, ignz, ipTn, ipŠn,
 ipSn, iŷmz, iŷmd, imlS, iltN, idlS, idlT, itlT, idnz, idnd,
 iemz, idnt, idns, idmz, izlS, izlT, iznz, iznd, itnd, isKs,
 ismd, izmz, izmd, iltŠ, itŠT, isKT, idŠT, inŠT, inst, ilst,
 isnl, isPS, isPT, ifTS, iNpl, insl, itŠn, indl, iltS, imOS,
 ipns, ignd, ikTS, ikŠn, iŷnz, itŠl, idŠn, isKl, ikSm, ilmz,
 ilmd, izTS, ivnz, iNgS, ivnd, ilkT, ilkS, iŷTS, iŷTSŠ, istl,
 itSn, ilkn, ilsm, intn, isPn, ipTS, igmz, ilnt, ilns, ildn,
 ilvn, ilŠn, ilnd, ifnz, ifnd, ilOm, igSn, iŷnd, idŠl, ibnd,
 ildm, isKl, itnl, ipST, inŠn, inOS, iNžl, iNžT, itOS, itmd,
 izml, ifnl, iŷnd, iŷnl, imsn, itFl, izns, iznt, itŠm, iznl,
 ivln, ivŠm, ifTn, idnl, indS, indm, ilOS, ilpS, ikSl, indn,
 iznO, ibSn, iŷlS, iŷlT, ilpn, ixnz, ignt, isFl, intl, sTms,
 sPns, snlS, snlT, sTns, sTnz, sTnd, sTlS, sFlS, sFlT, slnz,
 snsN, sTmz, slsn, sldS, sPlS, sPlT, sKlS, sKlT, sPnd, sPnz,
 sKnz, sKnd, sKnt, sKns, sFnt, sFns, sKmz, sKmd, smlS, smlT,
 slTn, sTlS, sTlS, snst, slst, sTŠn, sndl, sTŠl, sTŠn, sTSn,
 sntn, slns, slTn, slŠn, slnd, sTnl, snŠn, sTmd, sTnt, sndm,
 ŷslS, ŷslT, ŷsTS, ŷŷnz, ŷsnt, ŷsnd, ŷŷnl, ŷtns, ŷtnz, ŷtnt,
 ŷŷnd, ŷtlS, ŷsnz, ŷsns, ŷlnz, ŷsmz, ŷŷlS, ŷenz, ŷstn, ŷlTS,
 ŷŷnt, ŷŷns, ŷŷlT, ŷlTn, ŷtlT, ŷdnz, ŷOmz, ŷdnt, ŷdns, ŷdmz,
 ŷzlS, ŷzlT, ŷznz, ŷznd, ŷsPl, ŷtnd, ŷsKS, ŷsmd, ŷsmz, ŷzmd,
 ŷlTSŠ, ŷlnd, ŷend, mslS, mslT, mnlS, mnlT, msTS, mŷnz, msnt,
 msnd, mŷnl, mtnz, mtns, mtnt, mŷnd, mtlS, msnz, msns, mlnz,
 msmz, mŷlS, mOenz, mtmz, msTn, mlTS, mŷnt, mŷns, mŷlT, mlTn,
 mtlT, mdnz, mdnd, mOenz, mdnt, mdns, mdmz, mzlS, mzlT, mznz,
 mznd, msPl, mtnd, msKS, msmd, msmd, mzmz, mzmd, mlTSŠ, mlnd,
 mOnd, ŷnlS, ŷnlT, ŷTns, ŷTnz, ŷTnt, ŷTlS, ŷFlS, ŷFlT, ŷnsn,
 ŷlSn, ŷKnz, ŷKns, ŷsmnt, ŷsmns, ltnd, lslS, lslT, lnls, lnlt

lsTS, l^VSnz, lsnt, lsnd, l^VSnl, ltns, ltanz, ltnt, l^VSnd, ltls,

 ltlt, lsanz, lsns, lsmz, l^VSls, l^Venz, lnsn, ltmz, lsTn, lbls,

 lblt, lpls, lplt, lglS, lglT, klS, klT, vlS, vlT, lpnd,

 lpnz, lknz, lknd, lbnt, lbns, l^VSnt, l^VSns, l^VSlt, lbnz, lvnt,

 lvns, lknt, lkns, lgnz, lmlS, lmlT, ldnz, ldnd, l^Vemz, ldnt,

 ldns, ldmz, ldmd, lzlt, lzls, lznz, lznd, ltnd, lsKS, lsmd,

 lzmz, lzmd, lt^VT, lsKT, ld^VT, lnsT, ln^VT, lsnl, lfts, lkTS,

 lk^VSn, lt^VSl, ld^VSn, lsKl, lvnz, lsTl, ltSn, lntn, lsPn, lpTS,

 lgmz, lfnz, lfnd, lgSn, ltntl, lpST, lf^Ves, ld^VSm, lkSl, lsFl,

 lntl, bsls, bslt, bnls, bnlt, b^VSnz, bSnt, b^VSnl, bTns, bTnz,

 bTnt, b^VSnd, bTls, bSnz, bSns, blnz, bSmz, b^VSls, b^Venz, bnsn,

 bSTn, blTn, blTS, bT^VSl, blmz, bTnt, b^Vend, tsls, tslt, tnls,

 tnlt, t^VSnz, t^VSnd, tFlS, tFlT, tSnz, tSns, tlnz, tSmz, t^VSls,

 tSTn, tKnz, t^VSnt, t^VSns, t^VSlt, tSKS, tISm, tlnd, usls, uslt,

 unls, unlT, usTS, u^Vsnz, u^Vznz, usnt, usnd, u^Vsnl, utns, utnz,

 utnt, u^VSnd, utls, uflS, uflT, usnz, usns, ulnz, usmz, u^VSls,

 uenz, unsn, utmz, ulsn, usTn, u^VldS, ubls, ublt, upls, uplt,

 uglS, uglT, uklS, uklT, uvls, uvlt, upnd, upnz, uknz, uknd,

 ubns, ubnt, u^Vzns, u^Vznt, u^Vsnt, u^Vsns, u^Vslt, ubnz, u^Vzls, uvnt,

 uvns, uknt, ukns, ukmz, ufnt, ufns, upnt, ugnz, upTn, up^VSn,

 upSn, u^Vsmz, u^Vsmd, umls, ultn, udlS, udlT, utlt, udnz, udnd,

 uemz, udnt, udns, udmz, uzls, uzlt, uznz, uznd, utnd, usKS,

 usmd, uzmz, uzmd, ult^VS, ut^VT, ukKT, ud^VT, un^VT, unsT, ulst,

 usnl, usPS, usPT, ufts, uNpl, unsl, ut^VSn, undl, ultS, um^Ves,

 upns, ugnz, ukTS, uk^VSn, u^Vznz, ut^VSl, ud^VSn, usKl, ukSm, ulmz,

 ulmd, uzTS, uvnz, uNgS, uvnd, ulkT, ulkS, u^VTS, u^VTS^V, usTl,

 utSn, ulkn, ulsm, untn, usPn, upTS, ugmz, ulnt, ulns, uldn,

 ulvn, ul^VSn, ulnd, ufnz, ufnd, ul^Vem, ugSn, u^Vnd, ud^VSl, ubnd,

 uldm, usKl, utnl, upST, un^VSn, un^Ves, uN^Vzl, uN^VzT, ut^Ves, utmd,

 uzml, ufnl, u^Vznd, u^Vznl, umsn, utFl, uzns, uznt, ut^VSm uznl,

uvln, uv^vSm, uftn, udn1, undS, undm, ul0S, ulpS, ukS1, undn,
 uzn0, ubSn, ujlS, ujlT, ulpn, uxnz, ugnt, usFl, untl, gS1S,
 gS1T, gn1S, gn1T, gSTS, g^vSnz, gSnt, gSnd, g^vSn1, gTns, gTnz,
 gTnt, g^vSnd, gT1S, gF1S, gF1T, gSnz, gSns, gFST, glnz, gSmz,
 g^vS1S, g0nz, gnsn, gTmz, glSn, gSTn, glTS, gntl, vlnd, vlnz,
 vlnt, vlms, vn0S, pTnd, pS1S, pS1T, pn1S, p^vSnz, pSnt, p^vSn1,
 pTns, pTnz, pTnt, p^vSnd, pT1S, pSnz, pSns, plnz, pSmz, p^vS1S,
 p0nz, pnsn, plSn, pSTn, plTS, plTn, pTnt, p0nd/.

5-element post-nuclear clusters:-

This sub-set includes the following:-

/rNplS, rNplT, r1sTS, rns1S, rsn1S, rnd1S, rd^vSnt, rd^vSns, rk^vSnz,
 rndnt, rndns, rt^vS1S, rd^vSnz, rd^vSnd, rsTnz, rkS1S, rkSmz, r1sTn,
 rltnz, rnsTS, rsT1S, r1smz, rntnz, rsPnz, rp^vSnz, rsT^vSn, r1knz,
 rldnz, rlvnz, r^vsn1S, r1^vSnz, rlt^vSn, rt^vSnd, rt^vSnz, rklnd, rklnz,
 rk^vSnd, r10mz, rgSnz, r^vJnsm, rnsnz, rt^vSnt, rt^vSns, rd^vS1S, rldmz,
 rmsTn, rsK1S, rtn1S, rpSTS, rns^vnz, rN^vZ1S, rslnd, rslnz, rldnd,
 rzmlS, rlnsT, rsnsT, rntns, rns^vnt, rns^vns, rbSnz, rmsnz, rtSk1,
 rt^vSmz, rlsnz, rvnsn, rvlnz, rv^vSmz, rfTnz, rd^vSn1, rzlnd, rzlnz,
 rntnd, rzn0S, rplnd, rplnz, rns1T, rkSTn, rltnd, rnt1S, rdmnt,
 rdmns, iNplS, iNplT, ilsTS, ins1S, isn1S, ind1S, id^vSnt, id^vSns,
 ik^vSnz, indnt, indns, it^vS1S, id^vSnz, id^vSnd, isTnz, ikS1S, ikSmz,
 ilsTn, iltnz, insTS, isT1S, ilsmz, intnz, isPnz, ip^vSnz, isT^vSn,
 ilkz, ildnz, ilvz, i^vsn1S, il^vSnz, ilt^vSn, it^vSnd, it^vSnz, iklnd,
 iklnz, ik^vSnd, il0mz, igSnz, i^vJnsm, insnz, it^vSnt, it^vSns, id^vS1S,
 ildmz, imsTn, isk1S, itn1S, ipSTS, ins^vnz, iN^vZ1S, islnd, islnz,
 ildnd, izmlS, ilnsT, isnsT, intns, ins^vnt, ins^vns, ibSnz, imsanz,
 itSk1, it^vSmz, ilsanz, ivnsn, ivlnz, iv^vSmz, ifTnz, id^vSn1, int1S,
 izlnd, izlnz, intnd, izn0S, iplnd, iplnz, ins1T, ikSTn, iltnd

idmnt, idmns, uNplS, uNplT, ulsTS, unslS, usnlS, undlS, udSnt,
 udSns, ukSnz, undnt, undns, utS1S, udSnz, udSnd, usTnz, ukS1S,
 ukSmz, ulsTn, ultnz, unstS, usT1S, ulsmz, untnz, usPnz, upSnz,
 usTSn, ulknz, uldnz, ulvnz, uSn1S, ulSnz, ultSn, utSnd, utSnz,
 uklnd, uklnz, ukSnd, ul0mz, ugSnz, uTnsm, unsnz, utSnt, utSns,
 udS1S, uldmz, umstn, usK1S, utnlS, upSTS, unSnz, uNz1S, uslnd,
 uslnz, uldnd, uzmlS, ulnst, usnst, untns, unSnt, unSns, ubSnz,
 umsnz, utSKl, utSmz, ulsnz, uvnsn, uvlnz, uvSmz, uFTnz, udSnl,
 uzlnd, uzlnz, untnd, uzn0S, uplnd, uplnz, unslT, ukSTn, ultnd,
 unt1S, udmnt, udmns, kSTnz, knsnz, klSnz, kSntS, kFSTS, kSTnt,
 mlTnz, nSn1S, Nblmz, NplTn, NblTm, NglTn, ldSnt, ldSns, ldSnz,
 ldSnd, ldSmz, ldSmd, pSTnz, plTnz, nsTnz, nsTnt, ndlSn, nsPlS,
 nsTns, tKnsn, tlSmz, tlSmd, vnsTn, blTnz, blTnd, bnsnz, bnsns,
 bSTns, bSn0S, sTSnz, sTSnz, sTnst, sndmz, sndmd, fnsnz, fnsnd,
 nsTnz, nSn1S, dSTnz, dlTnz/.

6-element post-nuclear clusters:-

This sub-set contains the following:-

/utSmns, utSmnt, ukSTnz, ulndSn, tKnsnz, iklSnz, idnsTn,
 inSntl, itSK1S, ivnsnz, idSntl, rlsTnz, rstSnz, rltSnz,
 rmsTnz, ndlSnz, vnsTnz, NplTnz, NblTmz, NglTnz, ldSnsT/.

7-element post-nuclear potential clusters:-

This sub-set may contain the following:-

/idnsTnz, ulndSnz, idSntlS/.

CHAPTER 5.The Intrinsic Identities and Distinctive Functions of the Consonant Phonemes and Archiphonemes of S.E. and Statements of Their Distribution and Realization.

As the title of this Chapter indicates, we shall presently involve ourselves with performing three interrelated and equally significant descriptive acts. These will be

- a - the establishment of the intrinsic identity of each consonant phoneme and archiphoneme in the system and the determination of its overall distinctive function in the universe of S.E. discourse;
 - b - the formulation of a limited number of formal statements for the purpose of highlighting the distributional potentials of each single consonant phoneme or archiphoneme in the system;
- and, c - the identification of the realizational correlates of each of these established consonant phonemes or archiphonemes.

We recall from arguments in the preceding Chapters that the intrinsic identity of a given phoneme and the exact nature of its overall distinctive function in the universe of discourse of a given language is calculated in terms of all the oppositions into which the item in question is capable of entering. In other words, the global systemic oppositional distinctive value and function of each consonant phoneme or

archiphoneme in a system is logically equivalent to the sum-total of all the other items to which it is attestedly or potentially opposed in equivalent contexts.

Since the consonant phonemes and archiphonemes of S.E. have - in earlier discussions - been shown to vary drastically with respect to their combinatorial/distributional potentials, the formulated statements of distribution intervene to specify exactly the distributional behaviour of each separate consonant phoneme and archiphoneme in the system. Functionally speaking, the aim of these statements of distribution is not restricted to merely providing precise and adequate information on the regulations which govern the distributional behaviour of the formal entities in questions (within the scopes of the established models), equally importantly they serve a purpose in generating new material on the basis of this significant descriptive knowledge.

Over and above the structural and/or constructional relations which are implied in the foregoing statements of distribution, the statements of realization are responsible for linking each of the established formal entities with a private phonetic counter-domain which is not shared - in its entirety - by any of the other formal elements in the inventory. By doing so, the statements of realization are not only necessary for corroborating the material adequacy of the totality of the descriptive account, but they are also significant for facilitating the ostensive manipulation of the particulars of this account for generating new material on a different ontological level of abstraction (i.e. the phonetic level).

If, for instance, we start by re-producing in this context the previously established positional classes for S.E. (c.f. Chapters 3 and 4 of this PART), then the necessary number of distributional statements which require formulation and establishment for each single phoneme could be drastically reduced (as we shall see below) to one single statement of distribution only. This distributional statement - which will be formulated in such a way so as to emphasize all the positional affiliations of each consonant phoneme and archiphoneme - should also be understood to imply tacit references to the possibility of attested or potential oppositions between the element in question and all the other elements in any one specific position. E.g. a statement which maintains that "element /x/ belongs to positions "1", "2", "3", etc." not only takes care of specifying the exact positional occurrences of the element under consideration, but it also indirectly underlines the potentiality of the element in question to be opposed - in equivalent contexts - to all the other elements which figure in any of the classified positions (or archipositions whose terms are those positions) of the "major" and "minor" types of phonotactic distributional structure.

The complete list of the previously established position classes for S.E. may therefore be presently re-produced for the immediate purposes of the succeeding descriptive account of the consonant phonemes and archiphonemes of S.E. as follows:-

Position class "pre-e" (3') includes /s, ø/

position class "e1" (2') includes /T, t, d, P, p, b,

K, k, g, m, \emptyset /

Position class "e2" (1') includes /r, i, u, l, m, \emptyset /

Position class "E¹" includes /f, v, θ , n, h, \bar{S} , \bar{t} , e, \emptyset /

Position class "E²" includes /n, F, \emptyset /

Position class "E³" includes / \bar{Z} , z, $t\bar{S}$, $d\bar{S}$, \emptyset /

Position class "n" includes /a, e, o, r, i, u, A, I, O/

Position class "i1" (1) includes /u, i, r, n, N, m, v,

f, l, k, g, p, b, s, d, \bar{S} , \bar{t} , e, \emptyset /

Position class "i2" (2) includes /P, k, l, t, d, N, v,

s, b, m, n, p, g, S, K, \bar{S} , e, z, f, F, T, \bar{S} , θ , \bar{Z} , \bar{t} , \emptyset /

Position class "i3" (3) includes /S, n, K, l, \bar{S} , \bar{Z} , \bar{S} , s,

T, t, p, d, P, k, v, e, m, θ , g, F, \emptyset /

Position class "i4" (4) includes /T, d, n, S, s, K, \bar{S} , t,

l, m, e, \emptyset /

Position class "i5" (5) includes /n, S, s, T, l, t, m, \emptyset /

Position class "post-i" (6) includes /z, T, l, S, n, \emptyset /

Position class "Z¹" includes / η , \emptyset /

Position class "Z²" includes / η , \emptyset /

Position class "Z³" includes /T, \bar{S} , l, F, m, \bar{S} , S, n, z, K,
d, p, P, θ , \emptyset /

Position class "Z⁴" includes /S, z, s, T, d, t, \bar{S} , l, n, m, \emptyset /

Position class "Z⁵" includes /S, s, z, T, d, t, m, n, \emptyset /

(Position class ("Z⁶") includes /x, \emptyset /

(Position class ("Z⁷") includes /x, \emptyset /

With the above reproduction of all the previously postulated and established phonotactic positional classes, we can now safely move into investigating the possibility of economizing on the necessary number of realizational statements which require identification and formulation.

However, before we could possibly embark on examining this possibility, it should be specifically pointed out that since the variety of speech sounds in a given language are infinite and diversified, and since it is practically impossible for any phonological description to enumerate them all, the statements of realization which the linguist formulates may have to be rigorously restricted - in their precision, detail and exhaustiveness - to accounting for only the most conspicuous cases of all the attested realizational possibilities of each formal item. Once this task is completed, the linguist may subsequently attempt to formulate generalization which will cover as many realizational cases as possible. The ultimate purpose of formulating and/or formalizing descriptive realizational generalizations is to:-

- a - establish similarities and differences between the realizations of different formal entities;
- b - simplify the descriptive account;
- c - economize on the number of the realizational statements which are necessary for giving materially adequate accounts of phonological phenomena.

Now, if the privative types of realization which pertain to the description of any one specific consonant phoneme or archiphoneme are temporarily withheld, then the proposed set of generalized realizational statements may be formulated and presented as follows:-

- 1 - In context with a succeeding phoneme or archiphoneme of any category, all /occlusive/ phonemes and

- archiphonemes are characterized by an "unreleased (plosion-less) stop" type of realization, e.g. /begT/ "begged", /lipS/ "lips", /brtS/ "butts", /drbl/ "double", /fakTS/ "facts", etc.
- 2 - The /lenis/ phonemes of S.E. are consistently "voiced" and "non-aspirated" in actual realization.
 - 3 - In context with a succeeding/preceding element of any type, the point of articulation which is required for the realization of any consonant phoneme or archiphoneme progressively assimilates with the articulatory position which is needed for the realization of the succeeding/preceding element, (c.f. the realizations of the vocalic phonemes and archiphonemes in Chapter 3 of this PART), e.g. /tin/ "tin", /dor/ "door", /suAin/ "swine", /fed/ "fed", /nrn/ "nun", /plAit/ "plight", /traNP/ "tramp", /pit/ "pit", etc. (For a detailed study of the different types of "assimilation" in S.E., the reader is referred to the writings of Jones, Gimson and Malmberg; to mention but a few).
 - 4 - In context with a succeeding /l/, all the consonant phonemes and archiphonemes of S.E. assume a "released lateralized" realization, e.g. /krdl/ "cuddle", /bIitl/ "beatle", /sPe^Vsl/ "special", etc.
 - 5 - In context with a preceding phoneme of the /fortis/ category, all consonant archiphonemes (except /N/) are always realized as "fortis unvoiced" consonantal elements. Whenever they are preceded by an element belonging to the /lenis/ category, they are predominantly realized as "lenis voiced" consonants.

- 6 - In context with a preceding /lenis/ phoneme, the realizations of all the consonant archiphonemes (except /N/) are as [lenis voiced] consonants; however, when a /fortis/ phoneme precedes them, the archiphonemes in question are consistently marked by [fortis unvoiced] realizations.
- 7 - In "initial" and "final" positions, all /lenis/ phonemes are either "partially" or "completely" devoiced. The realizational "devoicing" phenomenon in initial position is "complete" when an intervening element occurs between the initiating /lenis/ phoneme and the nucleus of the form, but less so when no other element intervenes between the two. Analogous considerations also apply to the "devoicing" of all /lenis/ phonemes in final positions, e.g. /brɪNK/ "brink", /brɪg/ "bug", /rɪuʒ^V/ "rouge", /held/ "held", /bɪɪnd/ "beamed", etc.
- 8 - All /lenis/ and /fortis/ phonemes and archiphonemes assume a syllabic character (which is functionally insignificant) when they occur in the vicinity of a succeeding /l/, e.g. [bɔtɪ̯k] or [bɔtɔ̯k] for /botl/ "bottle", [spɛʃ^Vk] or [spɛʃ^Vɔ̯k] for /spɛʃl/ "special", etc.
- 9 - In context with a succeeding /nasal/ phoneme, all /lenis/ and /fortis/ elements are "nasalized" in actual realization, e.g. /rɪʃm/ "rhythm", /hɔpɪn/ "happen", /sKɪzɪm/ "schism", /rɪrɛn/ "earthen", /dɛfɪn/ "deafen", /bɛkn/ "beckon", etc.
- 10 - All the phonemes of S.E. may - in one way or another - include a relatively "dental" realization in context with a succeeding /fricative/ element, e.g. /hɔupfɪl/

- "hopeful", /srbFrrsiv/ "subversive", /uidθ/ "width", /botFlAi/ "botfly", /niNF/ "nymph", /mrnθ/ "month", etc.
- 11 - Most of the consonant phonemes and archiphones of S.E. assume what may be identified as "post-x" realizations, i.e. [post-bilabial], [post-alveolar], etc., in context with a succeeding [ɹ] realization of the phoneme /r/, e.g. [bɛdɹum] for /bedrum/ "bedroom", [it ɹiŋz] for /it riŋz/ "it rings", etc.
- 12 - The "voicedness" feature which accompanies the realization of the /nasal/ phonemes undergoes "partial devoicing" in context with a preceding "hissing" element, e.g. [smið̥] for /smir/ "smear", [sɳəp̥] for /snap/ "snap", etc. This phenomenon is normally represented in the phonetic tradition by a small "circle" underneath the "nasal" sound; thus, [smið̥] and [sɳəp̥], respectively.
- 13 - In context with a preceding /lenis/ or /fortis/ phoneme, the realization of any of the /nasal/ phonemes is phonetically - but not phonologically - syllabic, e.g. [mʌt̥n̥] or [mʌt̥ɔ̃n̥] for /mrtn/ "mutton", [ɹið̥m̥] or [ɹið̥ɔ̃m̥] for /rið̥m/ "rhythm", etc.
- 14 - Due to the phenomenon of "anticipatory assimilation" (mentioned in statement "3"), the realization of the nasal archiphoneme /N/ is [m] in the context with a succeeding /p/ or /P/, [ŋ] in the context with a succeeding /k/ or /K/, but [n̥] in the context with a succeeding /z̥/, /f/ or /F/.

However, before we start establishing the intrinsic identity of the consonant phonemes and archiphonemes, the reader's attention should be drawn to the unavoidable presence of certain "gaps" in the subsequent commutation/opposition

sets. Following the A.F. tradition in this respect, the existence of such "gaps" in the sets may be interpreted as either referring to "accidental absence of oppositional potentials", i.e. oppositions which are potentially possible but are not actually attested in the language, or as designating "systematically precluded possibilities", i.e. oppositional instances which are constantly rejected by the phonological and/or combinational rules of S.E. A special note will be inserted in each case to specify the reason.

Finally, since the established three "semi-vocalic" phonemes in S.E. have been attested to demonstrate distributional tendencies for occupying specific "pre-" and "post-" nuclear positions in the established "major" distributional unit, as well as in analogous positions in the different versions of the "onset" and "coda" minor-type phonotagms (c.f. Chapters 3 and 7 of this PART), and since they behave and function like consonants in these positions, the three semi-vocalic phonemes should be logically included in the following opposition sets. This is necessary for the sake of determining the global systemic oppositional values and functions of these unique elements in the universe of S.E. discourse. However, in addition to the foregoing, and in the interest of maintaining the consistency, adequacy and simplicity of the current descriptive account of the consonant phonemes and archiphonemes of S.E., it is worthwhile remarking that because the Scottish phoneme /x/ has been previously attested to play a very marginal role in the universe of S.E. discourse (Chapter 1 of this PART), all its oppositional potentials in the sets will therefore be enclosed between

ordinary-type brackets to emphasize this fact, i.e. (/x/).

The phoneme /b/:-

a) The phoneme /b/ belongs to positions "el" (2'), "il" (1) and "i2" (2).

b) The identity and distinctive function of /b/ are established by the following oppositions:-

1-	b/p	/bil/	"bill"	/pil/	"pill"
2-	b/v	/bAil/	"bile"	/vAil/	"vile"
3-	b/f	/bAil/	" " "	/fAil/	"file"
4-	b/d	/bOu/	"bow"	/dOu/	"dough"
5-	b/t	/bOu/	" " "	/tOu/	"toe"
6-	b/ʒ	/bOu/	" " "	/ʒOu/	"though"
7-	b/e	/bin/	"bin"	/ein/	"thin"
8-	b/g	/bOu/	"bow"	/gOu/	"go"
9-	b/k	/bil/	"bill"	/kil/	"kill"
10-	b/m	/bil/	" " "	/mil/	"mill"
11-	b/n	/bil/	" " "	/nil/	"nill"
12-	b/ŋ	/rrb/	"rub"	/rrŋ/	"wrung"
13-	b/z	/bIu/	"boo"	/zIu/	"zoo"
14-	b/s	/bOu/	"bow"	/sOu/	"sow"
15-	b/ʒ̥	/beib/	"babe"	/beiz̥/	"beige"
16-	b/ʒ̥	/bel/	"bell"	/ʒ̥el/	"shell"
17-	b/l	/bIin/	"been"	/lIin/	"lean"
18-	b/h	/band/	"band"	/hand/	"hand"
19-	b/(x)	/lob/	"lob"	(/lox/)	("loch")
20-	b/r	/brbl/	"bubble"	/rrbl/	"rubble"
21-	b/i	/bot/	"bot"	/iot/	"yacht"
22-	b/u	/brn/	"bun"	/urn/	"won"

c) The major realization of /b/:-

The principal realization of this phoneme is as a "lenis, voiced, bilabial, plosive" consonant.

The phoneme /p/:-

a) The phoneme /p/ belongs to positions "e1" (2'), "i1" (1), "i2" (2), "i3" (3) and "z³".

b) The identity and distinctive function of /b/ are established by the following oppositions:-

1-	p/b	(see b1)			
2-	p/v	/pAil/	"pile"	/vAil/	"vile"
3-	p/f	/pAil/	" " "	/fAil/	"file"
4-	p/d	/pen/	"pen"	/den/	"den"
5-	p/t	/pen/	" " "	/ten/	"ten"
6-	p/θ	/pen/	" " "	/θen/	"then"
7-	p/e	/pin/	"pin"	/ein/	"thin"
8-	p/g	/pil/	"pill"	/gil/	"gill"
9-	p/k	/pil/	" " "	/kil/	"kill"
10-	p/m	/pil/	" " "	/mil/	"mill"
11-	p/n	/pil/	" " "	/nil/	"nill"
12-	p/ŋ	/sip/	"sip"	/siŋ/	"sing"
13-	p/z	/lip/	" " "	/zip/	"zip"
14-	p/s	/lip/	" " "	/sip/	"sip"
15-	p/ ^v z	/leprd/	"leopard"	/le ^v zrd/	"leisured"
16-	p/ ^v s	/pIip/	"peep"	/s ^v Iip/	"sheep"
17-	p/l	/pIip/	" " "	/lIip/	"leap"
18-	p/h	/pIip/	" " "	/hIip/	"heap"
19-	p/(x)	/lop/	"lop"	(/lox/)	("loch")

20-	p/r	/prb/	"pub"	/rrb/	"rub"
21-	p/i	/pot/	"pot"	/iot/	"yacht"
22-	p/u	/prn/	"pun"	/urn/	"won"

c) The major realizations of /p/:-

- 1- The commonest realization of /p/ is as a "fortis, voiceless, bilabial, plosive" consonant.
- 2- In Cockney English, /p/ may either be realized as a "glottal stop" (or "catch"), i.e. [ʔ], or its standard realization may be reinforced by a "glottal stop", e.g. [ʃejʔ] or [ʃejʔp] for /ʃeip/, etc. (c.f. Gimson, 1978 and O'Connor, 1978).

The phoneme /v/:-

a) The phoneme /v/ belongs to positions "E¹", "i1" (1), "i2" (2) and "i3" (3).

b) The identity and distinctive function of this phoneme are established by the following oppositions:-

1-	v/b	(see b2)			
2-	v/p	(see p2)			
3-	v/f	/vAil/	"vile"	/fAil/	"file"
4-	v/d	/vAin/	"vine"	/dAin/	"dine"
5-	v/t	/vAin/	" " "	/tAin/	"tine"
6-	v/θ	/vAin/	" " "	/θAin/	"thine"
7-	v/e	/vAi/	"vie"	/eAi/	"thigh"
8-	v/g	/vein/	"vain"	/gein/	"gain"
9-	v/k	/vein/	" " "	/kein/	"cane"
10-	v/m	/vein/	" " "	/mein/	"main"
11-	v/n	/vAin/	"vine"	/nAin/	"nine"

12-	v/ŋ	/liv/	"live"	/liŋ/	"ling"
13-	v/z	/vIil/	"veal"	/zIil/	"zeal"
14-	v/s	/vIil/	" " "	/sIil/	"seal"
15-	v/ʒ	/klOuvr/	"clover"	/klOuʒr/	"closure"
16-	v/ʃ	/vAi/	"vie"	/ʃAi/	"shy"
17-	v/l	/vAi/	"vie"	/lAi/	"lie"
18-	v/h	/vAi/	"vie"	/hAi/	"high"
19-	v/(x)	/rAiv/	"rive"	(/rAix/)	("Reich")
20-	v/r	/vein/	"vain"	/rein/	"rain"
21-	v/i	/vir/	"veer"	/iir/	"year"
22-	v/u	/vent/	"vent"	/uent/	"went"

c) The major realization of the phoneme /v/:-

The most frequent realization of /v/ is as a "lenis, voiced, labio-dental, fricative (spirant)" consonant.

The phoneme /f/:-

a) The phoneme /f/ belongs to positions "E¹", "i1" (1) and "i2" (2).

b) The identity and distinctive function of the phoneme /f/ are established by the following oppositions:-

1-	f/b	(see b3)			
2-	f/p	(see p3)			
3-	f/v	(see v3)			
4-	f/d	/fAin/	"fine"	/dAin/	"dine"
5-	f/t	/fAil/	"file"	/tAil/	"tile"
6-	f/θ	/fAin/	"fine"	/θAin/	"thine"
7-	f/θ	/fIif/	"fief"	/eIif/	"thief"
8-	f/g	/fein/	"feign"	/gein/	"gain"

9-	f/k	/fein/	"feign"	/kein/	"cane"
10-	f/m	/fein/	" " "	/mein/	"main"
11-	f/n	/fAit/	"fight"	/nAit/	"night"
12-	f/ŋ	/daf/	"daff"	/daŋ/	"dang"
13-	f/z	/fIil/	"feel"	/zIil/	"zeal"
14-	f/s	/fIil/	" " "	/sIil/	"seal"
15-	f/ʒ	/lOuf/	"loaf"	/lOuʒ/	"loge"
16-	f/ʃ	/fAin/	"fine"	/ʃAin/	"shine"
17-	f/l	/fAin/	" " "	/lAin/	"line"
18-	f/h	/lAiv/	"live"	/hAiv/	"hive"
19-	f/(x)	/kof/	"cough"	(/gox/)	("Gogh")
20-	f/r	/fan/	"fan"	/ran/	"ran"
21-	f/i	/fir/	"fear"	/iir/	"year"
22-	f/u	/frn/	"fun"	/urn/	"won"

c) The major realization of /f/:-

The major realization of this phoneme is as a "fortis, voiceless, labio-dental, fricative (spirant)" consonant.

The phoneme /d/:-

a) The phoneme /d/ belongs to positions "e1" (2') "E³" "i1" (1), "i2" (2), "i3" (3), "i4" (4), "Z³", "Z⁴" and "Z⁵".

b) The identity and distinctive function of the phoneme /d/ are established by the following oppositions:-

1-	d/b	(see b4)			
2-	d/p	(see p4)			
3-	d/v	(see v4)			
4-	d/f	(see f4)			
5-	d/t	/den/	"den"	/ten/	"ten"

6-	d/ʃ	/der/	"dare"	/ʃer/	"there"
7-	d/e	/din/	"din"	/ein/	"thin"
8-	d/g	/dOu/	"dough"	/gOu/	"go"
9-	d/k	/din/	"din"	/kin/	"kin"
10-	d/m	/den/	"den"	/men/	"men"
11-	d/n	/dOu/	"dough"	/nOu/	"no"
12-	d/ŋ	/rid/	"rid"	/riŋ/	"ring"
13-	d/z	/dip/	"dip"	/zip/	"zip"
14-	d/s	/dip/	" " "	/sip/	"sip"
15-	d/ʒ	/beid/	"bade"	/beiʒ/	"beige"
16-	d/ʃ	/dAin/	"dine"	/ʃAin/	"shine"
17-	d/l	/dAin/	" " "	/lAin/	"line"
18-	d/h	/did/	"did"	/hid/	"hid"
19-	d/(x)	/god/	"God"	(/gox/)	("Goch")
20-	d/r	/dig/	"dig"	/rig/	"rig"
21-	d/i	/dir/	"dear"	/iir/	"year"
22-	d/u	/drn/	"done"	/urn/	"one"

c) The major realization of /d/:-

The main realization of this phoneme is as a "lenis, voiced, apico-alveolar, plosive" consonant.

The phoneme /t/:-

a) The phoneme /t/ belongs to positions "e1" (2'), "E³" "i1" (1), "i2" (2), "i3" (3), "i4" (4), "i5" (5), "Z⁴" and "Z⁵".

b) The identity and distinctive function of the phoneme /t/ are established by the following oppositions:-

1-	t/b	(see b5)			
2-	t/p	(see p5)			
3-	t/v	(see v5)			
4-	t/f	(see f5)			
5-	t/d	(see d5)			
6-	t/ʃ	/t0u/	"tow"	/ʃ0u/	"though"
7-	t/θ	/tin/	"tin"	/ein/	"thin"
8-	t/g	/t0u/	"tow"	/g0u/	"go"
9-	t/k	/til/	"till"	/kil/	"kill"
10-	t/m	/til/	" " "	/mil/	"mill"
11-	t/n	/til/	" " "	/nil/	"nill"
12-	t/ŋ	/sit/	"sit"	/siŋ/	"sing"
13-	t/z	/tip/	"tip"	/zip/	"zip"
14-	t/s	/tip/	" " "	/sip/	"sip"
15-	t/ʒ	/letr/	"letter"	/leʒr/	"leisure"
16-	t/ʃ	/t0u/	"tow"	/ʃ0u/	"show"
17-	t/l	/tip/	"tip"	/lip/	"lip"
18-	t/h	/tip/	" " "	/hip/	"hip"
19-	t/(x)	/lot/	"lot"	(/lox/)	("loch")
20-	t/r	/trg/	"tug"	/rrg/	"rug"
21-	t/i	/tir/	"tear"	/iir/	"year"
22-	t/u	/trn/	"ton"	/urn/	"one"

c) The major realizations of /t/:-

- 1- This phoneme is mostly realized as a "fortis, voiceless, apico-alveolar, plosive" consonant.
- 2- In Cockney and many dialectal versions of S.E., /t/ is mostly realized as a "glottal stop" in post-nuclear positions, as well as in the context of a non-weak vocalic element which is especially succeeded by /m,

n, l, r, i, u/, e.g. [gɔ?] for [gɔt] /got/ "got",
 [biɔ?] for [biɔt] /bilt/ "built", [bi?] for [bit]
 /bit/ "bit", [bɔ?ɔ] for [bɔtɔɔ] /botl/ "bottle",
 etc.

The phoneme /ʃ/:-

a) The phoneme /ʃ/ belongs to positions "E¹", "i1" (1) and
 "i2" (2).

b) The identity and distinctive function of /ʃ/ are
 established by the following oppositions:-

1-	ʃ/b	(see b6)			
2-	ʃ/p	(see p6)			
3-	ʃ/v	(see v6)			
4-	ʃ/f	(see f6)			
5-	ʃ/d	(see d6)			
6-	ʃ/t	(see t6)			
7-	ʃ/e	/ʃAi/	"thy"	/eAi/	"thigh"
8-	ʃ/g	/ʃOu/	"though"	/gOu/	"go"
9-	ʃ/k	/ʃAin/	"thine"	/kAin/	"kine"
10-	ʃ/m	/ʃAi/	"thy"	/mAi/	"my"
11-	ʃ/n	/beiʃ/	"bathe"	/bein/	"bane"
12-	ʃ/n	/uiʃr/	"wither"	/uinr/	"winger"
13-	ʃ/z	/brIiʃ/	"breathe"	/brIiz/	"breeze"
14-	ʃ/s	/ʃAi/	"thy"	/sAi/	"sigh"
15-	ʃ/ʒ	/beiʃ/	"bathe"	/beiʒ/	"beige"
16-	ʃ/ʃ	/ʃAi/	"thy"	/ʃAi/	"shy"
17-	ʃ/l	/ʃAi/	" " "	/lAi/	"lie"
18-	ʃ/h	/ʃAi/	" " "	/hAi/	"high"

19-	ʃ/(x)	/brɪiʃ/	"breathe"	(/drɪix/)	("dreich")
20-	ʃ/r	/ʃat/	"that"	/rat/	"rat"
21-	ʃ/i	/ʃen/	"then"	/ien/	"yen"
22-	ʃ/u	/ʃei/	"they"	/uei/	"way"

c) The major realizations of /ʃ/:-

The principal realization of this phoneme is as a "lenis, voiced, apico-dental (alternatively, interdental or post-dental), fricative (spirant)" consonant.

The phoneme /e/:-

a) The phoneme /e/ belongs to positions "E¹", "i1" (1), "i2" (2), "i3" (3) and "i4" (4).

b) The identity and distinctive function of this phoneme are established by the following oppositions:-

1-	e/b	(see b7)			
2-	e/p	(see p7)			
3-	e/v	(see v7)			
4-	e/f	(see f7)			
5-	e/d	(see d7)			
6-	e/t	(see t7)			
7-	e/ʃ	(see ʃ7)			
8-	e/g	/eAi/	"thigh"	/gAi/	"guy"
9-	e/k	/eik/	"thick"	/kik/	"kick"
10-	e/m	/eAi/	"thigh"	/mAi/	"my"
11-	e/n	/eAi/	" " "	/nAi/	"nigh"
12-	e/ŋ	/kie/	"kith"	/kiŋ/	"king"
13-	e/z	/eɪNK/	"think"	/ziNK/	"zinc"

14-	e/s	/eɪNK/	"think"	/sɪNK/	"sink"
15-	e/ʒ	/lɔue/	"loath"	/lɔuʒ/	"loge"
16-	e/ʒ	/eAɪ/	"thigh"	/ʒAɪ/	"shy"
17-	e/l	/eAɪ/	" " "	/lAɪ/	"lie"
18-	e/h	/eAɪ/	" " "	/hAɪ/	"high"
19-	e/(x)	/goe/	"Goth"	(/gox/)	("Gogh")
20-	e/r	/eɪk/	"thick"	/rɪk/	"rick"
21-	e/i	/eɔrn/	"thorn"	/iɔrn/	"yawn"
22-	e/u	/eɪn/	"thin"	/uɪn/	"win"

c) The major realization of /e/:-

This phoneme is realized as a "fortis, voiceless, apico-dental (alternatively, "interdental" or "post-dental"), fricative (spirant)" consonant.

The phoneme /g/:-

a) The phoneme /g/ belongs to positions "e1" (2'), "i1" (1), "i2" (2) and "i3" (3).

b) The identity and distinctive function of this phoneme are established by the following oppositions:-

1-	g/b	(see b8)			
2-	g/p	(see p8)			
3-	g/v	(see v8)			
4-	g/f	(see f8)			
5-	g/d	(see d8)			
6-	g/t	(see t8)			
7-	g/ʃ	(see ʃ8)			
8-	g/ə	(see ə8)			
9-	g/k	/gɔb/	"tob"	/kɔb/	"kob"

10-	g/m	/gob/	"gob"	/mob/	"mob"
11-	g/n	/gab/	"gap"	/nab/	"knab"
12-	g/ŋ	/uig/	"wig"	/uiŋ/	"wing"
13-	g/z	/fig/	"fig"	/fiz/	"fizz"
14-	g/s	/gob/	"gob"	/sob/	"sob"
15-	g/ʒ	/eigr/	"agar"	/eiʒr/	"azure"
16-	g/ʃ	/uig/	"wig"	/uiʃ/	"wish"
17-	g/l	/uig/	"wig"	/uil/	"will"
18-	g/h	/gob/	"gob"	/hob/	"hob"
19-	g/(x)	/log/	"log"	(/lox/)	("loch")
20-	g/r	/grn/	"gun"	/rrn/	"run"
21-	g/i	/got/	"got"	/iot/	"yacht"
22-	g/u	/grn/	"gun"	/urn/	"won"

c) The major realization of /g/:-

The standard realization of this phoneme is as a
 "fortis, voiced, dorso-palato-velar, plosive" consonant.

The phoneme /k/:-

a) This phoneme belongs to positions "e1" (2'), "i1" (1),
 "i2" (2) and "i3" (3).

b) The identity and distinctive function of the phoneme /k/
 are established by the following oppositions:-

- 1- k/b (see b9)
- 2- k/p (see p9)
- 3- k/v (see v9)
- 4- k/f (see f9)
- 5- k/d (see d9)
- 6- k/t (see t9)

7-	k/ʃ	(see ʃ9)			
8-	k/ə	(see ə9)			
9-	k/g	(see g9)			
10-	k/m	/kein/	"cane"	/mein/	"main"
11-	k/n	/keim/	"came"	/neim/	"name"
12-	k/ŋ	/sik/	"sick"	/siŋ/	"sing"
13-	k/z	/kɪɪl/	"keel"	/zɪɪl/	"zeal"
14-	k/s	/kɪɪl/	" " "	/sɪɪl/	"seal"
15-	k/ɹ	/eikr/	"acre"	/eiɹr/	"azure"
16-	k/ʃ	/keim/	"came"	/ʃeim/	"shame"
17-	k/l	/keim/	" " "	/leim/	"lame"
18-	k/h	/kandl/	"candle"	/handl/	"handle"
19-	k/(x)	/lok/	"lock"	(/lox/)	"loch"
20-	k/r	/kan/	"can"	/ran/	"ran"
21-	k/i	/kot/	"cot"	/iot/	"yacht"
22-	k/u	/kud/	"could"	/uud/	"wood"

c) The major realizations of /k/:-

- 1- The standard realization of this phoneme is as a "fortis, voiceless, dorso-palato-velar, plosive" consonant.
- 2- According to many phonetic sources, the two phonemes /k/ and /g/ demonstrate more flexibility to assimilate with a succeeding vocalic element than all the other consonants in the inventory.
- 3- In Cockney English, as well as in some other dialects, this phoneme is normally realized as a "glottal stop" in contexts analogous to those mentioned for /t/; (c.f. Gimson, 1978 and O'Connor, 1978).

The phoneme /m/:-

a) This phoneme belongs to positions "e1" (2'), "e2" (1'), "i1" (1), "i2" (2), "i3" (3), "i4" (4), "i5" (5), "z³", "z⁴" and "z⁵".

b) The identity and distinctive function of the phoneme /m/ are established by the following oppositions:-

1-	m/b	(see b10)			
2-	m/p	(see p10)			
3-	m/v	(see v10)			
4-	m/f	(see f10)			
5-	m/d	(see d10)			
6-	m/t	(see t10)			
7-	m/ʃ	(see ʃ10)			
8-	m/e	(see e10)			
9-	m/g	(see g10)			
10-	m/k	(see k10)			
11-	m/n	/meim/	"maim"	/neim/	"name"
12-	m/ŋ	/srm/	"sum"	/srŋ/	"sung"
13-	m/z	/meim/	"maim"	/meiz/	"maize"
14-	m/s	/meim/	" " "	/seim/	"same"
15-	m/ ^v z	/lOum/	"loam"	/lOu ^v z/	"loge"
16-	m/ ^v s	/meim/	"maim"	/ ^v seim/	"shame"
17-	m/l	/meim/	" " "	/leim/	"lame"
18-	m/h	/mil/	"mill"	/hil/	"hill"
19-	m/(x)	/drIim/	"dream"	(/drIix/)	("dreich")
20-	m/r	/man/	"man"	/ran/	"ran"
21-	m/i	/mir/	"mere"	/iir/	"year"
22-	m/u	/ment/	"meant"	/uent/	"went"

c) The major realization of /m/:-

This phoneme is commonly realized as a "lenis, voiced, bilabial, continuant, nasal" consonant.

The phoneme /n/:-

a) The phoneme /n/ belongs to positions "E¹", "E²", "i¹" (1), "i²" (2), "i³" (3), "i⁴" (4), "i⁵" (5), "post-i" (6), "Z³", "Z⁴" and "Z⁵".

b) The identity and distinctive function of this phoneme are established by the following oppositions:-

1-	n/b	(see b11)		
2-	n/p	(see p11)		
3-	n/v	(see v11)		
4-	n/f	(see f11)		
5-	n/d	(see d11)		
6-	n/t	(see t11)		
7-	n/ʃ	(see ʃ11)		
8-	n/e	(see e11)		
9-	n/g	(see g11)		
10-	n/k	(see k11)		
11-	n/m	(see m11)		
12-	n/ŋ	/srn/	"sun"	/srŋ/ "sung"
13-	n/z	/nIil/	"kneel"	/zIil/ "zeal"
14-	n/s	/nIil/	" " "	/sIil/ "seal"
15-	n/ʒ	/bein/	"bane"	/beiʒ/ "beige"
16-	n/ʃ	/nOʊ/	"no"	/ʃOʊ/ "show"
17-	n/l	/nOʊ/	" " "	/lOʊ/ "low"
18-	n/h	/nAu/	"now"	/hAu/ "how"

19-	n/(x)	/gon/	"gone"	(/gox/)	("Gogh")
20-	n/r	/nrn/	"nun"	/rnr/	"run"
21-	n/i	/nir/	"near"	/iir/	"year"
22-	n/u	/nrn/	"nun"	/urn/	"one"

c) The major realization of /n/:-

The standard realization of this phoneme is as a "lenis, voiced, apico-alveolar, continuant, nasal" consonant.

The phoneme /ŋ/:-

a) This phoneme belongs to positions "Z¹" and "Z²".

b) The identity and distinctive function of the phoneme /ŋ/ are established by the following oppositions:-

1-	ŋ/b	(see b12)			
2-	ŋ/p	(see p12)			
3-	ŋ/v	(see v12)			
4-	ŋ/f	(see f12)			
5-	ŋ/d	(see d12)			
6-	ŋ/t	(see t12)			
7-	ŋ/ʃ	(see ʃ12)			
8-	ŋ/ə	(see ə12)			
9-	ŋ/g	(see g12)			
10-	ŋ/k	(see k12)			
11-	ŋ/m	(see m12)			
12-	ŋ/n	(see n12)			
13-	ŋ/z	/uiŋ/	"wing"	/uiz/	"whiz"
14-	ŋ/s	/kiŋ/	"king"	/kis/	"kiss"
15-	ŋ/ʒ	not attested in practice.			
16-	ŋ/ʒ	/kiŋ/	"king"	/kiʒ/	"kish"

17-	ŋ/l	/kiŋ/	"king"	/kil/	"kill"
18-	ŋ/h	not possible in principle (for distributional reasons).			
19-	ŋ/(x)	/loŋ/	"long"	(/lox/)	("loch")
20-	ŋ/r	/diŋ/	"ding"	/dir/	"dear"
21-	ŋ/i	/boŋ/	"bong"	/boi/	"boy"
22-	ŋ/u	/baŋ/	"bang"	/bAu/	"bow"

c) The major realization of /n/:-

The characteristic realization of /ŋ/ is as a "lenis, voiced, velar (or "post-palatal"), continuant, nasal" consonant.

The phoneme /z/:-

a) The phoneme /z/ belongs to positions "E³", "i²" (2), "post-i" (6), "z³", "z⁴" and "z⁵".

b) The identity and distinctive function of the phoneme /z/ are established by the following oppositions:-

- 1- z/b (see b13)
- 2- z/p (see p13)
- 3- z/v (see v13)
- 4- z/f (see f13)
- 5- z/d (see d13)
- 6- z/t (see t13)
- 7- z/ʃ (see ʃ13)
- 8- z/θ (see θ13)
- 9- z/g (see g13)
- 10- z/k (see k13)
- 11- z/m (see m13)
- 12- z/n (see n13)

13-	z/n	(see n13)			
14-	z/s	/sɪnz/	"sins"	/sɪns/	"since"
15-	z/ʒ	/lɔuz/	"lows"	/lɔuz̥/	"loge"
16-	z/ʃ	/zɪp/	"zip"	/ʃɪp/	"ship"
17-	z/l	/zɪŋk/	"zinc"	/lɪŋk/	"link"
18-	z/h	/zɪl/	"zeal"	/hɪl/	"heal"
19-	z/(x)	/brɪz/	"breeze"	(/drɪx/)	("dreich")
20-	z/r	/zɪp/	"zip"	/rɪp/	"rip"
21-	z/i	/zɪu/	"zoo"	/ɪu/	"you"
22-	z/u	/haz/	"has"	/hAu/	"how"

c) The major realization of /z/:-

It is commonly realized as a "lenis, voiced, narrow-grooved, blade-fricative (spirant)" consonant.

The phoneme /s/:-

a) The phoneme /s/ belongs to positions "pre-e" (3'), "i1" (1), "i2" (2), "i3" (3), "i4" (4), "i5" (5), "z⁴" and "z⁵".

b) The identity and distinctive function of the phoneme /s/ are established by the following oppositions:-

1-	s/b	(see b14)
2-	s/p	(see p14)
3-	s/v	(see v14)
4-	s/f	(see f14)
5-	s/d	(see d14)
6-	s/t	(see t14)
7-	s/ʃ	(see ʃ14)
8-	s/θ	(see θ14)
9-	s/g	(see g14)

10-	s/k	(see k14)			
11-	s/m	(see m14)			
12-	s/n	(see n14)			
13-	s/ŋ	(see ŋ14)			
14-	s/z	(see z14)			
15-	s/ ζ	/lesr/	"lesser"	/le ζ r/	"leisure"
16-	s/ ξ	/sip/	"sip"	/ ξ ip/	"ship"
17-	s/l	/sip/	" " "	/lip/	"lip"
18-	s/h	/sand/	"sand"	/hand/	"hand"
19-	s/(x)	/los/	"loss"	(/lox/)	("loch")
20-	s/r	/srn/	"sun"	/rrn/	"run"
21-	s/i	/sot/	"sot"	/iot/	"yacht"
22-	s/u	/srn/	"sun"	/urn/	"one"

c) The major realization of /s/:-

The standard realization of this phoneme is as a "fortis, voiceless, narrow-grooved, blade-alveolar (or "apico-alveolar"), fricative, spirant" consonant.

The phoneme / ζ /:-

a) The phoneme / ζ / belongs to positions "E³", "i2" (2) and "i3" (3).

b) The identity and distinctive function of the phoneme / ζ / are established by the following oppositions:-

1-	ζ /b	(see b15)
2-	ζ /p	(see p15)
3-	ζ /v	(see v15)
4-	ζ /f	(see f15)
5-	ζ /d	(see d15)

6-	ʒ/t	(see t15)			
7-	ʒ/ʃ	(see ʃ15)			
8-	ʒ/e	(see e15)			
9-	ʒ/g	(see g15)			
10-	ʒ/k	(see k15)			
11-	ʒ/m	(see m15)			
12-	ʒ/n	(see n15)			
13-	ʒ/ŋ	(see ŋ15)			
14-	ʒ/z	(see z15)			
15-	ʒ/s	(see s15)			
16-	ʒ/ʒ	/eiʒr/	"azure"	/aiʒr/	"Asia"
17-	ʒ/l	/beiʒ/	"beige"	/beil/	"bail"
18-	ʒ/h	possible (but not attested in practice).			
19-	ʒ/(x)	possible (but not attested in practice).			
20-	ʒ/r	/ʒan/	"Jeanne"	/ran/	"ran"
21-	ʒ/i	/leʒr/	"leisure"	/leir/	"layer"
22-	ʒ/u	/aʒr/	"azure"	/Aur/	"hour"

c) The major realization of /ʒ/:-

The major realization of the phoneme /ʒ/ is as a "lenis, voiced, wide-grooved, palato-alveolar (or "apico-prepalatal"), fricative (spirant)" consonant.

The phoneme /ʒ/:-

a) This phoneme belongs to positions "E¹", "i1" (1), "i2" (2), "i3" (3) and "z³".

b) The identity and distinctive function of the phoneme /ʒ/ are established by the following oppositions:-

1-	ʃ/b	(see b16)			
2-	ʃ/p	(see p16)			
3-	ʃ/v	(see v16)			
4-	ʃ/f	(see f16)			
5-	ʃ/d	(see d16)			
6-	ʃ/t	(see t16)			
7-	ʃ/ʃ	(see ʃ16)			
8-	ʃ/ə	(see ə16)			
9-	ʃ/g	(see g16)			
10-	ʃ/k	(see k16)			
11-	ʃ/m	(see m16)			
12-	ʃ/n	(see n16)			
13-	ʃ/ŋ	(see ŋ16)			
14-	ʃ/z	(see z16)			
15-	ʃ/s	(see s16)			
16-	ʃ/ʒ	(see ʒ16)			
17-	ʃ/l	/ʃAin/	"shine"	/lAin/	"line"
18-	ʃ/h	/ʃel/	"shell"	/hel/	"hell"
19-	ʃ/(x)	/goʃ/	"gosh"	(/gox/)	("Gogh")
20-	ʃ/r	/ʃOu/	"show"	/rOu/	"row"
21-	ʃ/i	/ʃot/	"shot"	/iot/	"yacht"
22-	ʃ/u	/ʃrn/	"shun"	/urn/	"one"

c) The major realizations of the phoneme /ʃ/:-

- 1- The most distinguishable realization of this phoneme is as a "fortis, voiceless, wide-grooved, palato-alveolar (or "apico-prepalatal"), fricative (spirant)" consonant.
- 2- A clearer acoustic quality is heard when the speaker realizes this phoneme with spread lips.

The phoneme /l/:-

- a) The phoneme /l/ belongs to positions "e2" (1'), "i1" (1), "i2" (2), "i3" (3), "i4" (4), "i5" (5), "post-i" (6), "z³" and "z⁴".
- b) The identity and distinctive function of the phoneme /l/ are established by the following oppositions:-

1-	l/b	(see b17)			
2-	l/p	(see p17)			
3-	l/v	(see v17)			
4-	l/f	(see f17)			
5-	l/d	(see d17)			
6-	l/t	(see t17)			
7-	l/ʃ	(see ʃ17)			
8-	l/θ	(see θ17)			
9-	l/g	(see g17)			
10-	l/k	(see k17)			
11-	l/m	(see m17)			
12-	l/n	(see n17)			
13-	l/ŋ	(see ŋ17)			
14-	l/z	(see z17)			
15-	l/s	(see s17)			
16-	l/ʒ	(see ʒ17)			
17-	l/ʒ̃	(see ʒ̃17)			
18-	l/h	/land/	"land"	/hand/	"hand"
19-	l/(x)	/lol/	"loll"	(/lox/)	("loch")
20-	l/r	/lap/	"lap"	/rap/	"wrap"
21-	l/i	/lot/	"lot"	/iot/	"yacht"
22-	l/u	/leik/	"lake"	/ueik/	"wake"

c) The major realizations of /l/:-

- 1- The commonest realization of this phoneme is as a "lenis, voiced, apico-alveolar, lateral, liquid (or "approximant")" consonant.
- 2- Whenever phoneme /l/ is succeeded in a form by a vowel or a semi-vowel, it is always realized as a "clear" /l/ (phonetically represented as [l]).
- 3- In all post-nuclear positions, this phoneme is realized with a good amount of "velarization". Phonetically, it is normally identified as "dark" /l/ and represented as [ɫ].
- 4- An even "darker" realization of /l/ may be identified especially when it is phonetically considered to be syllabic, e.g. "battle", "table", etc.

The phoneme /h/:-

- a) The phoneme /h/ belongs to position "E¹".
- b) The identity and distinctive function of the phoneme /h/ are established by the following oppositions:-

- 1- h/b (see b18)
- 2- h/p (see p18)
- 3- h/v (see v18)
- 4- h/f (see f18)
- 5- h/d (see d18)
- 6- h/t (see t18)
- 7- h/ʃ (see ʃ18)
- 8- h/ə (see ə18)
- 9- h/g (see g18)
- 10- h/k (see k18)

- 11- h/m (see m18)
 12- h/n (see n18)
 13- h/ŋ (see ŋ18)
 14- h/z (see z18)
 15- h/s (see s18)
 16- h/ʒ (see ʒ18)
 17- h/ʃ (see ʃ18)
 18- h/l (see l18)
 19- h/(x) not possible in principle (because they do not occur in equivalent contexts).
 20- h/r /hat/ "hat" /rat/ "rat"
 21- h/i /hot/ "hot" /iot/ "yacht"
 22- h/u /heik/ "hake" /ueik/ "wake"

c) The major realizations of /h/:-

- 1- This phoneme is mainly realized as a "voiceless, glottal (or "laryngeal"), fricative (spirant)" consonant.
- 2- A "voiced" realization is heard in the speech of some speakers of S.E. in lexical items whose phonotactic structures are similar to those of "behind" and "behave", etc.
- 3- In minor-type weak phonotagms, as well as in Cockney English and some other dialects, the realization of /h/ is either "silent", "barely noticeable" or "non-existent", e.g. [im] for [him] /him/ "him", [wajɫ] for [hwajɫ] /h(w)uAil/ "while", etc.

The phoneme (/x/):-

- a) The phoneme /x/ belongs to positions "Z⁶" and "Z⁷".

b) The identity and distinctive function of this Scottish phoneme are established by the following oppositions:-

- | | | | | | |
|-----|--------|--|----------|-------|--------|
| 1- | (x)/b | (see b19) | | | |
| 2- | (x)/p | (see p19) | | | |
| 3- | (x)/v | (see v19) | | | |
| 4- | (x)/f | (see f19) | | | |
| 5- | (x)/d | (see d19) | | | |
| 6- | (x)/t | (see t19) | | | |
| 7- | (x)/ʃ | (see ʃ19) | | | |
| 8- | (x)/e | (see e19) | | | |
| 9- | (x)/g | (see g19) | | | |
| 10- | (x)/k | (see k19) | | | |
| 11- | (x)/m | (see m19) | | | |
| 12- | (x)/n | (see n19) | | | |
| 13- | (x)/ŋ | (see ŋ19) | | | |
| 14- | (x)/z | (see z19) | | | |
| 15- | (x)/s | (see s19) | | | |
| 16- | (x)/ʒ | (see ʒ19) | | | |
| 17- | (x)/ʒ̃ | (see ʒ̃19) | | | |
| 18- | (x)/l | (see l19) | | | |
| 19- | (x)/h | (see h19) | | | |
| 20- | (x)/r | (/lox/) | ("loch") | /lor/ | "lore" |
| 21- | (x)/i | (/gox/) | ("Goch") | /goi/ | "goy" |
| 22- | (x)/u | Possible (but not attested in practice). | | | |

c) The major realizations of (/x/):-

- 1- This phoneme is commonly realized in Scottish English as a "fortis, voiceless, dorso-velar, fricative (spirant)" consonant.

2- Because of the lack of opposition between /x:k/ in S.E., this Scottish phoneme is mostly realized in S.E. as a [k̠], i.e. as a "fortis, voiceless, dorso-palato-velar, plosive" consonant.

The phoneme /r/:-

- a) The phoneme /r/ belongs to positions "e2" (l'), "n" and "il" (l).
- b) The identity and distinctive function of this phoneme in the nuclear position are established in Chapter 3 .
- c) The identity and distinctive function of the phoneme /r/ in the peripheral positions are established by the following oppositions:-

- 1- r/b (see b20)
- 2- r/p (see p20)
- 3- r/v (see v20)
- 4- r/f (see f20)
- 5- r/d (see d20)
- 6- r/t (see t20)
- 7- r/ʈ (see ʈ20)
- 8- r/ə (see ə20)
- 9- r/g (see g20)
- 10- r/k (see k20)
- 11- r/m (see m20)
- 12- r/n (see n20)
- 13- r/ŋ (see ŋ20)
- 14- r/z (see z20)
- 15- r/s (see s20)
- 16- r/ʒ (see ʒ20)

- 17- r/ŷ (see ŷ20)
- 18- r/l (see l20)
- 19- r/h (see h20)
- 20- r/(x) (see (x)20)
- 21- r/i (see Chapter 3)
- 22- r/u (see Chapter 3)

d) The major realizations of the phoneme /r/:-

See Chapter 3.

The phoneme /i/:-

a) This phoneme belongs to positions "e2" (l'), "n" and "il" (l).

b) The identity and distinctive function of this phoneme in position "n" are established in Chapter 3 .

c) The identity and distinctive function of /i/ in the peripheral positions are established by the following oppositions:-

- 1- i/b (see b21)
- 2- i/p (see p21)
- 3- i/v (see v21)
- 4- i/f (see f21)
- 5- i/d (see d21)
- 6- i/t (see t21)
- 7- i/ʃ (see ʃ21)
- 8- i/ə (see ə21)
- 9- i/g (see g21)
- 10- i/k (see k21)
- 11- i/m (see m21)
- 12- i/n (see n21)

- 13- i/ŋ (see ŋ21)
- 14- i/z (see z21)
- 15- i/s (see s21)
- 16- i/ʒ (see ʒ21)
- 17- i/ʃ (see ʃ21)
- 18- i/l (see l21)
- 19- i/h (see h21)
- 20- i/(x) (see (x)21)
- 21- i/r (see r21)
- 22- i/u (see Chapter 3)

d) The major realizations of the phoneme /i/:-
See Chapter 3 .

The phoneme /u/:-

- a) The phoneme /u/ belongs to positions "e2" (l'), "n" and "il" (l).
- b) The identity and distinctive function of this phoneme in the nuclear position are established in Chapter 3 .
- c) The identity and distinctive function of the phoneme /u/ in the peripheral positions are established by the following oppositions:-

- 1- u/b (see b22)
- 2- u/p (see p22)
- 3- u/v (see v22)
- 4- u/f (see f22)
- 5- u/d (see d22)
- 6- u/t (see t22)
- 7- u/ʃ (see ʃ22)

- 8- u/ə (see ə22)
- 9- u/g (see g22)
- 10- u/k (see k22)
- 11- u/m (see m22)
- 12- u/n (see n22)
- 13- u/ŋ (see ŋ22)
- 14- u/z (see z22)
- 15- u/s (see s22)
- 16- u/ʒ (see ʒ22)
- 17- u/ʒ̃ (see ʒ̃22)
- 18- u/l (see l22)
- 19- u/h (see h22)
- 20- u/(x) (see (x)22)
- 21- u/r (see r22)
- 22- u/i (see i22)

d) The major realizations of the phoneme /u/:-

See Chapter 3.

The archiphoneme /P/:-

a) The archiphoneme /P/ belongs to positions "e1" (2'), "i2" (2), "i3" (3) and "Z³".

b) The identity and distinctive function of the archiphoneme /P/ are established by the following oppositions:-

- 1- P/b not possible in principle (because /b/ is one of the terms of /P/)
- 2- P/p not possible in principle (same reason as for "P/b").
- 3- P/v not possible in principle (because they do not occur in equivalent phonotactic contexts)
- 4- P/f not possible in principle (same reason as for "P/v")

5-	P/d	/daNP/	"damp"	/damd/	"damned"
6-	P/t	/brNP/	"bump"	/brnt/	"bunt"
7-	P/ʃ	not possible in principle (same reason as for "P/v")			
8-	P/θ	not possible in principle (same reason as for "P/v")			
9-	P/g	not possible in principle (same reason as for "P/v")			
10-	P/k	not possible in principle (same reason as for "P/v")			
11-	P/m	/sPeI/	"spell"	/smel/	"smell"
12-	P/n	/sPer/	"spare"	/sner/	"snare"
13-	P/ŋ	not possible in principle (same reason as for "P/v")			
14-	P/z	not possible in principle (same reason as for "P/v")			
15-	P/s	not possible in principle (same reason as for "P/v")			
16-	P/ʒ	not possible in principle (same reason as for "P/v")			
17-	P/ʒ̃	not possible in principle (same reason as for "P/v")			
18-	P/l	/sPIIk/	"speak"	/sIIk/	"sleek"
19-	P/h	not possible in principle (same reason as for "P/v")			
20-	P/(x)	not possible in principle (same reason as for "P/v")			
21-	P/r	possible (but not attested in practice)			
22-	P/i	possible (but not attested in practice)			
23-	P/u	possible (but not attested in practice)			
24-	P/T	/sPark/	"spark"	/sTark/	"stark"
25-	P/S	possible (but not attested in practice)			
26-	P/Š	possible (but not attested in practice)			
27-	P/N	not possible in principle (same reason as for "P/N")			
28-	P/θ	possible (but not attested in practice)			
29-	P/K	/liNP/	"limp"	/liNK/	"link"
30-	P/F	/sPir/	"spear"	/sFir/	"sphere"

c) The major realization of the archiphoneme /P/:-

The commonest realization of this archiphoneme is as a "bilabial, plosive" consonant.

The archiphoneme /T/:-

a) This archiphoneme belongs to positions "e1" (2'), "i2" (2), "i3" (3), "i4" (4), "i5" (5), "post-i" (6), "z³", "z⁴" and "z⁵".

b) The identity and distinctive function of this archiphoneme are established by the following oppositions:-

- 1- T/b not possible in principle (because they do not occur in equivalent phonotactic contexts)
- 2- T/p not possible in principle (same reason as for "T/b")
- 3- T/v not possible in principle (same reason as for "T/b")
- 4- T/f not possible in principle (same reason as for "T/b")
- 5- T/d not possible in principle (because /d/ is one of the terms of the archiphoneme /T/)
- 6- T/t not possible in principle (same reason as for "T/d")
- 7- T/ʃ not possible in principle (same reason as for "T/b")
- 8- T/e not possible in principle (same reason as for "T/b")
- 9- T/g not possible in principle (same reason as for "T/b")
- 10- T/k not possible in principle (same reason as for "T/b")
- 11- T/m /sTɔr1/ "stall" /smɔr1/ "small"
- 12- T/n /sTɛr/ "stare" /sner/ "snare"
- 13- T/ŋ not possible in principle (same reason as for "T/b")
- 14- T/z not possible in principle (same reason as for "T/b")
- 15- T/s not possible in principle (same reason as for "T/b")
- 16- T/ʒ not possible in principle (same reason as for "T/b")
- 17- T/ʒ not possible in principle (same reason as for "T/b")
- 18- T/l /sTeik/ "steak" /sleik/ "slake"
- 19- T/h not possible in principle (same reason as for "T/b")
- 20- T/(x) not possible in principle (same reason as for "T/b")
- 21- T/r possible (but not attested in practice)

22-	T/i	possible (but not attested in practice)			
23-	T/u	possible (but not attested in practice)			
24-	T/P	(see P24)			
25-	T/S	/lipT/	"lipped"	/lipS/	"lips"
26-	T/S̄	/pTar/	"Ptah"	/pS̄or/	"pshaw"
27-	T/N	not possible in principle (same reason as for "T/b")			
28-	T/θ	/sikST/	"sixte"	/sikSθ/	"sixth"
29-	T/K	/sTand/	"stand"	/sKand/	"scanned"
30-	T/F	/sTɪŋs/	"stinks"	/sFɪŋs/	"sphinx"

c) The major realization of the archiphoneme /T/:-

The main realization of this archiphoneme is as an "apical-alveolar, plosive" consonant.

The archiphoneme /S/:-

a) This archiphoneme belongs to positions "i2" (2), "i3" (3), "i4" (4), "i5" (5), "post-i" (6), "z³", "z⁴" and "z⁵".

b) The identity and distinctive function of the archiphoneme /S/ are established by the following oppositions:-

1-	S/b	not possible in principle (because they do not occur in equivalent phonotactic contexts)			
2-	S/p	not possible in principle (same reason as for "S/b")			
3-	S/v	not possible in principle (same reason as for "S/b")			
4-	S/f	not possible in principle (same reason as for "S/b")			
5-	S/d	not possible in principle (same reason as for "S/b")			
6-	S/t	not possible in principle (same reason as for "S/b")			
7-	S/ʃ	not possible in principle (same reason as for "S/b")			
8-	S/e	not possible in principle (same reason as for "S/b")			
9-	S/g	not possible in principle (same reason as for "S/b")			
10-	S/k	not possible in principle (same reason as for "S/b")			

11-	S/m	/brtS/	"butts"	/brtn/	"button"
12-	S/n	/brtS/	"butts"	/brtn/	"button"
13-	S/ŋ	not possible in principle (same reason as for "S/b")			
14-	S/z	not possible in principle (because /z/ is one of the terms of the archiphoneme /S/).			
15-	S/s	not possible in principle (same reason as for "S/z")			
16-	S/ʒ	not possible in principle (same reason as for "S/b")			
17-	S/ʒ̃	not possible in principle (same reason as for "S/b")			
18-	S/l	/bIitS/	"beats"	/bIitl/	"beatle"
19-	S/h	not possible in principle (same reason as for "S/b")			
20-	S/(x)	not possible in principle (same reason as for "S/b")			
21-	S/r	/pSAi/	"psi"	/prAi/	"pry"
22-	S/i	possible (but not attested in practice)			
23-	S/u	possible (but not attested in practice)			
24-	S/P	(see P25)			
25-	S/T	(see T25)			
26-	S/ʃ̃	/pSai/	"psi"	/pʃ̃or/	"pshaw"
27-	S/N	not possible in principle (same reason as for "S/b")			
28-	S/θ	/uedS/	"weds"	/uidθ/	"width"
29-	S/K	possible (but not attested in practice)			
30-	S/F	possible (but not attested in practice)			

c) The major realization of the archiphoneme /S/:-

The standard realization of this archiphoneme is as a "blade-alveolar (or "apico-alveolar"), fricative (spirant)" consonant.

The archiphoneme /ʃ̃/:-

a) This archiphoneme belongs to positions "E³", "i²" (2), "i³" (3), "i⁴" (4), "Z³" and "Z⁴".

b) The identity and distinctive function of the archiphoneme /š/ are established by the following oppositions:-

- 1- š/b not possible in principle (because they do not occur in equivalent phonotactic contexts)
- 2- š/p not possible in principle (same reason as for "š/b")
- 3- š/v /uelš/ "welsh" /helv/ "helve"
- 4- š/f /uelš/ "welsh" /self/ "self"
- 5- š/d /uelš/ "welsh" /ueld/ "weld"
- 6- š/t /uelš/ "welsh" /belt/ "belt"
- 7- š/ʃ not possible in principle (same reason as for "š/b")
- 8- š/e not possible in principle (same reason as for "š/b")
- 9- š/g /uelšr/ "welsher" /belgr/ "belga"
- 10- š/k not possible in principle (same reason as for "š/b")
- 11- š/m /uelš/ "welsh" /helm/ "helm"
- 12- š/n /uelš/ "welsh" /uuln/ "woolen"
- 13- š/ŋ not possible in principle (same reason as for "š/b")
- 14- š/z /uelš/ "welsh" /uelz/ "wells"
- 15- š/s /uelš/ "welsh" /els/ "else"
- 16- š/ž not possible in principle (because /ž/ is one of the terms of the archiphoneme /š/)
- 17- š/š not possible in principle (same reason as for "š/ž")
- 18- š/l /pšor/ "pshaw" /pliu/ "plew"
- 19- š/h not possible in principle (same reason as for "š/b")
- 20- š/(x) not possible in principle (same reason as for "š/b")
- 21- š/r /pšor/ "pshaw" /prorn/ "prawn"
- 22- š/i possible (but not attested in practice)
- 23- š/u possible (but not attested in practice)
- 24- š/P (see P26)
- 25- š/T (see T26)
- 26- š/S (see S26)

- 27- Š/N not possible in principle (same reason as for "Š/b")
 28- Š/θ /ue1Š/ "welsh" /ue1θ/ "wealth"
 29- Š/K /ue1Š/ "welsh" /ue1K/ "whelk"
 30- Š/F possible (but not attested in practice)

c) The major realization of the archiphoneme /Š/:-

The standard realization of this archiphoneme is as a "palato-alveolar (or "apico-prepalatal"), fricative (spirant)" consonant.

The archiphoneme /N/:-

a) The archiphoneme /N/ belongs to positions "i1" (1) and "i2" (2).

b) The identity and distinctive function of this archiphoneme are established by the following oppositions:-

- 1- N/b /srNf1Aur/ "sunflower" ?/srbf1Aur/ ?"subflower"
 2- N/p not possible in principle (because they do not occur in equivalent phonotactic contexts)
 3- N/v not possible in principle (same reason as for "N/p")
 4- N/f not possible in principle (same reason as for "N/p")
 5- N/d not possible in principle (same reason as for "N/p")
 6- N/t not possible in principle (same reason as for "N/p")
 7- N/ʈ not possible in principle (same reason as for "N/p")
 8- N/ɸ not possible in principle (same reason as for "N/p")
 9- N/g not possible in principle (same reason as for "N/p")
 10- N/k not possible in principle (same reason as for "N/p")
 11- N/m not possible in principle (because /m/ is one of the terms of the archiphoneme /N/)
 12- N/n not possible in principle (same reason as for "N/m")
 13- N/ŋ not possible in principle (same reason as for "N/m")

14-	N/z	not possible in principle (same reason as for "N/b")			
15-	N/s	/liNP/	"limp"	/lisP/	"lisp"
16-	N/ ζ	not possible in principle (same reason as for "N/b")			
17-	N/ ξ	not possible in principle (same reason as for "N/b")			
18-	N/l	/srNK/	"sunk"	/srkK/	"sulk"
19-	N/h	not possible in principle (same reason as for "N/b")			
20-	N/(x)	not possible in principle (same reason as for "N/b")			
21-	N/r	/brNpiŋ/	"bumping"	/bṛrpiŋ/	"burping"
22-	N/i	/liNfS/	"lymphs"	/liifS/	"leaf's"
23-	N/u	/brNfS/	"bumps"	/bIufS/	"bouffes"
24-	N/P	(see P27)			
25-	N/T	(see T27)			
26-	N/S	(see S27)			
27-	N/ ξ	(see ξ 27)			
28-	N/θ	not possible in principle (same reason as for "N/b")			
29-	N/K	not possible in principle (same reason as for "N/b")			
30-	N/F	not possible in principle (same reason as for "N/b")			

c) The major realization of the archiphoneme /N/:-

The standard realization of this archiphoneme is as a "lenis, voiced, nasal" consonant.

The archiphoneme /θ/:-

a) The archiphoneme /θ/ belongs to positions "E¹", "i²" (2) "i³" (3) and "z³".

b) The identity and distinctive function of the archiphoneme /θ/ are established by the following oppositions:-

1-	θ/b	/θrṛṣ/	"thrush"	/bṛṛṣ/	"brush"
2-	θ/p	/helθ/	"health"	/help/	"help"

3-	θ/v	/θiIu/	"thew"	/viIu/	"view"
4-	θ/f	/θiIu/	"thew"	/fiIu/	"few"
5-	θ/d	/helθ/	"health"	/held/	"held"
6-	θ/t	/helθ/	"health"	/uelt/	"welt"
7-	θ/ʃ	not possible in principle (because /ʃ/ is one of the terms of the archiphoneme /θ/)			
8-	θ/e	not possible in principle (same reason as for "θ/ʃ")			
9-	θ/g	/helθi/	"healthy"	/belgr/	"belga"
10-	θ/k	not possible in principle (because they do not occur in equivalent phonotactic contexts)			
11-	θ/m	/helθ/	"health"	/helm/	"helm"
12-	θ/n	/tilθ/	"tilth"	/kiln/	"kiln"
13-	θ/ŋ	not possible in principle (same reason as for "θ/k")			
14-	θ/z	/uelθ/	"wealth"	/uelz/	"wells"
15-	θ/s	/filθ/	"filth"	/fils/	"fils"
16-	θ/ʒ	possible (but not attested in practice)			
17-	θ/ʒ	/θuort/	"thwart"	/ʒuar/	"shwa"
18-	θ/l	/θiIu/	"thew"	/liIu/	"lieu"
19-	θ/h	/θiIu/	"thew"	/hiIu/	"hew"
20-	θ/(x)	not possible in principle (same reason as for "θ/k")			
21-	θ/r	not possible in principle (same reason as for "θ/k")			
22-	θ/i	not possible in principle (same reason as for "θ/k")			
23-	θ/u	not possible in principle (same reason as for "θ/k")			
24-	θ/P	(see P28)			
25-	θ/T	(see T28)			
26-	θ/S	(see S28)			
27-	θ/Š	(see Š28)			
28-	θ/N	(see N28)			
29-	θ/K	/uelθ/	"wealth"	/uelK/	"whelk"
30-	θ/F	/sθenik/	"sthenic"	/sFerik/	"spheric"

c) The major realization of the archiphoneme /θ/:-

This archiphoneme is mostly realized as an "apico-dental (or "interdental", or "postdental"), fricative (spirant)" consonant.

The archiphoneme /K/:-

a) This archiphoneme belongs to positions "e1" (2'), "i2" (2), "i3" (3), "i4" (4) and "z³".

b) The identity and distinctive function of this archiphoneme are established by the following oppositions:-

- | | | | | | |
|-----|--|--------|--------|--------|----------|
| 1- | K/b | /brlK/ | "bulk" | /brlb/ | "bulb" |
| 2- | K/p | /brlK/ | "bulk" | /prlp/ | "pulp" |
| 3- | K/v | /srlK/ | "sulk" | /solv/ | "solve" |
| 4- | K/f | /srlK/ | "sulk" | /self/ | "self" |
| 5- | K/d | /bilK/ | "bilk" | /bild/ | "build" |
| 6- | K/t | /bilK/ | "bilk" | /bilt/ | "built" |
| 7- | K/ʃ not possible in principle (because they do not occur in equivalent phonotactic contexts) | | | | |
| 8- | K/ə not possible in principle (same reason as for "K/ʃ") | | | | |
| 9- | K/g not possible in principle (because /g/ is one of the terms of the archiphoneme /K/) | | | | |
| 10- | K/k not possible in principle (same reason as for "K/g") | | | | |
| 11- | K/m | /elK/ | "elk" | /elm/ | "elm" |
| 12- | K/n | /srlK/ | "sulk" | /srln/ | "sullen" |
| 13- | K/ŋ not possible in principle (same reason as for "K/ʃ") | | | | |
| 14- | K/z | /bilK/ | "bilk" | /bilz/ | "bills" |
| 15- | K/s | /elK/ | "elk" | /els/ | "else" |
| 16- | K/ʒ not possible in principle (same reason as for "K/ʃ") | | | | |
| 17- | K/ʃ not possible in principle (same reason as for "K/ʃ") | | | | |
| 18- | K/l | /sKab/ | "scab" | /slab/ | "slab" |
| 19- | K/h not possible in principle (same reason as for "K/ʃ") | | | | |

20-	K/(x)	not possible in principle (same reason as for "K/ʃ")			
21-	K/r	/sKIi/	"ski"	/s ^v rIi/	"sri"
22-	K/i	/sKIup/	"scoop"	/siIu/	"sue"
23-	K/u	/sKop/	"scop"	/suob/	"swab"
24-	K/P	(see P29)			
25-	K/T	(see T29)			
26-	K/S	(see S29)			
27-	K/ʃ	(see ʃ29)			
28-	K/N	(see N29)			
29-	K/θ	(see θ29)			
30-	K/F	/sKIin/	"skean"	/sFIin/	"sphene"

c) The major realization of the archiphoneme /K/:-

This archiphoneme is unequivocally realized as a "dorso-palato-velar, plosive" consonant.

The archiphoneme /F/:-

a) The archiphoneme /F/ belongs to positions "E²", "i²" (2), "i³" (3) and "Z³".

b) The identity and distinctive function of this archiphoneme are established by the following oppositions:-

1-	F/b	not possible in principle (because they do not occur in equivalent phonotactic contexts)		
2-	F/p	not possible in principle (same reason as for "F/b")		
3-	F/v	not possible in principle (because /v/ is one of the terms of the archiphoneme /F/)		
4-	F/f	not possible in principle (same reason as for "F/v")		
5-	F/d	/brNF/	"bumph"	/brnd/ "bummed"
6-	F/t	/liNF/	"lymph"	/lint/ "lint"
7-	F/ʃ	not possible in principle (same reason as for "F/b")		

8-	F/e	not possible in principle (same reason as for "F/b")
9-	F/g	not possible in principle (same reason as for "F/b")
10-	F/k	not possible in principle (same reason as for "F/b")
11-	F/m	/sF _ɪ r/ "sphere" /sm _ɪ r/ "smear"
12-	F/n	/sF _ɪ r/ "sphere" /sn _ɪ r/ "sneer"
13-	F/ŋ	not possible in principle (same reason as for "F/b")
14-	F/z	not possible in principle (same reason as for "F/b")
15-	F/s	not possible in principle (same reason as for "F/b")
16-	F/ʒ	/liN _F / "lymph" /biN _Z / "binge"
17-	F/ʃ	not possible in principle (same reason as for "F/b")
18-	F/l	/sF _ɪ ŋs/ "sphinx" /sl _ɪ ŋs/ "slinks"
19-	F/h	not possible in principle (same reason as for "F/b")
20-	F/(x)	not possible in principle (same reason as for "F/b")
21-	F/r	/sF _ɪ ŋs/ "sphinx" /ʃr _ɪ ŋs/ "shrinks"
22-	F/i	/sFI _ɪ n/ "sphene" /siI _u d/ "sued"
23-	F/u	/sFI _ɪ n/ "sphene" /suI _i d/ "swede"
24-	F/P	(see P30)
25-	F/T	(see T30)
26-	F/S	(see S30)
27-	F/Š	(see Š30)
28-	F/N	(see N30)
29-	F/θ	(see θ30)
30-	F/K	(see K30)

c) The major realizations of the archiphoneme /F/:-

- 1- The most significant realization of this archiphoneme is as a "labio-dental, fricative (spirant)" consonant.
- 2- In very rare cases - especially in borrowings from foreign languages, a "non-aspirated, lenis, voiced" realization

of the archiphoneme /F/ is marginally attested in S.E., e.g. [svælt] for /sFelt/ "svelt", etc.

Summary:-

The oppositional facts of the foregoing opposition sets may be summed up and concisely re-produced - for the purpose of easy reference - in terms of the following opposition/commutation table. However, it should be especially noted that while a "dot" in the table signifies an "attested opposition" between any two commutants, an "x" designates the "absence of any such opposition". Thus, we have:-

CHAPTER 6.Prolegomena to the Establishment of
Minor-Type Phonotagms in S.E.

It was hinted at on many occasions that the establishment of a single major-type distributional unit may turn out to be insufficient for an exhaustive description of the different types of phonotagm one encounters in certain languages. Consequently, one may need to establish certain "subsidiary"-type structures (i.e. "minor" phonotagms, or whatever one likes to call them) to account consistently and adequately for the residues of the first basic step in the descriptive process, i.e. that of describing the distribution of formal elements in terms of the major distributional unit. This being the case, we shall presently devote ourselves in this Chapter to laying down the necessary foundations on which the subsequent investigation of all minor-type phonotactic structures in S.E. will eventually be based (c.f. the succeeding Chapter). However, in order to systematize the argument -and at the same time achieve optimal clarity- the significance and relevance of the A.F. theoretical concept of "under-articulation" will be firstly examined. On the basis of conclusions which are expected to result from such an examination, a specific methodology will be subsequently developed for the purposes of

- a- rigorously distinguishing between "major" and "minor" types of phonotactic construction;
- and, b- identifying internal phonotactic distinctions within each type and sub-classifying them in separate categories.

It is only when such a methodology is consistently and adequately formulated and constructed, that the investigation may be allowed to pursue its natural course and tackle the problem of determining the exact nature and number of all minor-type phonotagms in S.E. As pointed out earlier, these latter issues will be discussed in detail in the succeeding Chapter.

The "Upper" and "Lower" Limits of Distinctive Function and the Concept of "Under-Articulation".-

If we now re-consider in brief the implications of the frequently referred to concepts of "upper" and "lower" limits of an entity's distinctive function, we may arrive at an improved understanding not only of the phonology of S.E., but also of the significant role which the notion of "under-articulation" plays in system as a whole.

We recall, in very simple terms, that the

intrinsic identity of a given item = its upper limit,

and that the

extrinsic identity of the same item = its lower limit.

Now, if the "intrinsic identity" of the item in question is consequently understood to mean

"that complex of functional features which it does not share in its entirety with any other (i.e. different) item"; (Mulder, 1968),

and, if the "extrinsic identity" of the same item is interpreted as referring to

"the sum of those complexes of functional features it (i.e. the item) may possess without completely merging its identity with another item"; (ibid; Mulder's emphasis),

and if we recall that

"below the lower limit its (the item's) distinctive (or contrastive) function and therefore its separate identity is totally suspended"; (ibid, my emphasis),

and that,

"below the upper limit, but within the lower limit, its (the item's) distinctive (or contrastive) function and therefore its identity is partially suspended"; (ibid, my emphasis),

and if

"total suspension" is correlated with "neutralization",

and

"partial suspension" is correlated with "under-articulation",

then we should be able to set up an over-simplified skeletal pattern which sums up all the relevant information; thus,

intrinsic identity = upper limit	—————→	
	(<u>partial suspension</u> of an item's distinctive/contrastive function, i.e. "under-articulation")	↑ ↓
extrinsic identity = lower limit	—————→	
	(<u>total suspension</u> of an item's distinctive/contrastive function, i.e. "neutralization").	↑ ↓

Since the concept of "neutralization" (i.e. total suspension) has been treated in extenso in many places of this work, we shall attempt in the following an elucidation of the concept of "under-articulation" (i.e. partial suspension). It should, however, be pointed out that the reason for discussing the phenomenon of

"under-articulation" in this context -rather than in association with the para-phonotactic phenomena of "accentual prominence" (c.f. PART III)- may be attributed to the fact that the concept in question is particularly relevant for the identification and establishment of minor-type phonotagms and their underlying structures (c.f. the succeeding Chapter). The reader is therefore advised to approach the issue from the view-point of the overall description and treat it as a tactical step the aim of which is to keep the argument as simple and clear as possible.

The treatment of the concept of "under-articulation" is not unique to A.F., as it figures also in other linguistic/phonetic approaches under titles like "under-differentiation", "vowel reduction", "reduceability", etc. What is significant about its A.F. treatment is that its overall theoretical status is presumed to have been clarified and systematized in the theory. For, according to A.F., "under-articulation" is viewed as a distinctly semi-functional phenomenon which pertains to the realizational level¹. As such, it largely depends on the type, style and degree of speed with which a speaker is speaking². It represents (and is represented by) the lowest level of an item's distinctive realization which partially and temporarily overlaps with the distinctive realization of some other item with which it shares some affinity. In this sense, the functional value of the under-articulated item becomes "indeterminate", i.e. its actual realization as a variant becomes ambiguous and of a somewhat gradient and non-discrete nature. This, however, does not imply that the under-articulated version of the original sound is rendered totally unrecognizable. For, though the under-articulated version of a certain item is logically located

somewhere in-between the realizations of two items (and probably nearer to the realization of the second item in heavy cases of under-articulation), it nevertheless retains some features of its original sound-qualities which (in collaboration with the overall context) contribute positively, whenever necessary, towards recovering and re-capturing the upper-limit of the distinctive identity of the under-articulated item. Without these traces of sound-quality, the re-assignment of a given reduceable realization to a specific phoneme in the inventory would have had to be arbitrarily performed.

By dint of the foregoing conclusions, we move now towards investigating in some detail the overall structure of our proposed methodology.

Methodology for Identifying, Establishing and Distinguishing "Minor"-Type Phonotagms from "Major"-Type Phonotagms in S.E.:-

Basically, the foundations of the overall structure of the suggested "Methodology" is merely composed of two fundamental "General Hypotheses" and a derived set of "Syllabification Criteria". The ultimate aim of the entire body of this developed "Methodology" is, of course, to provide us with the means for arriving at consistent and adequate descriptive conclusions. However, in order to keep the argument as simple and straightforward as possible, it is worth pointing out that the symbols which will be used in the formulation of the "Hypotheses" and the "Criteria" signify the following:-

"X" stands for a given "complex phonological word/ construction" (c.f. PART I, Chapter 7);

"r" signifies a phonotagmic sub-chain whose nuclear

position is either occupied by the standard reduced neutral phoneme /r/ (i.e. [ɔ]), or by the reduceable [ɔ]-like realization of all the basic vocalic and semi-vocalic phonemes in the inventory. (Whenever necessary, all "r"-type sub-chains will be underlined for the convenience of the reader);

"R" represents the "Set" of all "r"-type sub-chains in S.E., i.e. $"R" = \{r_1, r_2, \dots, r_n\}$, such that $"r \in R"$, i.e. "r" is a member of "R";

"y" refers to a phonotagmic sub-chain whose nucleus is neither occupied by the standard reduced neutral phoneme /r/, nor by the reduceable [ɔ]-like realization of any of the basic vocalic and semi-vocalic phonemes;

"Y" represents the "Set" of all "y"-type sub-chains in S.E., i.e. $"Y" = \{y_1, y_2, \dots, y_n\}$ such that $"y \in Y"$, i.e. "y" is a member of "Y".

Thus, the two basic "General Hypotheses" and some of their ramifications may now be formulated in the following manner:-

General Hypothesis 1:-

"The set of all "y"-type phonotagms in S.E. (i.e. "Y") forms an overall class of "major"-type phonotagms".

General Hypothesis 2:-

"The set of all "r"-type phonotagms in S.E. (i.e. "R") forms an overall class of "minor"-type phonotagms".

Since the phonotagms which figure in either of the two postulated classes (and probably in both of them, as we shall see below) are noted to be internally and globally non-equivalent with respect to their distributional, realizational and accentual

configurations, we shall presently concentrate on briefly investigating

- a- the demonstrable characteristics of each identified type of phonotagm in the system;
- b- the similarities and differences between the identified types;
- c- the strategic distinctions between "major" and "minor" types of phonotactic construction;
- d- the feasibility of classifying the established similarities and differences in a single taxonomic grid for easy reference.

In order to achieve these ends, and at the same time come to consistent and adequate conclusions, each and all of the identified types of phonotactic construction in both classes will be mapped onto an intricate network of six empirically tested parameters. The overall structure of this parametrical network may be taken to include reference to the "capability~incapability" of a given phonotagm to

- 1- form a monophonotagmic base-line structure by itself;
- 2- figure as the most accentually prominent phonotagm in given (complex) phonological bases;
- 3- figure as other than the most prominent phonotagm in given (complex) phonological bases;
- 4- figure with "non-zero" right-hand extensions in a base;
- 5- figure with a "zero" right-hand extension in a base;
- 6- tolerate the reduction of its nucleus to a [ɔ]-like sound by under-articulation.

Now, if the above formulated parameters are indicated vertically on the utmost left-hand column in the succeeding

taxonomic grid, and if all the possible phonotagms in each class are horizontally classified alongside the uppermost row in the same grid, and if the "capability" of a phonotagm to comply with any of the requirements is signified by a " + ", and its "incapability" is represented by a " - ", then we should be able to construct a two-dimensional figure which, in addition to summing up the main points of the present argument, is actually capable of providing us with the precise information on each and all of the postulated sub-types of phonotagm in S.E. Thus,

	Major-type phonotagms						Minor-type phonotagms		
	Independent	Fixed	Restricted	Variable	Autonomous	Mobile	Bound major	Potentially reduceable	Reduced
Forms a mono-phonotagm.	+	+	-	-	+	-	-	-	-
Figures as most prominent.	+	+	+	+	+	+	+	-	-
Figures as non-most prominent.	+	-	-	+	+	+	+	+	+
Figures with non-zero right-hand extension.	+	+	+	+	+	+	-	+	+
Figures with zero right-hand extension.	-	-	-	-	-	-	+	+	+
Tolerates reducibility of nucleus.	-	-	-	-	+	+	+	+	-

Figure 1)

However, before we start corroborating the consistency and the material adequacy of the postulated types and sub-types of phonotagm in the system of S.E., the specially marked area inside the Figure requires some attention. If, for the sake of the argument, we initially base ourselves on the provided information in the Figure, we should come to a very significant conclusion, namely that,

though "major" and "minor" types of phonotagm are in essence mutually exclusive, they are noted to share some common ground under specifiable non-neutral conditions.

Since the exact nature of the conditions under which the alignability of certain phonotagms with the two postulated classes of "major" and "minor" type structures in S.E. will be properly investigated in the succeeding Chapter, it is sufficient for our present purposes to point out that any non-prominent "open"/"closed" major-type phonotagm whose nucleus is potentially reduceable (by under-articulation) to a [ɔ]-like sound in actual realization will be considered to form an overlap between the basic "major" and "minor" type classes of phonotagmic construction in the system. Granted that this brief elucidation is clear enough to give the reader a bird's eye-view of our contention, we can now move into corroborating the adequacy of the postulated types and sub-types of phonotagm in the language. The best, and probably the easiest, way to perform this corroborative process in a concise, transparent and illuminating manner is by simply substituting the " + "'s in the foregoing Figure with attested instances from S.E. Where necessary, the relevant parts of the forms instantiating types of phonotagm will be underlined in the table/figure, which we present as follows.-

Major-type phonotags

Minor-type phonotags

	Independent	Fixed	Restricted	Variable	Autonomous	Mobile	Bound major	Potentially reduceable	Reduced
Parameter "1".	/arm/ arm	/neɪʃn/ nation			/bed/ bed				
Parameter "2".	/arm-/ in armament	/neɪʃn-/ in nationwide	/-teɪʃn/ in citation	/-vɪst-/ in atavistic	/bed-/ in bedrock	/-lɒm-/ in cephalometer	/o-/ in orange		
Parameter "3".	/arm-/ in Armagedon			/-vɪst/ in harvest	/-bed/ in childbed	/-lɒm/ in coulomb	/o-/ in oregano	/-lɒm/ in coulomb	/-lɪrk-/ in allocation
Parameter "4".		/neɪʃn/ nation	/-teɪʃn/ dictation						/-lɪrk/ bullock
Parameter "5".							/o-/ in	/-tɪ/ in city	/-tʃr/ in teacher
Parameter "6".					/-bed/ in hotbed	/-lɒm-/ in tolomerization	/o-/ in oracular	/o-/ in oregano	

(Figure 2)

The table/figure itself is self-evident; the only point which should be emphasized in connection with its import is that although the incapability of certain sub-types of phonotagm for forming monophonotagmic bases is admittedly "accidental" in S.E. (and, therefore, no phonological rule can be formulated to predict it), this incapability contributes positively -alongside the other postulated parameters- towards the identification and establishment of a number of significant sub-types of phonotagm (c.f. Figures "1" and "2").

Syllabification Criteria

On the basis of the foregoing two "General Hypotheses", and in view of the definition of the concept of "complex phonological word" (c.f. Chapter 7 of PART I), the following set of "Criteria" may be formulated for the purposes of facilitating the recognition of all the juxtaposed phonotagms in complex base-line constructions. Thus, we have:-

Criterion 1: The minimum requirement for the identification of a complex phonotagm as forming an "X" is the juxtaposition of at least two sub-chains within the overall chain.

E.g. /marstr/ "master", /horsteil/ "horsetail",
/iveid/ "evade", etc.

Criterion 2: A prerequisite for the well-formedness and self-containedness of a given "X" requires that one of the two (or more) juxtaposed sub-chains in "X" be a member of set "Y" (and, by implication, in association with a "primary" degree of accentual prominence). This is an empirical hypothesis since

clusters of "r"-type phonotagms have not been attested in S.E. to demonstrate a potential for forming whole "X"'s by themselves³.

E.g. /ditein/ "detain", /brfr/ "buffer", /beli/ "belly", etc.

Criterion 3: Each juxtaposed sub-chain in "X" must contain an identifiable nuclear element.

E.g. /o/ and /i/ are identified as representing the nuclear elements of the two juxtaposed sub-chains /hOum/ and /miŋ/ in the overall structure of the "X" /hOumiŋ/ "homing", etc.

Criterion 4: If an "X" is constituted solely of a juxtaposition of "y"'s, then, by the nature of things, all the juxtaposed "y"-type phonotagms in "X" are assigned to the major distributional unit after the analysis into phonotagms is completed.

E.g. /reiluei/ "railway", /teiblsPIun/ "tablespoon", /voisPrint/ "voiceprint", etc.

Criterion 5: If an "X" is constituted of a juxtaposition of one or more "r"-type sub-chains and a single "y"-type sub-chain, and if the "r"-type sub-chains precede the "y"-type sub-chain within "X", then the "r"-type sub-chains belong exclusively to a minor-type underlying structure⁴ which precedes the structure to which the "y"-type sub-chain belongs.

E.g. /prtrOul/ "patrol", /ka^Všir/ "cashier", /kridenšl/ "credential", /akrdemik/ "academic", etc.

Criterion 6: If an "X" is constituted of a juxtaposition of one or more "r"-type sub-chains and a single "y"-type

sub-chain, and if the "r"-type sub-chains succeed the "y"-type sub-chain within "X", then all the "r"-type sub-chains belong exclusively to a minor-type underlying structure which succeeds the structure to which the "y"-type sub-chain belongs. E.g. /bIitr/ "beater", /intu/ "into", /lrvin/ "loving", /mard^Yrrrm/ "marjoram", etc.

Criterion 7: If an "X" is constituted of a juxtaposition of alternating "r"-type and "y"-type sub-chains, then any "r"-type sub-chain which is located between two "y"-type sub-chains counts both as a succeeding and as a preceding minor-type phonotagm. In symbols:

$$"X" = /y r y/ = /y \begin{array}{c} r \\ r \end{array} y/.$$

E.g. the medial "r"-type sub-chain /-miut-/ in /prmiutei^Ysn/ "permutation" belongs -by functional amalgamation- to both preceding and succeeding minor-type underlying structures, i.e.

major	succeeding/preceding minor	major
/pr [•] rm	mi <u>u</u> t	tei ^Y <u>s</u> n/
XXXXXXXXXXXXXXXXXXXXX		

Finally, it should be emphasized that the totality of the proposed "Methodology" is fundamentally based on the assumption that, phonologically speaking, any given complex string of phonotagms in S.E. is analysable into two basic types of sub-chain, i.e. "y"-type sub-chains and "r"-type sub-chains. Furthermore, these two types of phonotagmic sub-chain have also been postulated to correspond to three basic types of underlying

structure, i.e.

- a) basic (major) underlying structure (c.f. Chapter 4 of this PART);
- b) preceding pre-major minor-type underlying structure(s)⁵;
- c) succeeding post-major minor-type underlying structure(s).

The consistency and adequacy of these descriptive hypotheses and postulations will be corroborated in the succeeding Chapter when we start investigating all minor-type phenomena in S.E. However, before these issues can be properly discussed, the reader's attention should be drawn to a number of problematic analytical cases in the system. These will be outlined, examined and resolved in the succeeding section.

Analytical Problems and Proposed Solutions:-

In the process of gathering the necessary information for the formulation of the foregoing "Methodology", some interesting -though seemingly problematic- analytical cases attracted our special attention. On further investigation of the nature of these problematic instances, we have come to the definite conclusion that their existence in the system may be directly attributed to either, or both, of the following factors,

- a- the ambiguity surrounding the constructional formation of certain phonotagms in complex phonological bases;
- b- the indiscriminate and rigid application of the concept of "functional amalgamation" to semi-vocalic elements on the borders between phonotagms in complex phonological bases.

This being the case, our main aim in this final section will be to (1) outline these problematic cases which are believed to be open for numerous contradictory interpretations and, (2) suggest consistent and adequate solutions for their incorporation in the descriptive account. In order to simplify and systematize our approach to the issues involved, each identified type of problem will be summed up and introduced in a specifically formulated "headline". Following that, the essence of the problem will be explained in some detail (and always with direct reference to provided sets of attested instances and forms from the language) before a solution is proposed to resolve the situation in an appropriate manner. The significance of all the suggested solutions for the identification and establishment of minor-type base-line structures in S.E. will become evident even when it is not specifically singled out and emphasized.

Problems Related to Structural Ambiguity -Type "A":-

The problematic issues which we shall concentrate on under this heading are restricted to those which evolve from the presence of two or more /r/'s in close proximity within specific kinds of complex phonotagmic base. The underlined phonotagms in the following set of attested instances and forms contain typical examples of the case in hand; thus,

Set 1

<u>Sub-set 1a</u>		<u>Sub-set 1b</u>	
labour	/leibr/	labourer	/leibṛrṛṛ/
murmer	/mrrmr/	murmerer	/mrrmṛrṛṛ/
harbour	/harbr/	harbourage	/harbṛrṛriḍṣ/
latter	/latr/	lateral	/latṛrṛrl/
barter	/bartr/	barterer	/bartṛrṛṛ/
<hr/>			
range	/reiṆẓ/	arrange	/ṛreiṆẓ/
round	/rAund/	arround	/ṛrAund/

On close inspection of the constructional, distributional and analytical properties of each and all of the classified complex information in "Sub-set 1a", it turns out that

- because the phoneme /r/ is never attested in the nucleus of open-type monophonotagmic contexts in S.E.,

and, - because it is equally not attested as a nuclear [ʌ] in final open-type phonotagms in complex phonological words (c.f. succeeding Chapter),

each of the classified complex base-line structures in "Sub-set 1a" should therefore be analysed into a juxtaposition of "major:minor" types of phonotactic structure; thus,

/lei + br/	-	/mrr + mr/	-	/harb + br/
/lat + tr/	-	/bar + tr/		

(It should be pointed out that though the two types of "arrow" are generally used in this context to signify the application of the concept of "functional amalgamation" to isolable phonotactic elements on the borders between phonotagms in complex

phonological bases, the significations which they convey are by no means equivalent. While the "single-headed arrow" is used to designate the assignment of the final element of a preceding "closed" major-type phonotagm to the beginning of a succeeding one (be it a major or a minor), the "two-headed arrow" refers to an "indeterminate" case of "functional amalgamation", i.e. a case where one is incapable of specifying to which phonotagm the amalgamated tactic element definitely belongs. Obviously, the "absence" of an "arrow" between phonotagms in complexes is symptomatic of the non-applicability of the concept of "functional amalgamation". The differences between the three types of case have never, to our knowledge, been referred to in A.F.).

Now, if analogous considerations are applied to the identification of the analytical properties of the selected complexes in "Sub-set 1b", we are bound to conclude that the constructional formation of the underlined sections of these complexes are too ambiguous to tell whether one is dealing

with /leibrr + rr/, i.e. [lej_bz: + ʌð]/[lej_bðʌ + ʌð],

or /leibr + rr/, i.e. [lej_bð + ʌð];

with /mrrmrr + rr/, i.e. [m₃:m₃: + ʌð]/[m₃:m_ðʌ + ʌð],

or /mrrmr + rr/, [m₃:m_ð + ʌð];

with /harbrr + rid^V/, i.e. [h_a:b₃: + ʌid^V]/[h_a:b_ðʌ + ʌid^V],

or /harbr + rid^V/, i.e. [h_a:b_ð + ʌid^V];

with /latrr + rrl/, i.e. [l_at₃: + ʌðɹ]/[l_at_ðʌ + ʌðɹ],

or /latr + rrl/, i.e. [l_at_ð + ʌðɹ];

with /bartrr + rr/, i.e. [b_a:t₃: + ʌð]/[b_a:t_ðʌ + ʌð],

or /bartr + rr/, i.e. [b_a:t_ð + ʌð];

with /rr + reiN^V/, i.e. [ɹ: + ʌejn^V]/[ðʌ + ʌejn^V],

or /r + reiN^V/, i.e. [ð + ʌejn^V];

with /rr + rAund/, i.e. [ɜ: + ɹawnd]/[ɔɹ + ɹawnd],
 or /r + rAund/, i.e. [ɔ + ɹawnd].

In order to resolve the above type of structural ambiguity (or indeterminacy), the linguist may find it necessary to

- either introduce additional conventions to distinguish between the different positional occurrences of the phoneme /r/ (alongside the subscripted "dots");
- or consider the different distributional occurrences of the phoneme /r/ as constituting sufficient justification for the establishment of four different phonemes, instead of one, say, ?/ʌ/, ?/ɔ/, ?/ɹ/ and ?/ɜ:/;
- or resort to a multiple of structural, as well as non-structural, means for achieving consistent and adequate conclusions.

Since the present descriptive account of the phenomena is entirely based on A.F. tenets and principles, we are in a position to reject the first alternative proposal for being mechanical in essence, and to reject the second for violating the principle of "systemic economy". This comfortably leaves us with only one viable option to investigate. The nature and overall structure of this proposed final solution, as it will soon be demonstrated, must necessarily include significant references to established distributional, realizational and accentual factors. In short, unless all three factors are taken into proper consideration in the analytical process, it is hard to foresee how the analytical conclusions (which are expected to emerge) could be singularly substantiated by direct evidence from the facts of the language. If, in this context, the complex formal base /leibr̩rr̩/ is randomly selected to exemplify our

suggested analytical solution, then the following conclusions may be obtained:-

The analysis of /leib_•rrr_•/ into /leib + brr + rr/ should be rejected on the grounds that

- 1- the application of the concept of "functional amalgamation" to semi-vocalic elements on the borders between isolable phonotagms has inadequately led to the ambiguous creation of a closed major-type phonotagm where an open minor-type phonotagm should have been identified, i.e. /-brr-/:/-br-/;
- 2- though the establishment of /-brr-/ seems to be formally justified by the distributional statements of the phoneme /r/, it is neither corroborated by the realizational statements of the same phoneme, nor substantiated by the established para-phonotactic system of "accentual prominence" (c.f. Chapter 7 of this PART as well as Chapter 1 of PART III).

In view of the foregoing objections, and in the interest of reaching consistent and adequate conclusions, the concept of "functional amalgamation" will not be allowed to exercise indiscriminate application throughout the analytical process. This being the case, the analysis of the complex formal base /leib_•rrr_•/ must therefore be definitely into /lei + br + rr/, and not into anything else. The consistency and material adequacy of these analytical conclusions are directly corroborated by the following facts:-

- a- Because the realization of the undotted /r/ phoneme in the final bound phonotagm /-rr/ is that as [ɹ], it can not non-arbitrarily be assigned (by functional

amalgamation) to the end of the preceding bound phonotagm /-br-/. This is empirically corroborated by the fact that the established realizations of all post-nuclear /r/'s in S.E. are always attested to be either as [ː] (prolongation) or as [ɾ] (gliding), but never as [ɹ].

b- By investigating the constructional and distributional characteristics of the juxtaposed phonotagms in the complex base /leibr̩rr̩/, we may point out that while the "independent" phonotagm /lei-/ is identifiable as a major-type construction, the two remaining "bound" phonotagms /-br-/ and /-rr-/ are noted to bear strong affinity with minor (open)-type base-line structures (c.f. the proposed "Syllabification Criteria" above as well as the succeeding Chapter).

c- The basic "major:minor" distinction between /lei-/, on the one hand, and /-br-/ and /-rr-/, on the other, is further corroborated on the para-phonotactic level by the fact that while /lei-/ is associated with a certain degree of "+ prominence", both /-br-/ and /-rr-/ are correlated with a certain degree of "- prominence".

Now, if analogous considerations are applied to the analysis of the remaining forms in the previously given "Sub-set 1b", the subsequent analytical conclusions will necessarily emerge:-

/mrr̩ + mr̩ + rr̩/ - /harb̩ + br̩ + r̩d̩^V/ - /lat̩ + tr̩ + rrl̩/
 /bar̩ + tr̩ + rr̩/ - /r̩ + reiNz̩^V/ - /r̩ + rAund̩/.

However, before we move into discussing the second type of "structural ambiguity", it is worth remarking that the reason why

the concept of "functional amalgamation" is not allowed to operate on certain consonants on the borders between phonotagms in attested complex phonological words may be briefly summed up as follows:-

The application of the concept of "functional amalgamation" to the analysis of complex bases into instances of phonotagms should be prevented from increasing the number of "bound" phonotagms in the system (c.f. Mulder, 1968).

Accordingly, one may emphasize that while /mrr/ and /bar/ are separately attested to correspond to the lexical items "myrrh" and "bar" in S.E., neither of the phonotagms ^ʒ/mrrm/ and ^ʒ/bart/ is attested to correlate with any lexical item in the language, i.e. the two forms in question represent "potential/accidental gaps" in the system.

Problems Related to Structural Ambiguity -Type "B":-

The problems which we shall discuss under this heading demonstrate significant analogy to those which have been investigated in the previous "sub-section". The only justification for treating the two types of structural ambiguity in two separate sub-sections may be attributed to the fact that while the totality of the foregoing discussion has concentrated on dealing with ambiguities involving the phoneme /r/ in certain nuclear/peripheral contexts, the present sub-section will be solely concerned with examining the problematic presence of any of the six basic vocalic and semi-vocalic phonemes of the system in analogous (or relatively analogous) circumstances. The classified complex information in the following set is considered exemplary to illustrate the cases in hand:-

Set 2

<u>Sub-set 2a</u>	<u>Sub-set 2b</u>
arrow / <u>a</u> r <u>o</u> u/	aromatic / <u>a</u> r <u>r</u> matik/
berry / <u>b</u> e <u>r</u> i/	eristic / <u>e</u> r <u>i</u> s <u>T</u> ik/
horrid / <u>h</u> o <u>r</u> i <u>d</u> /	oracular / <u>o</u> rak <u>i</u> ul <u>r</u> /
spirit / <u>s</u> <u>P</u> i <u>r</u> i <u>t</u> /	eradicate / <u>i</u> radikeit/
burro / <u>b</u> u <u>r</u> o <u>u</u> /	uranic / <u>i</u> uranik/
burrow / <u>b</u> u <u>r</u> o <u>u</u> /	{ turriculate / <u>t</u> r <u>r</u> ikiuleit/ arrest / <u>r</u> rest/

If, for the sake of brevity, some -or all- of the previously manipulated factors are called upon to have a bearing on the analysis of each attested complex base in "Set 2" into its juxtaposed analytical properties, we should be able to obtain the following conclusions:-

/ <u>a</u> + r <u>o</u> u/	-	/ <u>a</u> + r <u>r</u> mat + tik/
/ <u>b</u> e + r <u>i</u> /	-	/ <u>e</u> + r <u>i</u> s <u>T</u> + tik/
/ <u>h</u> o + r <u>i</u> d/	-	/ <u>o</u> + rak + kiul + lr/
/ <u>s</u> <u>P</u> i + r <u>i</u> t/	-	/ <u>i</u> + rad + dik + keit/
/ <u>b</u> u + r <u>o</u> u/	-	/ <u>i</u> u + ran + nik/
/ <u>b</u> u + r <u>o</u> u/		{ / <u>t</u> r + rik + kiul + leit/ /r + rest/

The consistency and adequacy of the above analytical results are directly corroborated by our knowledge that:-

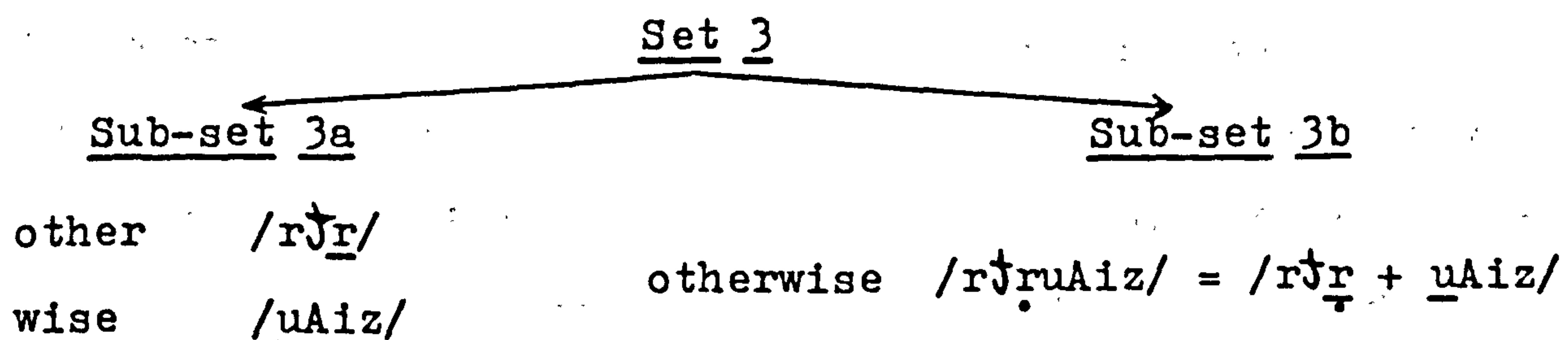
- a- Whenever the phoneme /r/ is attested as occurring post-nuclearly in S.E. monophonotagmic forms, it is consistently realized either as [r] or as [ɾ].
- b- No attested monophonotagmic form in S.E. is noted to terminate with (or to be closed by) an /r/ whose

neutral realization is as [ʃ].

However, though the rigorous application of the above distributional and realizational factors to the analysis of the complex instances in "Set 2" has led to the establishment of "open"-type phonotagms in prominent -as well as in non-prominent-contexts (c.f. Sub-sets 2a and 2b), we see no phonological reason why this can not logically be the case since we are nowhere claiming that these "open"-type phonotagms can figure independently in actual communication. In consequence, we may presently emphasize that the occurrence of "open"-type phonotagms in any of the established distributional models for S.E. is tolerated so long as the phonotagms themselves are noted to form integral parts of complex phonological bases; thus, /a-/ in /arou/, /o-/ in /orakiulr/, /be-/ in /beri/, etc.; (c.f. the established type of "Bound Major" phonotagms in the suggested "Methodology").

Problems Related to Structural Ambiguity -Type "C":-

Though the problematic issue which we intend to examine in this "Sub-section" shows some resemblance to the previously discussed types of structural ambiguity, the inconveniences which it raises are deemed sufficient to justify its treatment in a separate "Sub-section". The exact nature of this problematic issue can only be correctly identified if the underlined sections of the classified complex information in the succeeding Set of instances and forms are properly considered; thus,



spider	/sPAidr/	spiderwort	/sPAidrurrt/ = /sPAidr + urrt/
wort	/urrt/		
a	/r/		
ward	/uord/	award	/ruord/ = /r + uord/
wait	/ueit/	await	/rueit/ = /r + ueit/
etc.		etc.	

If the constructional formation of the underlined sections in the Set are examined, the essential problem which presently faces us may be summed up and outlined in the following question:-

Should the sequential presence of /r/ and /u/ in close proximity within given complex phonological words be consistently interpreted as signifying attested cases of "neutralization"?

Obviously, the most consistent and adequate solution to the above problem can only be formulated if superficial impressions and pseudo logical factors are kept at bay. By this, we of course imply that one's final decisions in this respect should neither be based on partial investigation of the phenomena, nor unduly influenced by remotely analogous cases in the system. Bearing these considerations in mind, we can now embark on properly researching the different aspects of the problem in hand before we propose what we believe to be a satisfactory solution.

We recall from earlier arguments in Chapter 3 of this PART that, when the archiphoneme /A/ was postulated and established in the overall system, it was said to represent the constant suspension of opposition between the lower limits of the distinctive realizations of the phonemes /a/ and /r/ in the context of an immediately succeeding /u/ or /i/ in the same form.

The due emphasis on (1) the lower limits of the distinctive realizations of the neutralized items and, (2) the insistence on the close proximity between the neutralizable candidate and its context within the borders of analytically isolable forms, was presumed sufficient for the identification of genuine cases of "neutralization" in given phonotactic contexts. In fact, they do. For, if the underlined sections of the classified information in the two Sub-sets of Set 3 are firstly compared with one another and then mapped onto the above outlined theoretical perspective, we should come to very interesting preliminary conclusions. In brief, these are:-

- a- The standard realizations of the underlined /r/ phoneme in all the given simple and complex base-line structures are predominantly and unmistakably as nuclear [ɔ]'s, and not as [ʌ]'s.
- b- The standard realizations of the preceding/succeeding /u/ phonemes in the same structures are unequivocally as pre-nuclear [w]'s.
- c- The close proximity of the two phonemes /r/ [ɔ] and /u/ [w] is questionable since it takes place on the borders between phonotagms in attested complex bases, i.e. /-r + u-/, but never within the borders of a single phonotagm.

On the basis of this, one can not foresee any possibility of seriously considering a neutralization which results from the suspension of opposition between /r-a/ (i.e. [ɔ-a]) in the context of a succeeding /u/ (which, a priori, does not fulfil the conditions of being a "proper" context) to be equivalent to the previously postulated neutralization between /r-a/ (i.e.

[ʌ-ɑ]) in the context of a genuinely succeeding /u/. This being the case, one may be tempted to believe that the postulation and establishment of two archiphonemes in the system, say, /A¹/ and /A²/, instead of one, could probably contribute towards resolving the situation in a consistent and adequate manner. However, since the two postulated archiphonemes are attested to be mutually distributionally exclusive, i.e. they do not occur in analogous contexts, /A¹/ may be assumed to represent the suspension of opposition between /a-r/ [ɑ-ʌ] in the context of a succeeding /u/ or /i/ in major-type phonotagms, and /A²/ would, as a consequence, be expected to represent the suspension of opposition between /a-r/ [ɑ-ɔ] in the context of a succeeding /u/ (and possibly /i/, as well) in minor-type phonotagms. On proper and thorough investigation of the particulars of the foregoing proposal, it turns out that

- a- it inevitably and unnecessarily increases the number of the established vocalic/semi-vocalic archiphonemes in the system;
- b- the postulated archiphonemes would -by the nature of their tactic construction- necessitate the permanent transformation of all identified initial and medial weakly accented "open"-type phonotagms in attested phonological complexes to accentually prominent "closed"-type phonotagms in the system; thus depriving the system of one of its most significant distinguishing qualities;
- c- the establishment of analogous archiphonemes in the system would most certainly lead to unprecedented complexity on the different levels of linguistic analysis;

d- the postulation of two archiphonemes whose neutralized phonemes and triggering contexts overlap in every conceivable way is considered by the theory of A.F. to be contradictory in its terms and circular, i.e. it is neither consistent, nor adequate (c.f. Chapter 3 of this PART).

In view of the above refuting evidence, we pronounce the proposed "archiphonemic" option theoretically void and descriptively untenable. Significantly, this brings us very near to outlining what we believe to be a consistent and adequate solution to the problematic issue in hand. In order to do so, we shall base our initial hypothesis on the previously corroborated fact that the A.F. concept of "functional amalgamation" is definitely not a notional tenet which is endowed with wide-ranging powers of indiscriminate application over all conceivable types of phonotactic structure in S.E. (see Type "A" of "Structural Ambiguity", above). It is only against such an understanding that our final proposed solution for resolving the present type of structural ambiguity may be formulated. Thus:-

- a- Whenever the standard reduced neutral phoneme /r/ appears in the nucleus of one phonotagm (with zero right-hand consonants) and is immediately succeeded within the same complex by the phoneme /u/ at the beginning of another phonotagm, the complex phonological base should be functionally analysed into /-r + u-/.
- b- If the upper limit of the distinctive realization of the phoneme /r/ is noted to be as [ɔ], and if the relationship of the succeeding phoneme /u/ with the

preceding phonotagm in which the /r/ phoneme figures as the nucleus is not strongly confirmed, then no "neutralization" should be postulated, and no archiphoneme should be established, either.

Finally, before we terminate our discussion in this Chapter, we shall presently demonstrate in brief how the above formulated proposal can be used to resolve the outstanding problem in a consistent and adequate manner. For the immediate purposes of this explication, all the classified forms in Set 3 will be mapped into a single unified table. The table itself, as we shall see, is not only capable of accounting for the analytical and distributional properties of each and all of the forms, but it is also equipped to provide general clues with respect to the basic types of accentual prominence which correlate with the analytical properties of each simple and/or complex phonological base-line structure. Thus, we have:-

Forms	Preceding "-prominent" open minor- type phonotagms.	" ⁺ prominent" major-type phonotagms.	Preceding/ Succeeding "-prominent" open minor- type phonotagms.	" ₊ prominent" major-type phonotagms.
/rṛr/		/rṛ	↔	ṛr/
/uAiz/		/uAiz/		
/rṛ <u>ru</u> Aiz/		/rṛ	↔	ṛr uAiz/
/sPAidr/		/sPAid	↔	dr/
/urrt/		/urrt/		
/sPAid <u>ru</u> rrt/		/SPAid	↔	dr urrt/
/r/	/r/			
/uord/		/uord/		
/ueit/		/ueit/		

/ruord/

/ṛ

uord/

/rueit/

/ṛ

ueit/

etc.

etc.

etc.

etc.

Notes to Chapter 6.

1- In the interest of providing the reader with a clear insight into the theory of A.F., it should be pointed out that the exact overall theoretical status of "under-articulation" and "free-variance" has never been properly clarified by Mulder. For, though he admits that the phenomenon of "under-articulation" unmistakably belongs to the realizational level, he denies it any phonological role. In other words, "no phonological status can be assigned to it", Mulder, 1968, p.189. On the other hand, he points out that "Such realizations as [ɔ] and [ʹ] in languages, being (at least intuitively) the 'weakest' vowel and the 'weakest' consonant respectively, have in common that, if they have phonematic status at all, it is often marginal" (ibid, p.190). Implicitly, this boils down to saying that at least certain cases of the "under-articulated" phenomena are of semi-functional nature. The difference, for instance, between /hu/ in /huot/ "what" and /u/ in /uot/ "Watt" is not functional in the explosive section of the distributional unit, i.e. they are free-variants of one another (ibid, p.192). However, this may not be true with respect to /huAi/ or /uAi/ "why", on the one hand, and /uAi/ (the name of the letter) "y", on the other. For, though there is free-variance between /hu/ and /u/ in relation to "why", opposition between /u/ and /hu/ may be attested in the explosive section, e.g. /uAi/-/huAi/ "y": "why". According to Mulder, such cases "can be regarded as marginally functional phenomena, ... Whether they are called 'functional', 'semi-functional', or even 'quasi-

functional' is unimportant. It is important, however, that they are accounted for in the description with an indication of their marginal nature" (ibid, p.192). Furthermore, in his discussion of the different levels of tone in Chinese (ibid, p.218), Mulder stresses the fact that "Because I believe that the purpose of a model is its possibility of application, I would assume in the first instance that the untoned syllable is a variant in realization rather than a functional variant - i.e. I would regard it as representing a lower (in fact, the lowest) level of distinctive realization- in those, but only those, cases where the variance 'beyond any reasonable doubt' is due to under-articulation, e.g. in quick speech, in de-stressing as a modification of the stress pattern, etc., i.e. if clearly ^{there} is a generative force and that force is of a distinctly phonetic, i.e. non-functional, nature". Summing up, one may conclude that treating the realizational phenomena phonetically at a certain point, and semi-functionally at another, is inconsistent with the overall conception of the "double articulation" and the subsequent establishment of "systems" and "sub-systems". However, because the concepts of "under-articulation" and "free variance" belong exclusively to the realizational level, they are

1- relevant for the determination of the necessary number of minor-type underlying structures for S.E.;

2- important for the identification of the phonotagmic fillers of the above structures;

and, 3- necessary for the treatment of "accentual prominence" and the identification and establishment

of its different levels and degrees (c.f. PART III). Consequently, they will be treated in this work as admittedly "realizational" phenomena of "semi-phonological" nature and status.

2- If one applies the theoretical concept of "under-articulation" to the types of speech one hears daily, one is bound to distinguish at least three basic types/styles (or speeds) of speech. These are

- 1- deliberately slow and meticulous type of speech similar to the one used in dictation or tuition of S.E. to beginners;
- 2- normal speed of speech similar to the one people use in conversation, debates, etc., i.e. a speed which is neither intentionally slow, nor exceedingly fast;
- 3- a rather fast variety similar to the one ordinary people use in extreme cases of anger or frustration, or to the one which some British one-man show comedians wittily resort to nearer to the end of their jokes to intensify the effect and attract quick response from their audience.

Note that Crystal (1969, p.141) points out that one can not make absolute and accurate decisions or generalizations as to the exact speeds of utterance. This is because different people strike different notes in respect to these.

3- It should also be emphasized that "Criterion 2" is potentially capable of accounting for some dubious instances like /ʃr/ [ʃð] "the" and /r/ [ð] "a" whose pseudo-independence in S.E. phonology is refuted by Mulder (1968) and Hervey (1978).

- 4- Note that we are referring here to "a" minor structure and not to "the" minor structure, since the subsequent discussion will prove the need to establish more than a single underlying minor-type structure to account for the phenomena which precede as well as succeed those in the basic unit.
- 5- It should be remarked that all minor-type phonotactic constructions have not been attested to figure alone in communication, i.e. they are dependent for their occurrence in given "X"'s on "y"-type units in the same "X"'s. In consequence, the underlying structures which accommodate them can not be truly identified as signifying proper "distributional units" in the strictest sense of the term. Henceforth, the concept of "distributional unit" will only be used in relation to phonotactic constructions whose nuclei are neither realized as reduced [ɔ]'s, nor as reduceable [ɔ]-like sounds. In lay terms, the concept of "distributional unit" will be reserved to designate phonotagms which may (either directly or indirectly) figure alone in communication. Note in this context that Mulder (1968) uses the term "distributional unit" in relation to both types of phonotagm.

CHAPTER 7.Minor-Type Phonotagms in S.E. and Their
Underlying Base-Line Structural Models

The discussion of any one specific issue in a descriptive account must - in addition to its being identified as forming part of the factual phenomena to be investigated - be theoretically justified by the outlined scope of a theory's view of the world. Whether the theory is later capable of contributing positively towards suggesting a satisfactory solution to the problem, or not, is actually a different matter which does not seriously concern us here. In brief, however, we consider a theory which contains sufficient and straightforward clues in this respect to be simpler, more transparent and more readily accessible to operate with than one which does not. If, in this context, the totality of the issue in hand is grafted onto such a general background, we observe that:-

a- the term "minor-type phonotagms" designates the entirety of the phenomena which do not fall within the range of the "major" distributional unit in S.E.;

and, b- though the existence of these minor-type phenomena in S.E. is actually predicted - but casually referred to - by the theory of A.F. (c.f. Mulder, 1968), no clear-cut and sound proposals are ever suggested to facilitate their treatment in the descriptive account.

This being the case, the previously formulated "Methodology"

and "Criteria" should be considered in this respect not only as a serious attempt at bridging the gap between points "a" and "b" above, but also as a coherent and well-principled method for systematizing and regulating the descriptive approach to the identified phenomena. In fact, it is only on the basis of such a balanced body of hypothetical postulates and criteria that one could arrive at a logically consistent and materially adequate descriptive account of all "minor"-type phenomena in S.E.

We shall presently devote ourselves in this Chapter to investigating in detail the different possible types of "minor" phonotagmic construction in S.E. A limited number of base-line distributional structures will be postulated and established to accommodate those constructions and cater for their distributional qualities.

The reader who has already gone through the proceedings of the developed "Methodology" and "Criteria" in the preceding Chapter would undoubtedly have come to the conclusion that the only way for successfully identifying and establishing all "minor"-type phonotactic/phonotagmic structures in S.E. is by logically basing the descriptive process on an intricate network of interrelated correlations of distributional, realizational and accentual factors and/or principles. Since the "Methodology" and "Criteria" bear sufficient indications as to the exact nature of this specific network of principles, its overall hypothetical construction may consequently be envisaged to include direct references to the following theoretical and descriptive notions:-

- Occurrence dependency in bases.
- Potentials for oppositions in the nucleus of marginal phonotagms.
- Restrictions on the post-nuclear distributional possibilities of phonemes in certain marginal contexts.
- The distinction between "open" and "closed" types of phonotagm in non-accentually-prominent contexts.
- Potentials for under-articulation in the nucleus of certain types of marginal phonotagm.
- The correlation between "accentual prominence" and specific types of marginal "open" and "closed" types of phonotagm.

It should, however, be noted that the loose term "marginal" is used in the above formulations to designate phonotagms which are not seen to correlate with the locus of accentuation in given complex forms, i.e. phonotagms which are not associated with a "+ prominence" value and which are not, therefore, entitled to take up a central place in complex para-phonotactic units; (c.f. PART III, Chapter 1). The decision as to whether all, or only part of, the "marginal" phonotactic/phonotagmic phenomena could/should be properly correlated with "minor"-type base-line structures in the system will become clear in the course of the discussions. However, in order to locate the issues involved in their proper perspectives and at the same time avoid any unnecessary complexity in the main body of the subsequent arguments, we shall initially concentrate on

investigating and corroborating the descriptive significance of the postulated dichotomy between "major" and "minor" types of phonotactic/phonotagmic construction /structure in S.E.

The "Major:Minor" Dichotomy - An Essential Basis for Distinguishing Between Two Fundamentally Different Types of Phonotactic Construction:-

One seldom encounters in phonological descriptive accounts of human languages any rigorous and systematic attempts at distinguishing between the different types of formal tactic construction which are attested in such systems of communication. It is of course an error to claim that spoken languages, or some of them, are potentially constructed of one single recurring type of tactic structure. In fact, it makes no odds whether one is discussing a widely spoken language like English, Arabic, Chinese, etc., or investigating one of those African or North American languages which are spoken by a mere handful of people. The point is: As long as a given language demonstrates a potentiality for generating complex tactic constructions on the formal level, it is most certainly incorrect to treat the analytical phonotagms of all such complexes as solely representing a single type of base-line structural pattern. Not only would such a language violate many of the well-established generalizations about known human languages, but it would probably be a language which has no para-phonotactic system at all. Though we may imagine such a language as a semiotic system in its own right, we would not regard it to be a

"natural language" in the strictest sense of the term; (c.f. Mulder and Hervey, 1975). To the knowledge of the present author, no human language with the aforementioned characteristics has ever been reported to exist, or to have existed in the past, by any linguist and/or phonetician.

To start with, let us examine the constructional formation of the following set of simple and complex phonotactic data from S.E.:-

<u>Sub-set a</u>		<u>Sub-set b</u>		<u>Sub-set c</u>	
bash	/ba ^V s/	abash	/rba ^V s/	basher	/ba ^V sr/
bet	/bet/	abet	/rbet/	better	/betr/
top	/top/	atop	/rtop/	topper	/topr/
but	/brt/	abut	/rbrt/	butter	/brtr/
lit	/lit/	alit	/rlit/	litter	/litr/
foot	/fut/	afoot	/rfut/	footer	/futr/

(Set 1)

On close inspection of the distributional, realizational and accentual qualities of the attested lexical items and their correlated forms in "Sub-set 1a", we may note that:-

- a - The six basic nuclear phonemes in S.E. are attested to commute with one another in equivalent monophonotagmic contexts; (c.f. Chapter 3 of this PART).
- b - Whenever they occur and commute in such contexts, they are noted to be consistently represented by the upper limits of their distinctive realizations;

thus, [-æ-], [-ɛ-], [-ɔ-], [-i-], [-u-] and [-ʌ-], respectively.

- c - This being the case, the establishment of a single underlying distributional model can be deemed sufficient to account for the distributional characteristics of these phonotagms.
- d - Since all the phonotagms in question (which a priori belong to the same underlying distributional model) do not postulate internal juxtapositions with other adjoining sub-bases in the same forms, they can be automatically presumed to contract positive relationships with the para-phonotactic phenomena of "accentual prominence"; (c.f. PART III).

If we now move into examining the constructional formation of the classified complex information in the remaining two "Sub-sets", we are bound to encounter some difficulties. In the main, these can be attributed to the inability of the phonotactic structures themselves to provide us with the necessary clues for distinguishing between the juxtaposed types of phonotagm in each attested complex. I.e., there is nothing specific about the formal representation of the lexical items in Sub-sets "2" and "3" which is likely to tell us that the final and initial phonotagms in the two Sub-sets, should be treated differently from the preceding and succeeding phonotagms in the same Sub-sets. Faced with problems of this kind, we are forced to investigate the possibility of manipulating non-structural means for resolving structural ambiguities. For the immediate purposes of the

present argument, the onus for contributing positively towards implementing viable descriptive solutions will be considered to initially fall on the realizational aspects of the isolable phonotagmic components in each given complex form. Now, if the generalized realizational statements (which have been previously established in Chapters 3 and 5 of this PART) are taken into consideration in this context, they are bound to tell us, for instance, that the standard neutral realizations of the classified complex information in Sub-sets "2" and "3" should unequivocally be into:-

[ðbæʒ]	[bæʒð]
[ðbet]	[betð]
[ðtɔp]	[tɔpð]
[ðbʌt]	[bʌtð]
[ðlit]	[litð]
[ðfut]	[futð]

By comparing these realizational aspects with one another, we come to the conclusion that the juxtaposed phonotagms within the limits of each complex instance cannot be distributionally treated as belonging to one and the same type of underlying distributional structure. The essence of this conclusion is primarily based on the attested fact that, in well-formed and self-contained monophonotagmic forms, there is no direct opposition in the nucleus between [ʌ] and [ð], nor between [ð] and any of the upper limits of the distinctive realizations of the other basic

vocalic elements in the system of S.E. In consequence, one may probably need to postulate the establishment of two subsidiary types of underlying base-line structure to account for the phenomena which can not be accommodated within the previously referred to and established "major" distributional unit. Since these residual phenomena figure on both sides of what has been identified as "basic" or "major" types of phonotagmic construction in complex phonological continua (c.f. the preceding Chapter), the two new types of hypothetical underlying structure may consequently be termed "Onset Minor" and "Coda Minor", respectively. While an "Onset Minor" structure should be understood to refer to any phonotagm which is potentially capable of preceding and introducing a "major" type phonotagm in a given complex structural base, the "Coda Minor" is used with reference to a base-line phonotagm which succeeds a "major" phonotagm in a form and may, or may not, close the overall structure of the phonological complex.

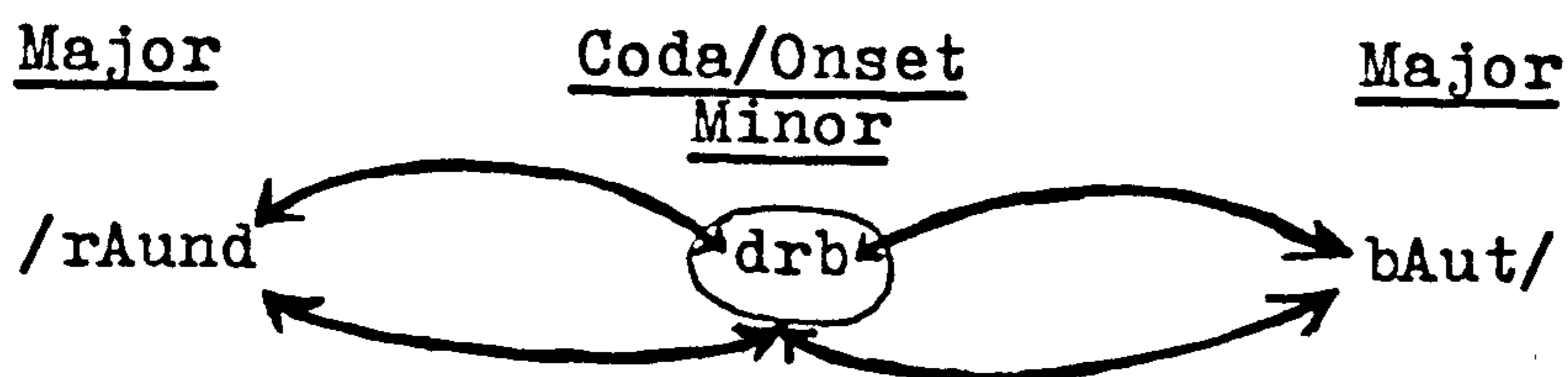
Granted that the above approximation to the issues under consideration is consistently in line with the theoretical framework of A.F., as well as with the other parts of the present descriptive account, the strategic distributional differences between the juxtaposed phonotagms of the classified complexes in Sub-sets "2" and "3" may be highlighted and brought into focus in terms of the following representational table:-

<u>Onset Minor</u>		<u>Major</u>		<u>Coda Minor</u>	
/	rb	↔	ba ^V s	∅	/
/	rb	↔	bet	∅	/
/	rt	↔	top	∅	/
/	rb	↔	brt	∅	/
/	rl	↔	lit	∅	/
/	rf	↔	fut	∅	/
/	∅		ba ^V s	↔	v ^r
/	∅		bet	↔	tr
/	∅		top	↔	pr
/	∅		brt	↔	tr
/	∅		bit	↔	tr
/	∅		fut	↔	tr

(Note that the "two-headed arrows" represent cases of "functional amalgamation" on the borders between phonotagmic components in complexes, and the "functional ∅" 's signify the potential absence of any further succeeding/preceding phonotagmic appendages. See the preceding Chapter).

It is worthwhile commenting in passing that because the operational domain of the concept of "functional amalgamation" has been widened to include application to minor-type phonotagms on the borders between major-type phonotagms in complex forms (c.f. preceding Chapter), the "Onset" and "Coda" base-line underlying structures may, in certain identified cases, be attested to overlap with one another. In this sense, one single marginal minor-type phonotagm may, distributionally speaking, figure as an "Onset Minor" as well as a "Coda Minor" in given formal complexes. The

medial minor-type phonotagm /-drb-/ in /rAundrbAut/
 "roundabout" may, in this context, be said to exemplify
 exactly the theoretical point in hand; thus,



Obviously, the lower two-headed arrows designate the
 application of "functional amalgamation" to the totality
 of locked-in minor-type phonotagms between major-type
 phonotagms in phonological complexes.

Now, if the significant distributional evidence which
 has so far been obtained from examining the specially
 selected corpus of data from S.E. are properly reconsidered,
 we may state that

all phonotagms whose nuclei are occupied by
 the standard reduced neutral phoneme /r/
 belong exclusively to either, or both, of the
 two postulated minor-type underlying
 structural models.

However, since the phoneme /r/ has, on many occasions, been
 attested to constitute a source of many unpleasant
 controversies and encounters, we shall attempt the formulation
 of a limited set of descriptive remarks the purpose of which
 is to resolve the ambiguities involved once and for ever.
 Note that distributional, realizational and accentual factors
 have been indirectly taken into due consideration in the
 formulation of these remarks. Thus,

- a - the phrase "the standard neutral phoneme /r/" should be understood to consistently refer to an /r/ in its capacity of forming the nucleus of a major-type phonotagmic component, i.e. [^];
- b - the phrase "the standard reduced neutral phoneme /r/" will be used to designate an /r/ in its capacity as forming the nucleus of a bound minor-type phonotagm, i.e. [ɔ];
- c - the phrase "the standard pre-nuclear phoneme /r/" should be solely taken to imply a clear-cut reference to its [ɹ] realization;
- d - the phrase "the standard post-nuclear phoneme /r/" will necessarily indicate either [:] or [ɔ] , but no others.

Though one is probably entitled at this stage to terminate the argument and maintain that the sole occupants of the two postulated minor-type structures in S.E. are those - and only those - phonotagms whose nuclei are represented by the standard reduced neutral phoneme /r/, it is noticed that no strategic purpose could ever be achieved from narrowing the scope of the description to accounting for the most obvious cases in the language. In fact, as the investigation progresses and further evidence is brought to the foreground, new types of phenomenon will automatically evolve demanding due identification and equal recognition in the system. The significance of the standard reduced neutral phoneme /r/, and its relevance for a consistent and adequate descriptive account of those phenomena, will be thoroughly investigated

later in the Chapter. For the time being, however, let us concentrate on developing certain aspects of the previous argument one step further.

We recall that when the issue of paradigmatic opposition in the nucleus of prominent major-type phonotagmic components was discussed, it was postulated and established to consistently take place between the upper limits of the distinctive realization of the six basic vocalic and semi-vocalic phonemes qua oppositional operators in the nucleus. Thus,

/a - e - o - r - i - u/,
i.e. [æ - ε - ɔ - ʌ - i - u/.

The above being the case, we shall presently go beyond the previously imposed limits to investigate the possibility of whether the above set of vocalic and semi-vocalic oppositional potentials may, or may not, figure in the nucleus of some adjoining marginal phonotagmic components, i.e. phonotagmic components which - as pointed out earlier - do not correspond (in phonological complexes) to loci of accentuation. Perhaps, the best way to approach the issue is by examining the oppositional and realizational potentials in the nucleus of the underlined phonotagmic components in the following set of examples and forms; thus,

elude - allude	/ <u>il</u> lud/	- /r <u>l</u> lud/	/-i-/-/-r-/
	[ilu:d]	- [ɔlu:d]	[-i-] - [-ɔ-]
pentip-pentop	/pent <u>i</u> p/	- /pent <u>o</u> p/	/-i-/-/-o-/
	[pɛntip]	- [pɛntɔp]	[-i-] - [-ɔ-]

handbill-handbell	/hand <u>P</u> il/ - /hand <u>P</u> el/	/-i-/-/-e-/
	[hændbi <u>ɪ</u>] - [hændbe <u>ɪ</u>]	[-i-] - [-e-]
beechknot-beechnut	/bIit <u>S</u> not/ - /bIit <u>S</u> nrt/	/-o-/-/-r-/
	[bi:t <u>ʃ</u> nɔt] - [bi:t <u>ʃ</u> nʌt]	[-ɔ-] - [-ʌ-]
bathos - bathers	/beie <u>o</u> s/ - /bei <u>ʃ</u> rz/	/-o-/-/-r-/
	[beje <u>ɔ</u> s] - [bej <u>ʃ</u> ɔz]	[-ɔ-] - [-ð-]
postmen-postman	/pOus <u>T</u> men/ - /pOus <u>T</u> mrn/	/-e-/-/-r-/
	[pɔwst <u>m</u> ɛn] - [pɔwst <u>m</u> ɔn]	[-ɛ-] - [-ɔ-]
	(granted that the /r/ [ð] in /-mrn-/ is not considered a parasitic phonetic sound)	
flowerbed-flowerbud	/flAur <u>b</u> ed/ - /flAur <u>b</u> rd/	/-e-/-/-r-/
	[flɔwɔ <u>b</u> ɛd] - [flɔwɔ <u>b</u> ʌd]	[-ɛ-] - [-ʌ-]
backwood-backward	/baku <u>u</u> d/ - /bakur <u>u</u> d/	/-u-/-/-r-/
	[bæ kw <u>u</u> d] - [bæ kw <u>ɔ</u> d]	[-u-] - [-ɔ-]
iliac - Iliad	/ili <u>a</u> k/ - /il <u>i</u> rd/	/-a-/-/-r-/
	[ilijæ <u>k</u>] - [ilij <u>ɔ</u> d]	[-æ-] - [-ɔ-]
backshack-backshock	/bak <u>S</u> ak/ - /bak <u>S</u> ok/	/-a-/-/-o-/-
	[bæks <u>ʌ</u> k] - [bæks <u>ɔ</u> k]	[-æ-] - [-ɔ-]
etc.	etc.	etc.

(Set 2)¹

(Note that though the above Set of minimal oppositions may, with some extra effort, be extended to include all the remaining oppositional possibilities between the six basic vocalic and semi-vocalic phonemes in marginal contexts, the Set as it currently stands is sufficient to provide us with the necessary information for developing the present argument to a fruitful conclusion).

The first impression which one obtains from surveying the attested paradigmatic oppositions in the nucleus of the underlined phonotagmic components in the above Set is that, the basic hexadic vocalic and semi-vocalic system which figures in major-type phonotagms seems to be isomorphic with the vocalic and semi-vocalic system which could be established for some marginal minor-type phonotagmic constructions. Obviously, this tentative conclusion is entirely based on the ambiguous nature of the phonotactic structures themselves which are incapable of specifying whether the terms of the attested oppositions in question are a priori equivalent with respect to their distributional and realizational factors, or not. It is clear from the nature of these queries that whichever decision one is likely to formulate in this respect, it *not only must* be based on a thorough investigation of the language, but it should also be externally and internally consistent and adequate, i.e. it should be justified by the theory and in complete agreement with the other descriptive statements of the facts. However, since no such thorough investigation of the marginal phenomena has so far been claimed to have been completed, we shall consider the adequacy of the following abstracted conclusions to be of a temporary nature only; thus,

- a - the six basic nuclear phonemes in S.E. are opposed to one another in some equivalent (non-accentually prominent) marginal phonotagmic contexts;
- and b - they may also be opposed to the standard reduced neutral phoneme /r/ in some of these marginal phonotagmic constructions.

In view of this, and pending further corroborating/refuting evidence, we shall tactically - and only tentatively - assume that the basic hexadic vocalic and semi-vocalic system which figures in major-type phonotagms may also potentially recur in the nucleus of some marginal minor-type phonotagmic constructions. Of course, the final decision as to whether the above types of "marginal tagmic construction" deserve to be identified and established as "minor-type phonotagms" in the system, or not, will be formulated in the course of the subsequent discussions. This being the case, we shall concentrate in the succeeding section on (1) examining the significance of the phenomena of "under-articulation" to the discussion of specific categories of minor-type construction in S.E. and, (2) delimiting its operational scope in the totality of the S.E. phonological system. Until these issues are clarified and resolved, the possibility of formulating consistent and adequate generalizations about minor-type constructions in S.E. is actually very slim, indeed.

The Relationship Between "Under-Articulation" and Specific Types of Marginal Phonotagmic Construction in S.E.:

It is worth emphasizing from the very outset that though the subsequent discussions will concentrate on investigating the recently outlined issues, the definitive conclusions which are expected to result actually amount to a direct and/or indirect corroboration of many of the formulated (descriptive) hypotheses in this section as well as some of those in the preceding Chapter. In order to achieve these

ends, we shall initially focus our investigations on examining the constructional formation of the underlined marginal phonotagmic components in the following Set of examples and forms:-

Sub-set 1

accrescent /akresnt/
 deadpan /dedPan/
 sacramental /sakrrmentl/
 handbarrow /handParOu/

Sub-set 3

ocellus /oselrs/
 alcohol /alkrhol/
 nomination /nomineisn^V/
 oracular /orakiulr/

Sub-set 5a

constituent /krnsTitieurnt/
 evacuee /ivakiuIi/
 deadwood /deduud/
 uranic /iuranik/

Sub-set 6a

antihalation /antihrleisn^V/
 behind /bihAind/
 pinfish /piNfis^V/

Sub-set 2

semiotics /semiotikS/
 degeneration /didSenrreisn^V/
 sedimentation /sedimenteisn^V/
 chokecherry /tŠoukTŠeri^V/

Sub-set 4

pignut /pignrt/
 puppeteer /prprtir/
 subrogation /srbrргеisn^V/
 turriculate /trrikiuleit/

Sub-set 5b

onto /ontu/
 into /intu/
 been to /bIintu/
 Lesotho /lisIutu/

Sub-set 6b

city /siti/
 geography /dŠiogrrfi^V/
 hypocrisy /hipokrrsi^V/

Sub-set 7a

ahead /rhed/
 alchemist /alkrmist/
 suburban /srbrrbn/
 around /rraund/

Sub-set 7b

better /betr/
 nippers /niprz/
 mugger /mrgr/

(Set 3)

However, before we could start presenting the results of our functional examination of the underlined data in the foregoing Set, it is necessary for the correct understanding of the subsequent descriptive conclusions that the significations of the symbols which are used in their formulation be a priori decided. Thus,

- "~" refers to "any number of attested pre-nuclear elements". Theoretically, this number may range from "0" to at most "3" elements.
- "n" stands, as usual, for "any nuclear vocalic/semi-vocalic element".
- "0" signifies the "absence of any post-nuclear extension".
- "C₀₋₁" indicates the "absence/presence of no more than a single consonant".
- "→" and "←" represent the type of relationship which holds between nuclei and their peripheral attachments, i.e. that of "occurrence dependency".

Now, if the constructional formations of the underlined sections of the classified data in Set 3 are properly

considered in the light of the previously developed "Methodology" and "Criteria" (c.f. preceding Chapter), the following highly important information may be said to have been extracted, namely that:-

- a - The three vocalic phonemes /a, e, o/ and the standard neutral semi-vocalic phoneme /r/ can never occur as nuclei of final "open"-type phonotagms of the form

$$/r \rightarrow n \leftarrow \emptyset/$$

(given that the accidental occurrence of some loan forms is a priori overlooked, e.g. /boma/ "boma", /debe/ "debe", /kiino/ "keno", etc.). (Sub-sets 1, 2, 3 and 4).

- b - In initial and medial phonotagmic components, the above four phonemes are attested to figure in the nucleus of "open" as well as "closed" types of phonotactic construction of the form

$$/r \rightarrow n \leftarrow C_{0-1}/.$$

(Sub-sets 1, 2, 3 and 4).

- c - Whenever the four basic phonemes in question occupy the nuclear positions of certain marginal "closed"-type phonotagms, the maximum extension of their post-nuclear sections is restricted to at most one single consonant phoneme; thus, " C_{0-1} ".

- d - Different from the foregoing are the identified configurations which the two nuclear phonemes /i, u/ and the standard reduced neutral phoneme /r/ demonstrate in the system of S.E.

e - Significantly, the three semi-vocalic phonemes (mentioned in d) are noted to figure in the nucleus of "open" as well as "closed" types of phonotagmic construction of the form

$$/\sim \longrightarrow n \longleftarrow C_{0-1}/.$$

(Sub-sets 5a, 5b, 6a, 6b, 7a, 7b).

f - Whenever they do so, the phonotagmic components which contain them may occur initially, medially or finally in phonological complexes; (c.f. the same Sub-sets as for e).

g - Though the phoneme /u/ is observed to keep a low profile in final "open"-type phonotagms (c.f. Sub-set 5b), there seems to be no phonological reason to treat it differently from the other two semi-vowels in Sub-sets 6b and 7b.

Granted that the extracted knowledge is sufficiently informative of a general trend in specific types of S.E. marginal phonotagmic construction, we shall presently pursue the matter further and investigate the ramifications of grafting the semi-phonological phenomena of "under-articulation" onto bases of the aforementioned specifications; (c.f. preceding Chapter).

Following the deductive method of logical reasoning, we shall essentially launch a hypothesis² and then attempt to corroborate its consistency and adequacy. Thus,

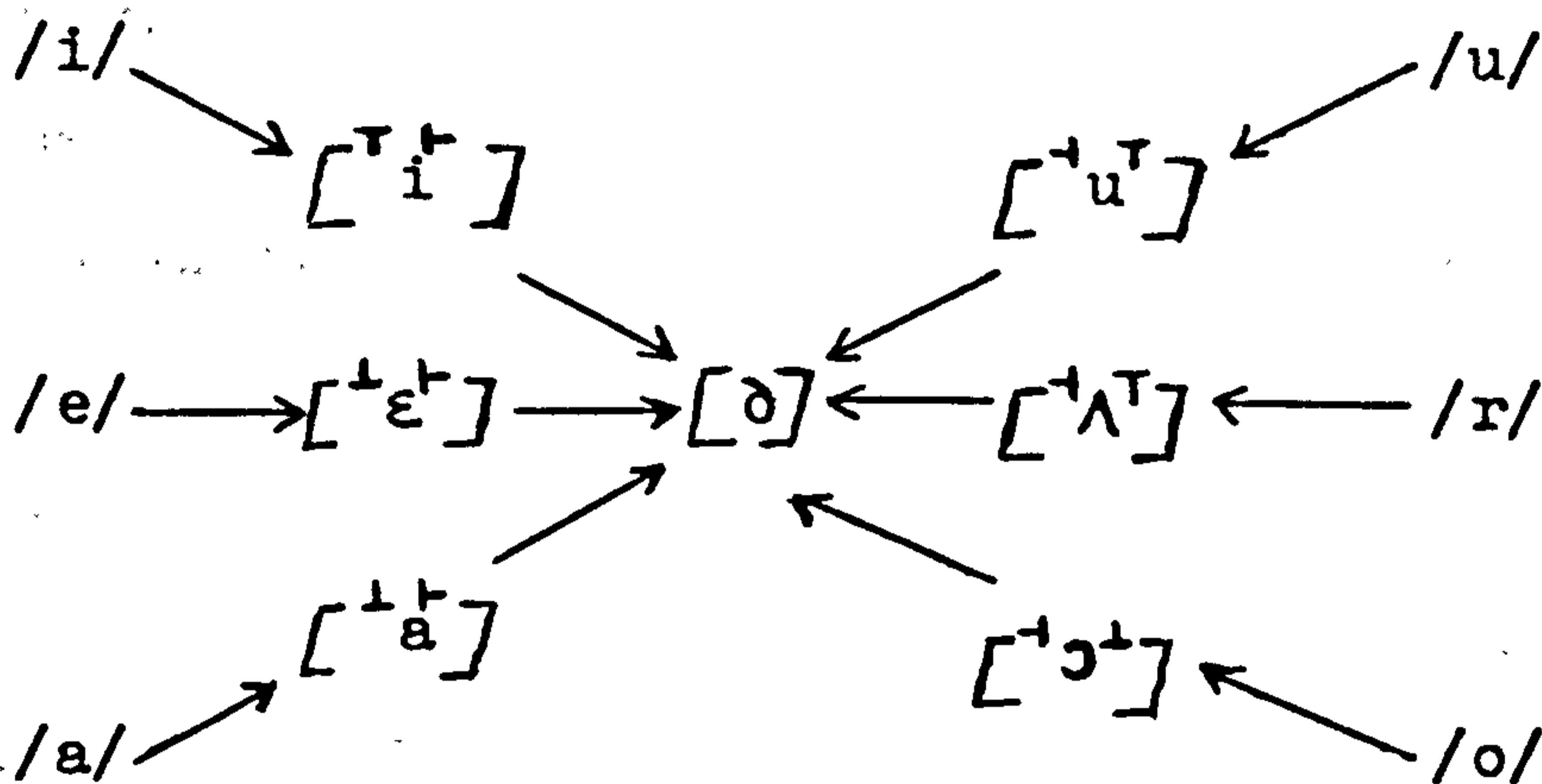
the nuclear elements of all marginal phonotagmic components whose base-line structures demonstrate affinity with the form

$$/r \rightarrow n \leftarrow C_{0-1}/,$$

are potentially reduceable to $[\partial]$ -like sounds in actual realization.

It should be noted that these phonotagms will - for explicatory reasons - be phonologically represented by what they are though marked by superscripted $[\partial]$'s to highlight their potential under-articulatory status.

The significant point of the above hypothesis may be visually summed up as follows:-



(Note that the phonetic symbols "r", "l", "r" and "l" are used as cues to designate the realizational aspects of each under-articulated phoneme; thus, "r = raising", "l = lowering", "r = backing" and "l = fronting").

(Figure 1)

Obviously, the above centripetal movement from the "distinctive" to the "less distinctive" and finally to the "broad" is empirical not only because the $[\partial]$ is the weakest of all S.E. vocalic and semi-vocalic sounds - especially when it occurs in structures of the aforementioned

type (c.f. PART III), but also because it is the most central towards which all the other basic vocalic and semi-vocalic sounds move when subjected to reduction by under-articulation. The consistency and adequacy of this descriptive approach to the issues involved are corroborated by the fact that all the relevant phonetic parameters (as well as the established phonological dimensions) which apply to the description of the vocalic and semi-vocalic elements in question, i.e. [front-back], [close-open], [round-spread], etc., are partially suspended in a "centralized" [ɔ̃]-like sound³ (c.f. preceding Chapter). However, in order to maintain the strategic descriptive differences between the "under-articulated" vocalic and semi-vocalic elements in the system and the "standard reduced neutral" semi-vocalic phoneme /r/, the former will henceforth be referred to as "potentially reduceable" elements. Thus, while the first phenomena may be considered as semi-functional and, therefore, non-obligatory, the latter is decisively functionally distinctive and obligatory. This, in fact, boils down to emphasizing that unless the strategic distinction between the two types of "reduced" and "reduceable" nuclei is taken into consideration, the semi-phonological phenomena of "under-articulation" would then have to be treated as purely phonetic phenomena of no phonological relevance whatsoever. In other words, if the distinctive realizations of each of the six basic vocalic and semi-vocalic phonemes in S.E. are said to include - under neutral conditions - a [ɔ̃] realization, then all the basic vocalic and semi-vocalic phonemes would necessarily

overlap with respect to parts of their realizational spectra. This would logically imply treating all [ɔ] realizations of the six basic nuclear phonemes as concomitant phonetic phenomena which are neither relevant to the phonological description, nor serve any phonological or semi-phonological purposes. Since this is not exactly the case, and since the phenomena of "under-articulation" only operate over specific contexts where the neutral conditions for "upper limit" realizations are neither fulfilled nor consistently enforced, "under-articulation" can not therefore be treated as concomitant phonetic phenomena of no phonological significance. For, what we are dealing with here is that though the "upper limit" of the distinctive realization of any given basic vocalic or semi-vocalic phoneme has been identified (in previous discussions in this Chapter) to be in paradigmatic opposition with the standard reduced neutral phoneme /r/ in certain marginal contexts, the "lowest limits" of the distinctive realization of any of the basic nuclear phonemes are noticed to be in some form of "free variance"⁴ with the realization of the standard reduced neutral phoneme /r/ under the influence of the phenomena of "under-articulation". If, for instance, the phoneme /a/ is selected in this context to represent this general drive, then the duality of this interesting situation may be represented as follows:-

a - According to the examples and forms of "Set 2",
we have

/a/-/r/, i.e. [æ] - [ɔ].

b - Under conditions of under-articulation, we have

$$/a/ \longrightarrow [a] / [\delta] ;$$

(the "slash" reads "either ... or").

Note that analogous treatment also applies to each of the remaining basic vocalic and semi-vocalic phonemes in the inventory.

In view of the above, all the underlined phonotagmic components of Sets "2" and "3" (with the exception of those in Sub-sets 7a and 7b, of course) may be considered to exhibit this significant tendency. However, before the modified forms are produced in the present context, it should be pointed out that though all "reduced" and "potentially reduceable" phonotagmic components will be subsequently underlined - for adequacy purposes, only the "potentially reduceable" components will - as pointed out earlier - be additionally marked by superscripted $[\delta]$'s to emphasize their under-articulatory potential. Moreover, each classified phonological complex will be correlated with two realizational possibilities signifying the attested phenomena of "free variance". Each two oscillating realizations (which are a priori due to the application of the phenomena of "under-articulation") will be separated by a "slash" (i.e. "/"). In this sense, a "slash" should be understood to imply an "either ... or" realizational relationship. Thus, if we start by re-introducing the phonological complexes of "Set 2", we shall have:-

/i/-/r/	/i ^ð liud/	Iud/
	[ilu:d] / [ð:	:d]
/i/-/o/	/pentip ^ð /	- /pentop ^ð /
	[pentip] / [pentðp]	[pentɔp] / [pentðp]
/i/-/e/	/handPil ^ð /	- /handPél ^ð /
	[hændbiɫ] / [hændbðɫ]	[hændbɛɫ] / [hændbðɫ]
/o/-/r/	/bIitšnót ^ð /	- /bIitšnr ^ð t/
	[bi:tšnɔt] / [bi:tšnðt]	[bi:tšnɾt] / [bi:tšnðt]
/o/-/r/	/beieos ^ð /	- /beiʃrz/
	[bejeɔs] / [bejeðs]	[bejʃɾz]
/e/-/r/	/pOustmēn ^ð /	- /pOustm ^ð rn/
	[powstmɛn] / [powstmðn]	[powstmðn]
/e/-/r/	/flAurbēd ^ð /	- /flAurb ^ð rd/
	[flawðbɛd] / [flawðbðd]	[flawðbrɾd] / [flawðbðd]
/u/-/r/	/bakuud ^ð /	- /bakurd/
	[bækwud] / [bækwðd]	[bækwðd]
/a/-/r/	/iliak ^ð /	- /ilird/
	[ilijæk] / [ilijðk]	[ilijðd]
/a/-/o/	/bakšak ^{vð} /	- /bakšok ^{vð} /
	[bæksæk] / [bæksðk]	[bæksæk] / [bæksðk]
etc.	etc.	etc.

(Set 4)

On the same par, the relevant sections of the complex forms in "Set 3" may, by analogy, be equally re-produced in this context to demonstrate similar tendencies; thus,

/akresnt/ → [ækwɛsðnt] / [ɔkwɛsðnt]
 /dedPan^ð/ → [dɛdpæn] / [dɛdpðn]
 /sākrrmentl^ð/ → [sækwðmentðɫ] / [sɔkwðmentðɫ]

/hand <u>Pa</u> rou/	→	[hændbærow] / [hændbðrow]
/s <u>e</u> m <u>i</u> otiks/	→	[semijotiks] / [sɔmɔjotiks]
/did <u>S</u> en <u>r</u> re <u>i</u> sn/	→	[didʒɛndwejsɔn] / [didʒɔndwejsɔn]
/s <u>e</u> d <u>i</u> mente <u>i</u> sn/	→	[sedimentejsɔn] / [sɔddɔmentejsɔn]
/t <u>S</u> ouk <u>T</u> <u>S</u> er <u>i</u> /	→	[tʃowktʃɔi] / [tʃowktʃɔɪ]
/o <u>s</u> elrs/	→	[ɔselɔs] / [ɔselɔs]
/al <u>k</u> rh <u>o</u> l/	→	[ælkɔhɔɪ] / [ælkɔhɔɪ]
/n <u>o</u> mine <u>i</u> sn/	→	[nɔminejsɔn] / [nɔmɔnejsɔn]
/o <u>r</u> aki <u>u</u> lr/	→	[ɔwækjulɔ] / [ɔwækjɔlɔ]
/p <u>i</u> gn <u>r</u> t/	→	[pignɔt] / [pignɔt]
/p <u>r</u> p <u>r</u> t <u>i</u> r/	→	[pɔpɔtiɔ] / [pɔpɔtiɔ]
/s <u>r</u> b <u>r</u> r <u>g</u> e <u>i</u> sn/	→	[sɔbɔdʒejsɔn] / [sɔbɔdʒejsɔn]
/t <u>r</u> riki <u>u</u> le <u>i</u> t/	→	[tɔwikjulejt] / [tɔwikjɔlejt]
/k <u>r</u> ns <u>t</u> i <u>t</u> u <u>r</u> nt/	→	[kɔnstittjuwɔnt] / [kɔnstittjɔwɔnt]
/i <u>v</u> aki <u>u</u> li/	→	[ivækjuwi:] / [ɔvɔkjɔwi:]
/de <u>u</u> u <u>d</u> /	→	[dɛdwud] / [dɛduɔd]
/i <u>u</u> ran <u>i</u> k/	→	[juwɔnik] / [jɔwɔnɔk]
/o <u>n</u> tu/	→	[ɔntu] / [ɔntɔ]
/i <u>n</u> tu/	→	[intu] / [intɔ]
/b <u>i</u> ntu/	→	[bi:ntu] / [bi:ntɔ]
/l <u>i</u> s <u>i</u> tu/	→	[lisu:tu] / [lɔsu:tɔ]
/a <u>n</u> t <u>i</u> hr <u>l</u> e <u>i</u> sn/	→	[æntihɔlejsɔn] / [æntɔhɔlejsɔn]
/b <u>i</u> h <u>a</u> ind/	→	[bihajnd] / [bɔhajnd]
/p <u>i</u> n <u>f</u> is/	→	[pinfɪʃ] / [pinfɔʃ]
/i <u>r</u> ite <u>i</u> sn/	→	[iɔitejsɔn] / [ɔɔtejsɔn]
/s <u>i</u> ti/	→	[siti] / [sitɔ]
/d <u>S</u> iog <u>r</u> r <u>f</u> i/	→	[dʒijɔgɔfi] / [dʒɔjɔgɔfɔ]
/h <u>i</u> p <u>o</u> kr <u>r</u> si/	→	[hipɔkwɔsi] / [hɔpɔkwɔsɔ]
/r <u>h</u> ed/	→	[ɔhɛd]

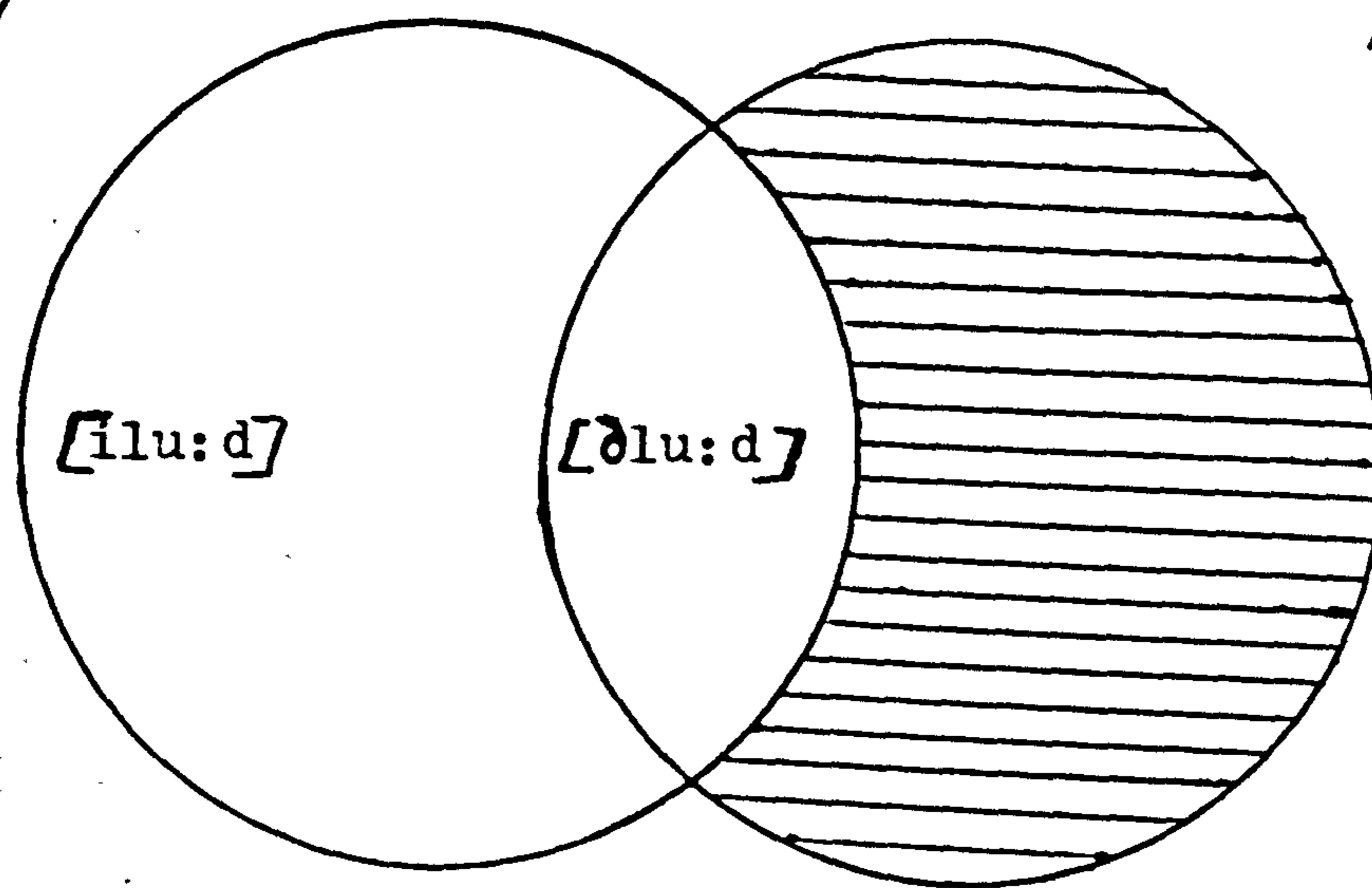
/alk <u>r</u> mi <u>s</u> T/	[ælkðmist]
/s <u>r</u> b <u>r</u> r <u>b</u> n/	[sðbɜ:bðn]
/r <u>r</u> A <u>u</u> nd/	[ðɹɑwnd]
/be <u>t</u> r/	[bɛtð]
/ni <u>p</u> rz/	[nipðz]
/m <u>r</u> gr/	[mʌgð]

(Set 5)

If we now base ourselves on the particulars of the latter conclusions in Sets "4" and "5", we may emphasize that with the exception of some minor-type phonotagmic components of certain phonological complexes, i.e. those whose nuclei are almost always represented by the standard reduced neutral phoneme /r/, each of the remaining underlined phonotagmic components are potentially correlateable with two realizational possibilities. Only one of any two of such possibilities may be said to overlap (in equivalent contexts) with the single and only realizational possibility of another form, or it may overlap with one of the two possible realizations of a third form. This is most appropriately demonstrated by the examples and forms of "Set 4". For, if the attested realizational possibilities of the two complexes /illud/ and /rlud/, for instance, are mapped onto a Venn diagram for two classes, we get an exemplary case of "proper inclusion" where the overall realization of one form is completely included in the realization of the other, e.g.

/ɪlɪud/

/rɪlɪud/

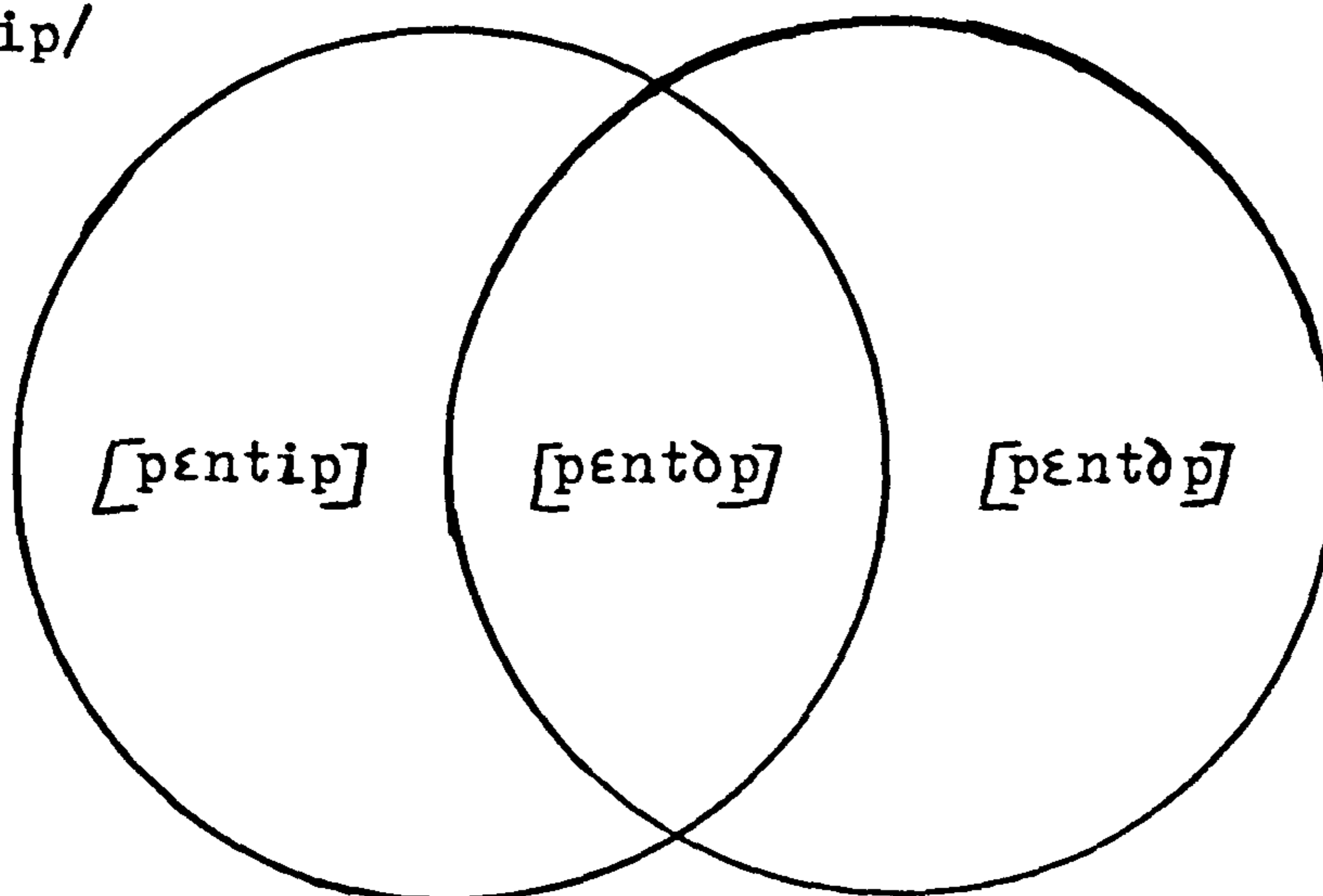


(Figure 2)

However, if the realizations of the two forms /pentip/ and /pentop/ are mapped onto an analogously constructed Venn diagram, we obtain conclusions which are different from those of Figure 2,

e.g. /pentip/

/pentop/



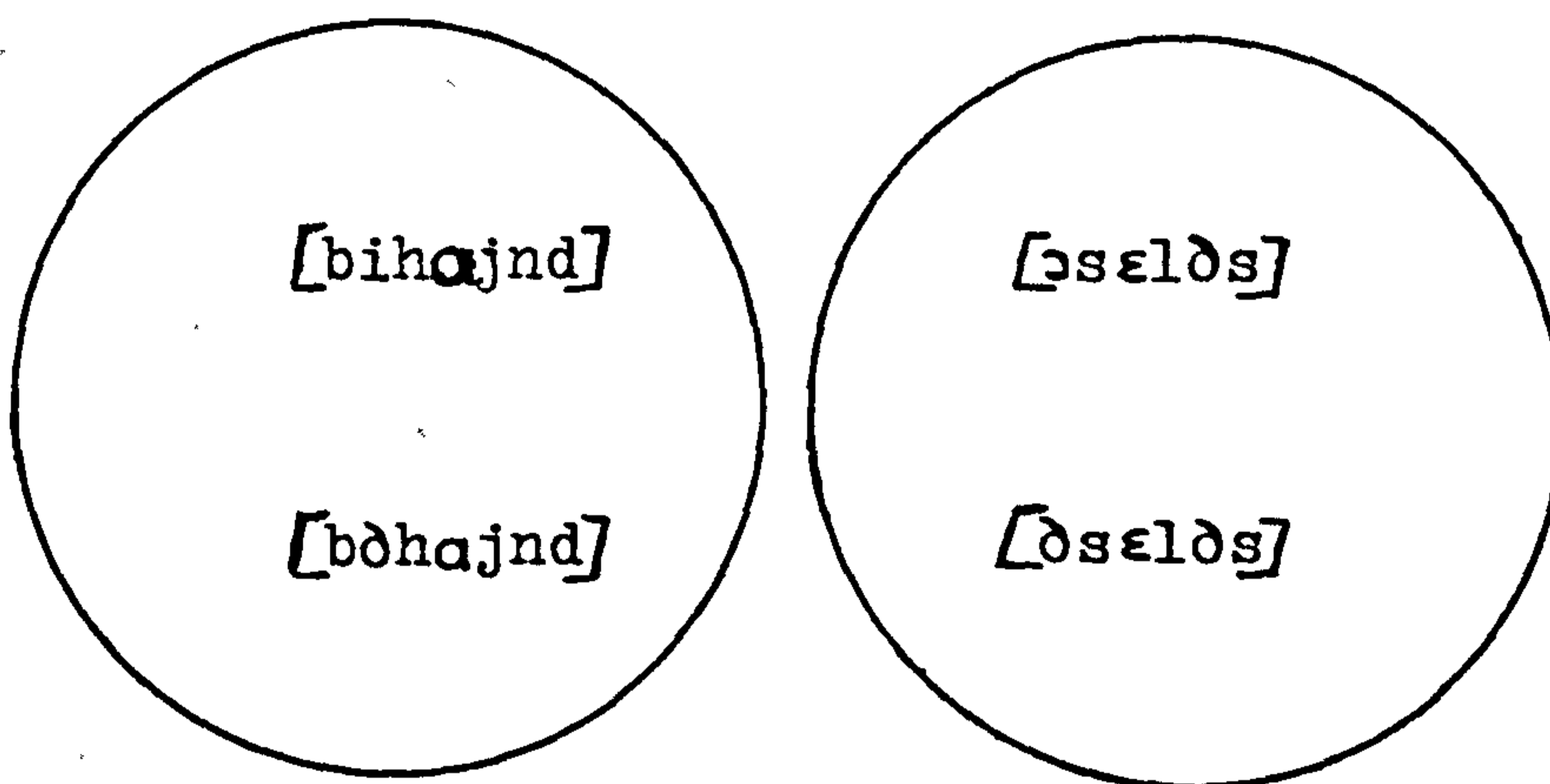
(Figure 3)

Because the two forms in Figure 3 overlap with respect to the lowest limits of their distinctive realization (but not with respect to their upper limits), they demonstrate an obvious case of what may be termed "partial inclusion".

Now, if the realizations of the two previously given forms /bihAind/ and /oselrs/ are mapped onto a Venn diagram of exactly the same specifications, a new situation is noticed to evolve which is intrinsically different from the aforementioned two cases, i.e. a situation where no intersection of whatever kind could be established between the allo- realizational domains of the two globally different forms. This clear-cut case of "total exclusion" may be represented as follows:-

/bihAind/

/oselrs/



(Figure 4)

It should however be pointed out in this context that, irrespective of whether the realizations of any two (or more) phonological forms manifest a tendency to intersect with one another, or not, they nevertheless demonstrate (from a functional point of view) different relations, e.g.

/ilIud/	[ilu:d] / [ɔlu:d]	Rd	"elude"
/rliud/	[ɔlu:d]	Rd	"allude"
/pentip/	[pɛntip] / [pɛntɔp]	Rd	"pentip"
/pentop/	[pɛntɔp] / [pɛntɔp]	Rd	"pentop"
/bihAind/	[bihajnd] / [bɔhɔind]	Rd	"behind"
/oselrs/	[ɔsɛlɔs] / [ɔsɛlɔs]	Rd	"ocellus"
etc.	etc.		etc.

(In A.F. tradition, the "R" reads "in relation to" and "d" means "distinctive phonological function").

Note that because the counter-domains (right-hand sections of all the equations) are different, they are therefore different relations, and because a "signum" (formerly "sign") is defined in A.F. as a relation (p)Rs^s - they are different signa.⁵ (For further information concerning the above type of formulae, the reader is referred to Mulder 1968 and 1980, and to Mulder and Hervey 1972 and 1980).

However, before this section is brought to a close, it is worth recapitulating in brief the main points of the preceding arguments; thus,

- a - when the six vocalic and semi-vocalic phonemes figure in the nucleus of marginal-type phonotagms with the underlying structure

$$/\sim \longrightarrow n \longleftarrow C_{0-1}/,$$

their realizations may undergo varying degrees of under-articulation;

- b - marginal phonotagms are identified as "minor"-type phonotagms only if their nuclei manifest reduceable realizations (approximating to [ɔ]) in actual communication;

- c - if the nuclear element of a given phonotagm is not reduceable by under-articulation, the phonotagm is treated as an instance of the "major" distributional unit;
- d - as an immediate consequence of note "c", one can not consider the attested paradigmatic oppositions in "Set 2" to be ontologically and distributionally justified;
- e - in the above explained sense, all marginal phonotagms whose nuclear positions are occupied by any of the six basic vocalic and semi-vocalic phonemes in S.E. may consequently be considered to form a special class of phonotagms each member of which is primarily alignable with the "major" distributional unit, but which - under specifiable conditions - may also figure in any of the established "minor"-type underlying structures; (see below);
- f - summing up, we conclude that the six basic vocalic and semi-vocalic phonemes which figure in "major"-type phonotagms in the system may appear in the nucleus of "minor"-type phonotagms if and only if they are noted to demonstrate reduceable potentials.

The Establishment of Minor-Type Phonotagmic Components

Functioning as "Onset" Units and Their Underlying Structural

Models:-

The stage is now properly set for the determination of the exact number of minor-type underlying structures which

are necessary for an adequate description of the phonotactic constitution of all minor-type sub-chains (loosely phonotagms) which, as pointed out earlier, are not capable of figuring alone in communication.

However, in order to keep the subsequent argument as simple and clear as possible, it is worthwhile dividing our investigations into

- 1 - examining the phonotactic construction of "r"-type sub-chains which precede "y"-type sub-chains in given "X"'s and establishing corresponding underlying structural models;
- 2 - examining the phonotactic construction of "r"-type sub-chains which succeed "y"-type sub-chains in given "X"'s and establishing corresponding underlying structural models.

Since "preceding" ("Onset") and "succeeding" ("Coda") minor-type units are noted to be less extensive in phonotactic structure than basic (major)-type phonotagms, and since a laborious re-investigation of the phonotactic structures of the above units will only bring diminishing results, the distribution of phonotactic elements in "Onset" and "Coda" units will not be investigated in the present work.⁶

In much the same way as in Chapter 4 of this PART, the determination of the maximum extension of a minor-type underlying structure functioning as an "Onset" unit requires investigating the phonotactic construction of the underlined phonotagms in the following Set. It should however be noted

that while each (and only each) of the underlined components of "Sub-set A" will be correlated with two phonetic forms, the non-underlined components will be represented by an ad hoc number of "dots" in the phonetic representation. We may cite three reasons for this:-

- 1 - The basic "y"-type phonotagmic components have already been treated extensively in Chapter 4 of this PART.
- 2 - The discussion concerning the underlined minor-type "Onset" units applies also to all non-underlined units which display analogous characteristics; (see the "Methodology").
- 3 - It is necessary to delimit the scope of the discussion to immediately relevant issues.

Thus, the selected set of data may now be arranged and presented in terms of the following two lists:-

Sub-set A

Minor-type phonotagms whose nuclei may be under-articulated in specifiabile phonotactic contexts.

stratification /sTratifik^VeiSn/

↙ ↘
[stwæt...]/ [stwɔ̄t...]

handbarrow /handParOu/

↙ ↘
[...bæ...]/ [...bɔ̄...]

strenuosity /sTreniuositi/

↙ ↘
[stwæn...]/ [stwɔ̄n...]

Sub-set B

Minor-type phonotagms whose nuclear positions are always occupied by the standard reduced neutral phoneme /r/.

strategic

/sTr^VrrtIidSik/

↓
[stwɔ̄t...]

peppermint

/pepr^Vmint/

↓
[...pɔ̄m...]

substantial

/srbSTans^Vl/

↓
[sɔ̄bst...]

eristic	/erisTik/	dramatic	/drrmatik/
	↙ ↘		↓
	[ε...] / [ð....]		[dʷðm...]
stridulation	/sTridiuleiŝn/	neologistic	/niolrdŝisTik/
	↙ ↘		↓
	[stwid...] / [stʷðd...]		[...lðdž...]
antihalation	/antihrleiŝn/	monasterial	/monrsTirriɾl/
	↙ ↘		↓
	[.ti...] / [.tð...]		[.nðst...]
Socratic	/sokratik/	nonconductor	/noNkrndrkTr/
	↙ ↘		↓
	[sɔk...] / [sðk...]		[...kðnd...]
oracular	/orakiulr/	demonstration	/demrnsTreišn/
	↙ ↘		↓
	[ɔ...] / [ð...]		[.mðnst...]
juristic	/dŝurisTik/	etc.	etc.
	↙ ↘		
	[džu...] / [džð...]		
superb	/suprrb/		
	↙ ↘		
	[sup...] / [sðp...]		
guffaw	/grfor/		
	↙ ↘		
	[gɒf...] / [gðf...]		
turriculate	/trrikiuleit/		
	↙ ↘		
	[tɒ...] / [tð...]		
etc.	etc.		

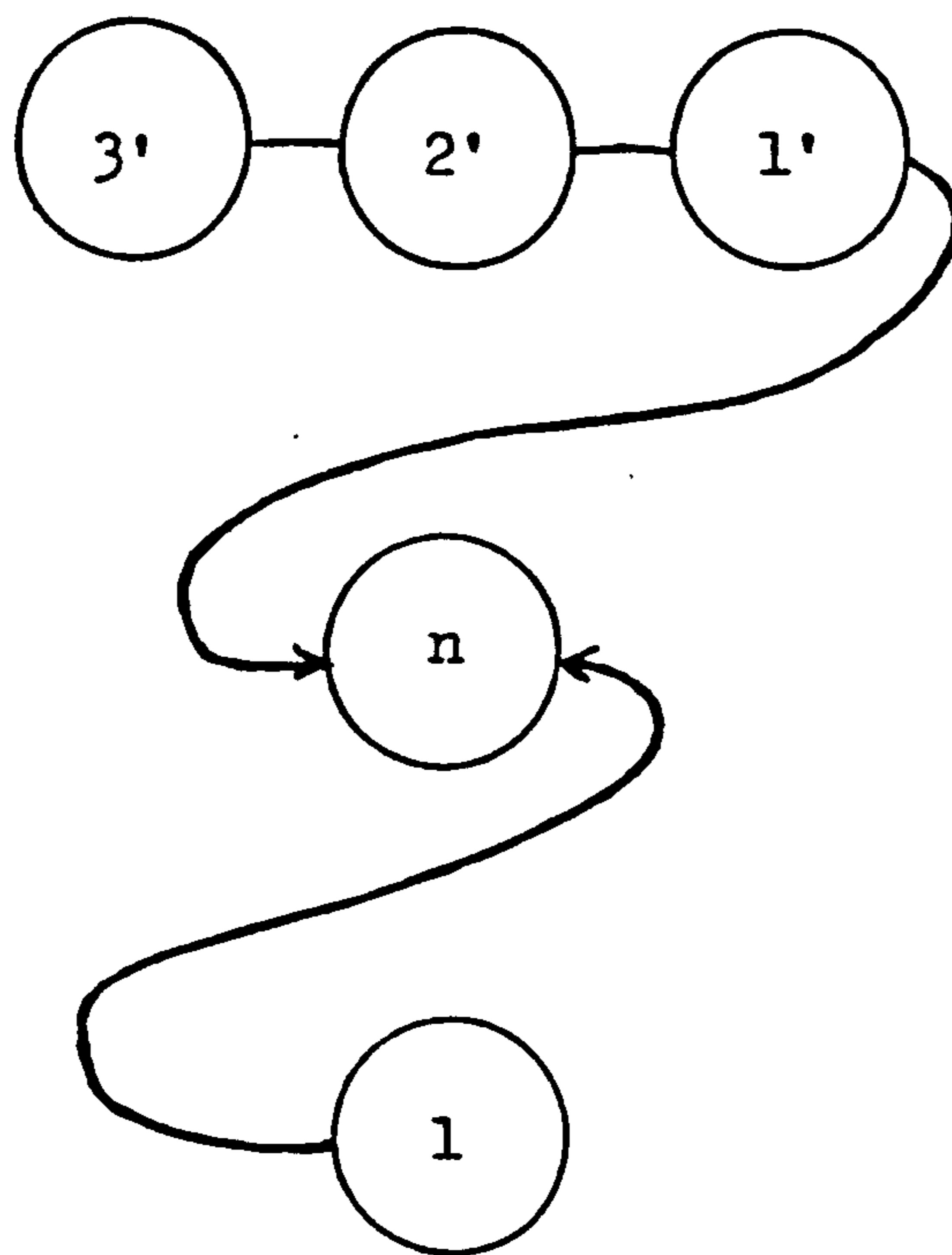
(Set 6)

On examination of the given forms in "Sub-set A", it turns out that the phonotactic construction of all the underlined phonotagmic components, i.e. those whose nuclei are potentially reduceable to [ð] -like sounds in realization, demonstrate a tendency to conform with the previously established formulaic structure whose form is

$$/x_{0-3} \longrightarrow n \longleftarrow c_{0-1}/ \cdot^7$$

(Note that the " \sim " in the original formulations has been substituted in the present underlying structure for its attested value, i.e. " x_{0-3} ". By the latter symbol we, of course, imply that the pre-nuclear combinational possibilities of tactic elements may range from "0" to the maximum of "3" phonemes in any one instance).

If the above constructed formula is re-interpreted and formally transformed into a proper model of an underlying distributional field of relations, we should be able to set up an "Onset" minor-type phonotagmic model which is capable of accounting adequately for the distributional possibilities of all the forms in "Sub-set A". Thus,



(Figure 5)

This model will account for the tactic relationships which hold between the elements of specific kinds of both

"closed" and "open" types of phonotagmic construction which may precede "major" phonotagms in attested S.E. complex bases. The single post-nuclear peripheral position in the established unit, it must be emphasized, plays a decisive role in determining the type and nature of any given phonotagmic construction of the above specifications. It is only when this position is filled by a consonant that the unit may be pronounced "closed". By implication, in all remaining cases, i.e. when the post-nuclear position is left unoccupied in given contexts, the phonotagms are treated as "open". On the basis of this, and with reference to the attested instances in "Sub-set A", two highly important descriptive statements may be formulated for the benefit of the reader. These are:-

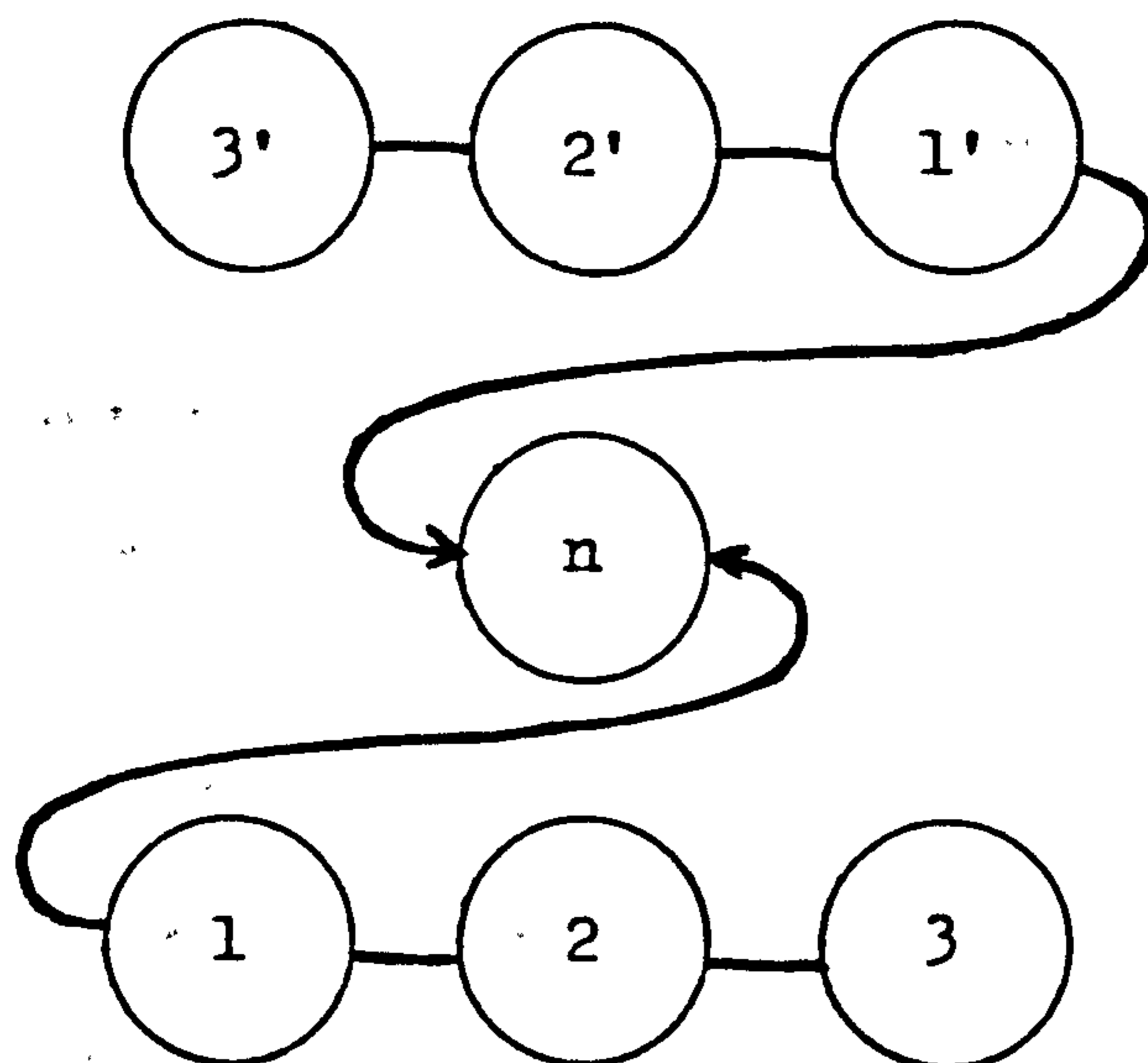
- 1 - An "Onset" minor-type phonotagm is considered "closed" if the under-articulated vocalic/semi-vocalic nucleus is immediately succeeded by a single consonant in the established post-nuclear position.
- 2 - If the under-articulated nucleus of an "Onset" minor-type phonotagmic component is immediately succeeded by the [ɹ] realization of the phoneme /r/, by an /h/, or by another vocalic/semi-vocalic nucleus in a given complex base, the phonotagmic component in question is deemed to be "open".

By comparison with the foregoing, the instances which are listed in "Sub-set B" of the latter Set pose a different kind of problem. This is partly because the nuclear

positions of all the underlined phonotagmic components are - due to distributional restrictions - filled by the standard reduced neutral phoneme /r/, and partly because the maximum extensions of the post-nuclear sections of these phonotagms are at variance with those of "Sub-set A". As such, any attempt at forcibly applying the established "Onset" underlying model in Figure 5 to the description of the forms in "Sub-set B" will lead to the refutation of its adequacy. Since the adequacy of the established model in Figure 5 has been corroborated by direct evidence from specific sections of the classified data, the onus of the solution to this new problem ultimately lies in the establishment of a second version of an "Onset" model to cater for the distributional needs of all the underlined phonotagmic components in "Sub-set B" of Set 5. If the phonotactic structure of the underlined phonotagms in question is properly considered, we come to the conclusion that they comply with a formulaic structure of the type

$$/ x_{0-3} \longrightarrow n \longleftarrow C_{0-3} / \cdot$$

If this formulaic representation is subsequently transformed into a phonotactic model, the second version of the "Onset" minor-type underlying distributional field of relations may be set up in the following manner:-



(Figure 6)

Though the strategic differences between Figures "5" and "6" are presumed to be evident and require no further comment, we find it necessary, for the correct understanding and appreciation of this part of the description, to complement the picture by some additional explanatory and corroborative information. For simplicity reasons, this information will be presented in the form of interrelated notes. Thus,

- a - when the standard reduced neutral phoneme /r/ occupies the nuclear position of "Onset" minor-type phonotagmic constructions, the "pre-" and "-post" nuclear sections of the "Onset" unit are noted to be potentially commutable with "zero". The section which commutes with its potential absence may theoretically be termed a "peripheral expansion", and the one which does not may, by comparison, be identified as forming a "bound peripheral" section;

- b - an analogous situation is encountered when the two phonemes /i/ and /u/ (in their potentially under-articulated realizations) figure as nuclei of "Onset" minor-type phonotagmic constructions of the form

$$/x_{0-3} \longrightarrow n \longleftarrow C_{0-1}/.$$

Depending on the specific constructional nature of each phonotagmic component, either of the two peripheral sections, or both of them, may commute with "zero";

- c - the under-articulated realizations of the three vocalic phonemes /a, e, o/ and the standard neutral semi-vocalic phoneme /r/ are attested (in the majority of cases) to figure in "closed"-type phonotagmic constructions of the form

$$/x_{0-3} \longrightarrow n \longleftarrow C_1/.$$

In view of this, the peripheral post-nuclear sections of such types of phonotagm must be treated as "bound peripherals";

- d - in a minority of instances, namely when any of the foregoing nuclear elements in note "c" figures in the nucleus of an "Onset" minor-type phonotagm and is immediately succeeded in the same base by another phonotagm initiated by the phoneme /r/ in a pre-nuclear position, the post-nuclear section of the phonotagm in question may be said to constitute a "peripheral expansion"; thus,

$$/x_{0-3} \longrightarrow n \longleftarrow C_0/ ;$$

e - because each phonological complex is separately judged on its own merits, the pre-nuclear peripheral section of all "Onset" minor-type phonotagmic components may be treated as a "peripheral expansion"; (c.f. note "a");

f - "Onset" minor-type phonotagm may either occur initially in a complex form before a major-type phonotagm, or medially in analogous circumstances, e.g. compare the occurrence of /sok-/ in /sokratik/ "Socratic" with /-drb-/ in /rAundrbAut/ "roundabout", i.e. /sok-/ is an "Onset" phonotagm occurring initially in the base /sokratik/ and /-drb-/ is a "Coda/Onset" phonotagm occurring medially (between two major phonotagms) in the base /rAundrbAut/.

With the above notes, we may now move into discussing minor-type phonotagmic constructions which succeed major-type units in attested S.E. complex phonological forms.

The Establishment of Minor-Type Phonotagmic Components Functioning as "Coda" Units and Their Underlying Structural Models:-

The establishment of the "Coda" minor-type underlying structural model (or models) for S.E. should not, by now, cause any problems since all the relevant issues which are related to the establishment of "minor"-type units in general have been sorted out in earlier discussions. The slight differences between "Onset" and "Coda" units will automatically emerge from the subsequent investigation of the following two sub-sets of examples. It should be noted that the

same representational conventions which have previously been used in connection with the phonological forms in the preceding Section apply also to the discussion of the forms in the present context. Thus, the relevant information which is necessary for the immediate purposes of our argument may be presented as follows:-

Sub-set A

Minor-type phonotagms whose nuclei may be under-articulated in specifiable phonotactic contexts.

strenuous /sTreniurs/
 [..nju...] / [..njð...]

menstruate /mensTrueit/
 [..tʷu...] / [..tʷð...]

careful /kerful/
 [..fuɹ] / [..fðɹ]

flowerbud /flAurbrd/
 [..bʌd] / [..bðd]

syllabub /silrbrb/
 [..bʌb] / [..bðb]

crosscurrent /kroskrrrrnt/
 [..kʌ...] / [..kð...]

decagon /dekrgon/
 [..gɔn] / [..gðn]

neutron /niItron/
 [..tʷɔn] / [..tʷðn]

noncorrelative /noNkorelrtiv/
 [..kɔ...] / [..kð...]

Sub-set B

Minor-type phonotagms whose nuclear positions are always occupied by the standard reduced neutral phoneme /r/.

keeper /kIipr/
 [..pð]

operator /oprreitr/
 [..pð...tð]

stratum /sTrartrm/
 [.....tðm]

breakables /breikrbls/
 [..kðbðɹz]

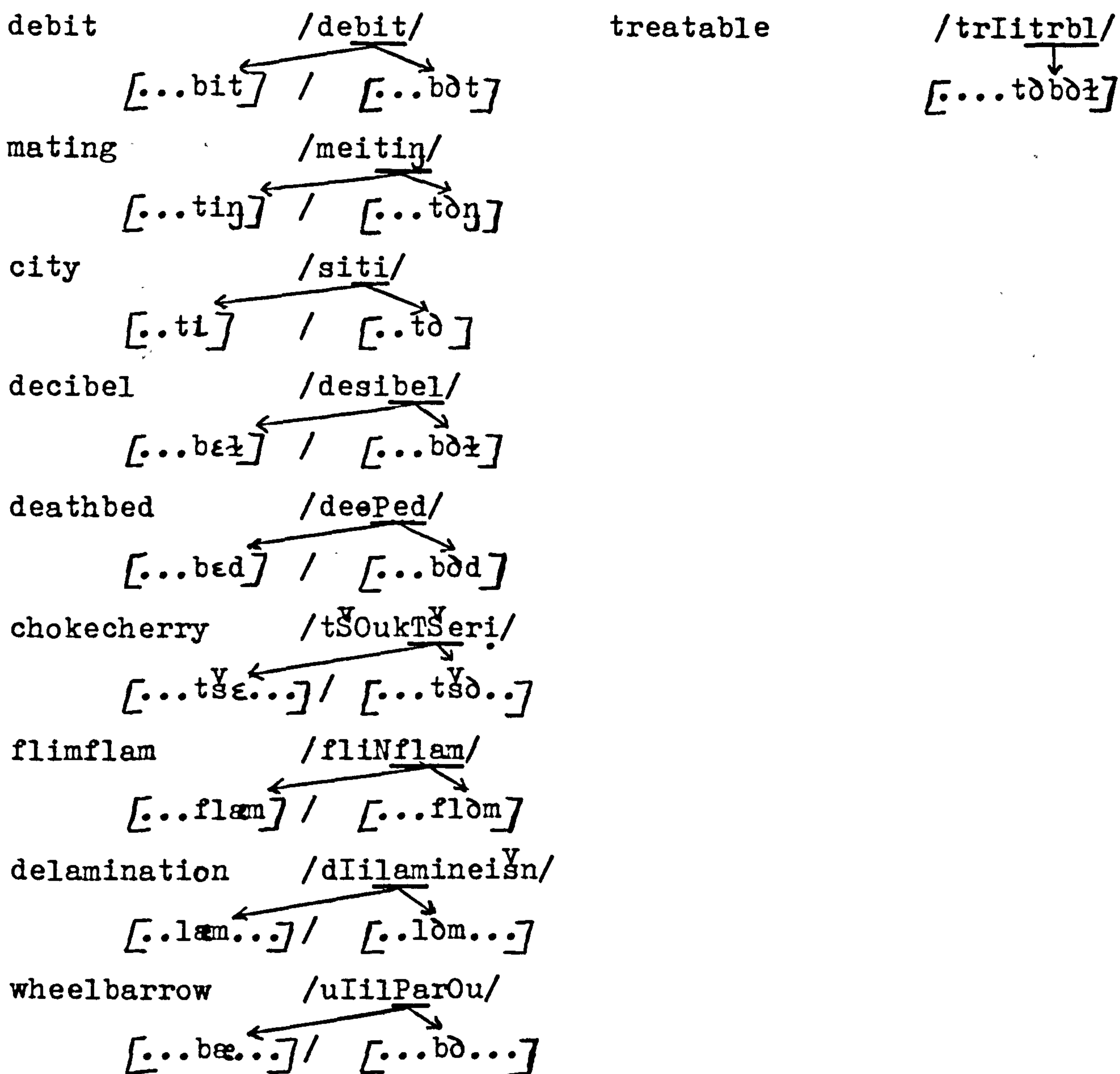
subsequent /srbSikrnt/
 [.....kwðnt]

envelopment /iNvelrpmnt/
 [..lðpmðnt]

Williamson's /uilrmsnz/
 [..ðmsðnz]

spectacles /sPekTrkls/
 [..tðkðɹz]

hundredths /hrndrrdθs/
 [..dʷðdθs]



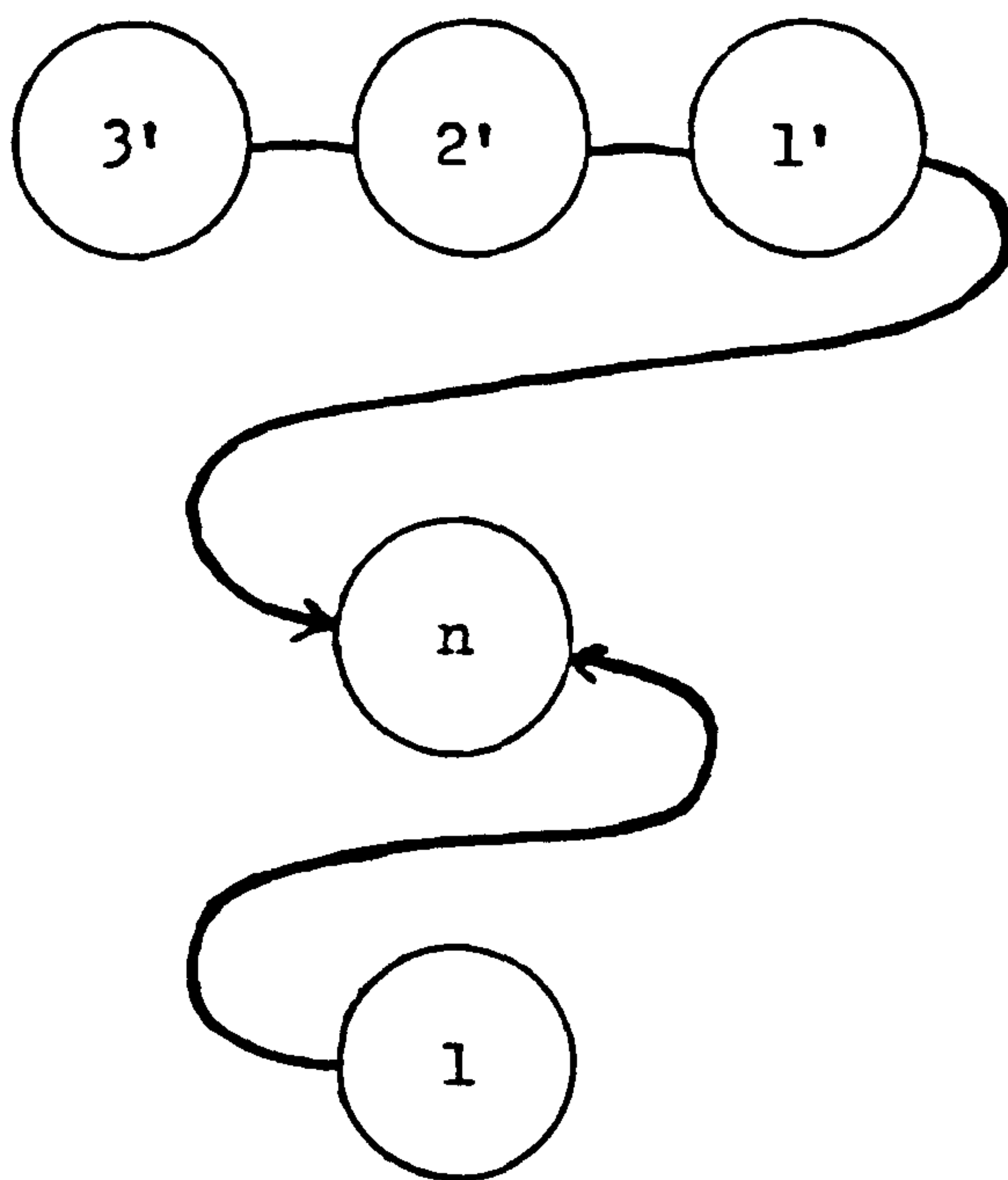
(Set 7)

If the examples and forms of "Sub-set A" in the above list are compared with their counterparts in "Sub-set A" of the "Onset" minor-type structure, we detect no vital differences, whatsoever. In other words, the constructional build-up of all S.E. minor-type phonotagmic components whose nuclei are potentially reduceable to [ɔ̃]-like sounds in actual realization demonstrate a tendency to comply with the frequently referred to formulaic representation of

$$/x_{0-3} \longrightarrow n \longleftarrow c_{0-1}/;$$

(of course, "n" represents in this particular formula the under-articulated realizations of any of the six basic nuclear elements in the system, i.e. /a, e, o, i, u, r/).

On the basis of the latter formula, the first version of the "Coda" minor-type underlying structural model may be conceived to be composed of the following simultaneous bundle of positions; thus,



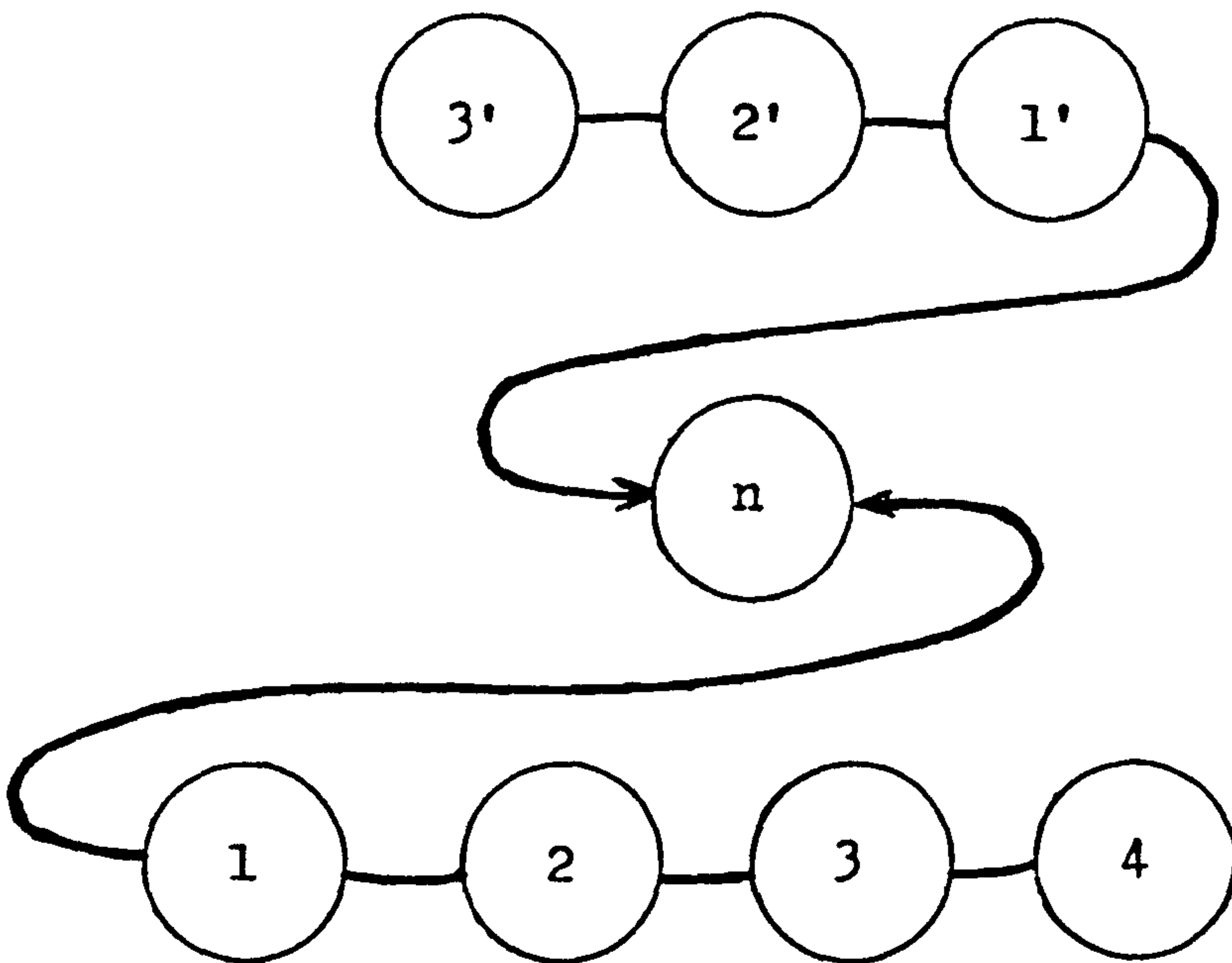
(Figure 7)

The material adequacy of the formula and the model are directly corroborated by the classified information in "Sub-set A" of "Set 7". For, as pointed out in previous discussions, the under-articulated realizations of the six basic vocalic and semi-vocalic phonemes in S.E. may figure in the nucleus of minor-type "open" as well as "closed" phonotagmic constructions if and only if they are never succeeded in a form by more than one single consonantal element.

Now if the examples and forms in "Sub-set B" of "Set 7" are properly investigated, one may very easily conclude that they conform with a formulaic pattern of the type

$$/x_{0-3} \longrightarrow n \longleftarrow c_{0-4}/;$$

(where "n" represents the standard reduced neutral phoneme /r/). In terms of a simultaneous bundle of positions, the corresponding self-contained underlying structural model may, by comparison with the earlier figures, be set up as follows:-



(Figure 8)

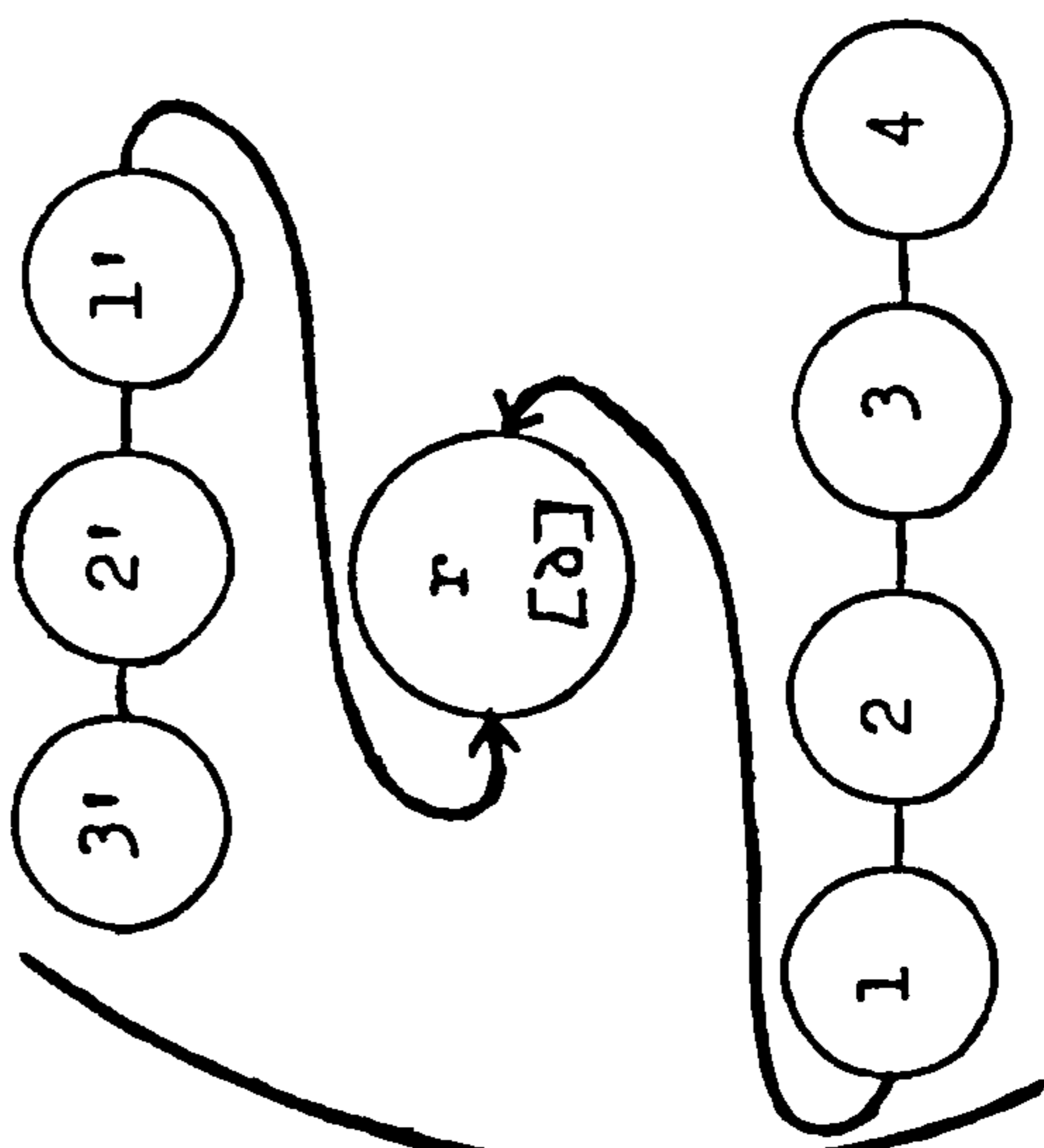
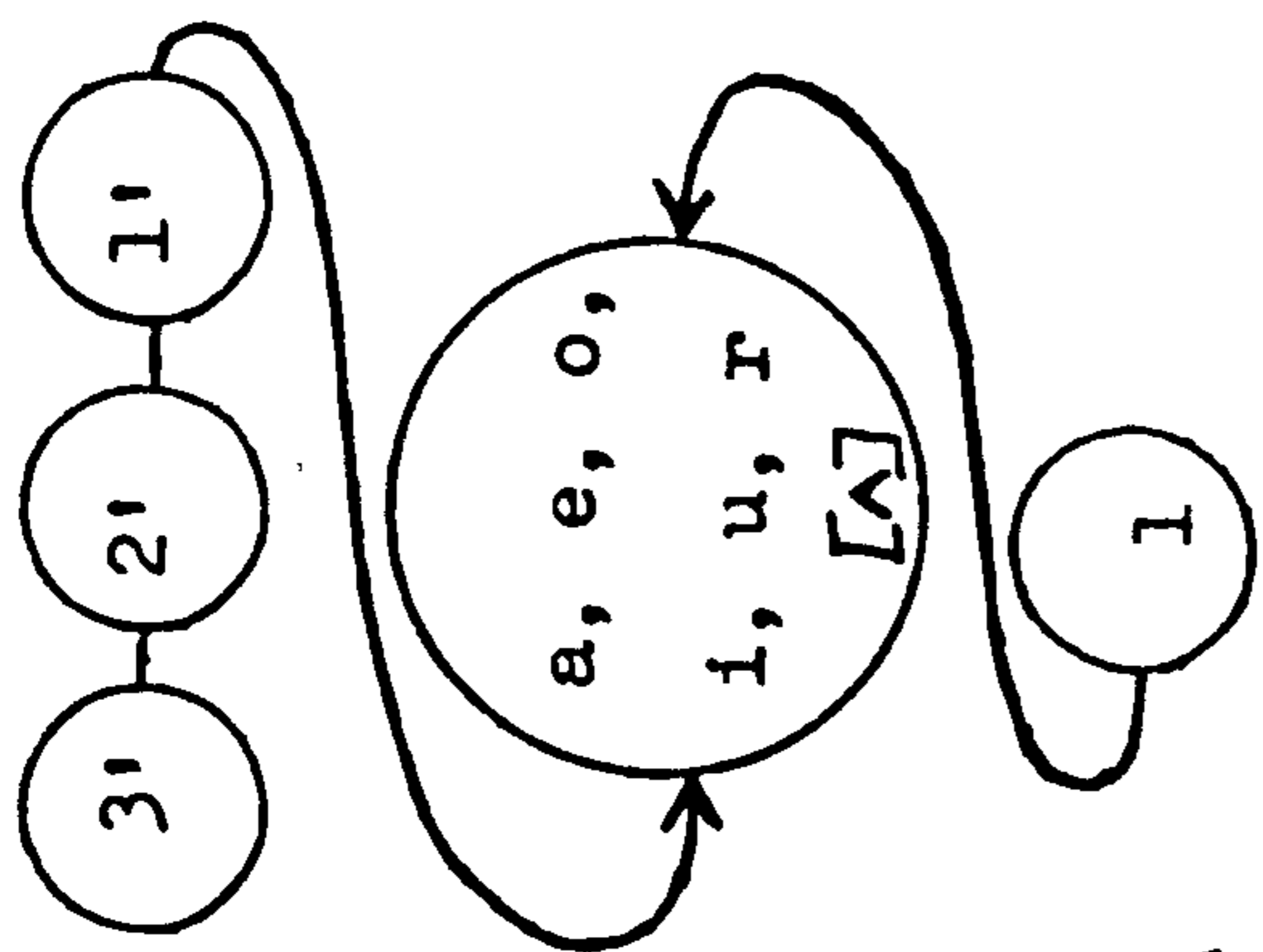
For reasons analgous to those mentioned and discussed in connection with the establishment of two versions of an "Onset" minor-type underlying structural model, the two versions of the "Coda" minor-type distributional model can not be conflated to form one single type "Coda" unit. Subsequently, one has no other viable alternative but to accept the validity of the two versions of the minor-type "Coda" unit established above.

Summary:-

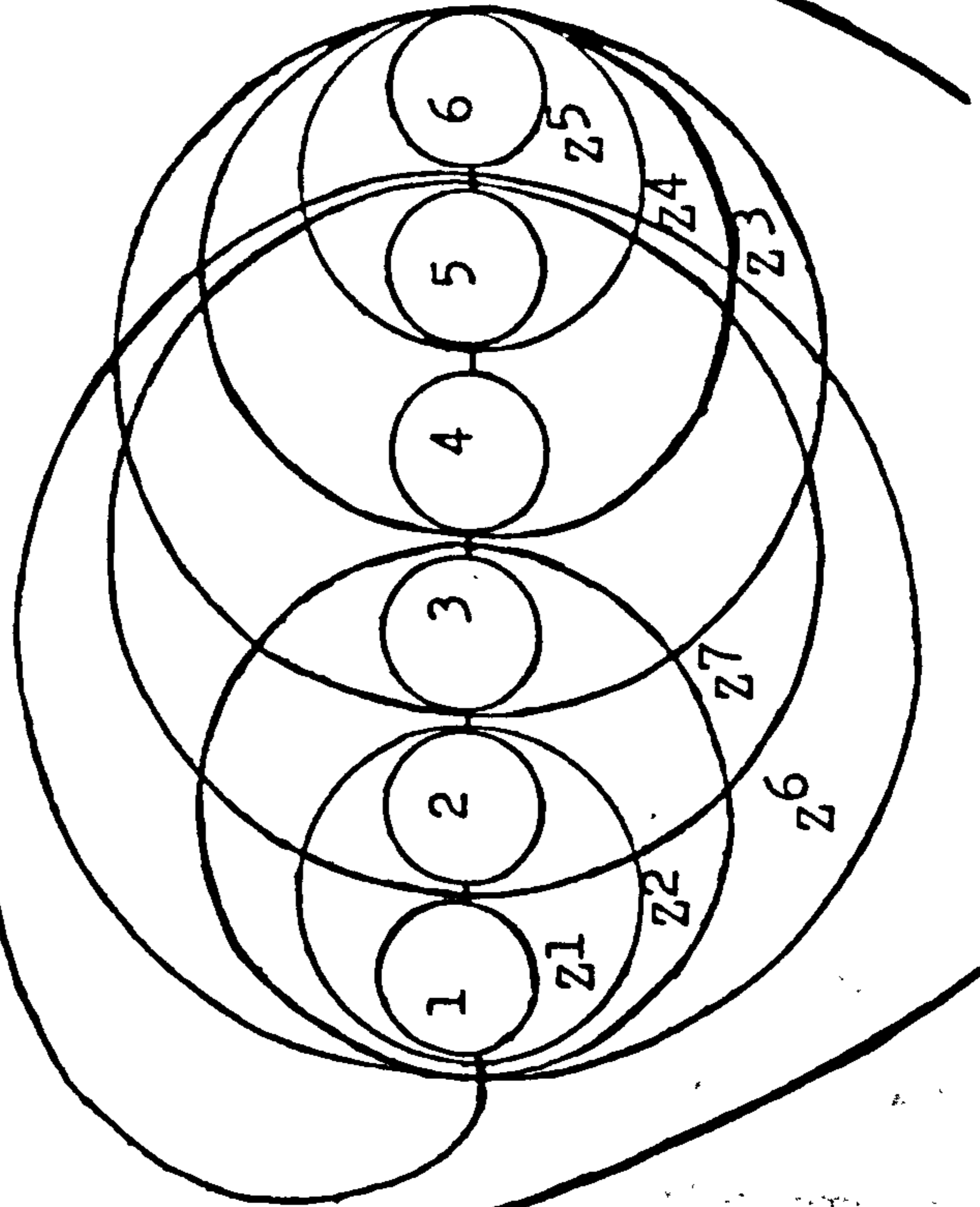
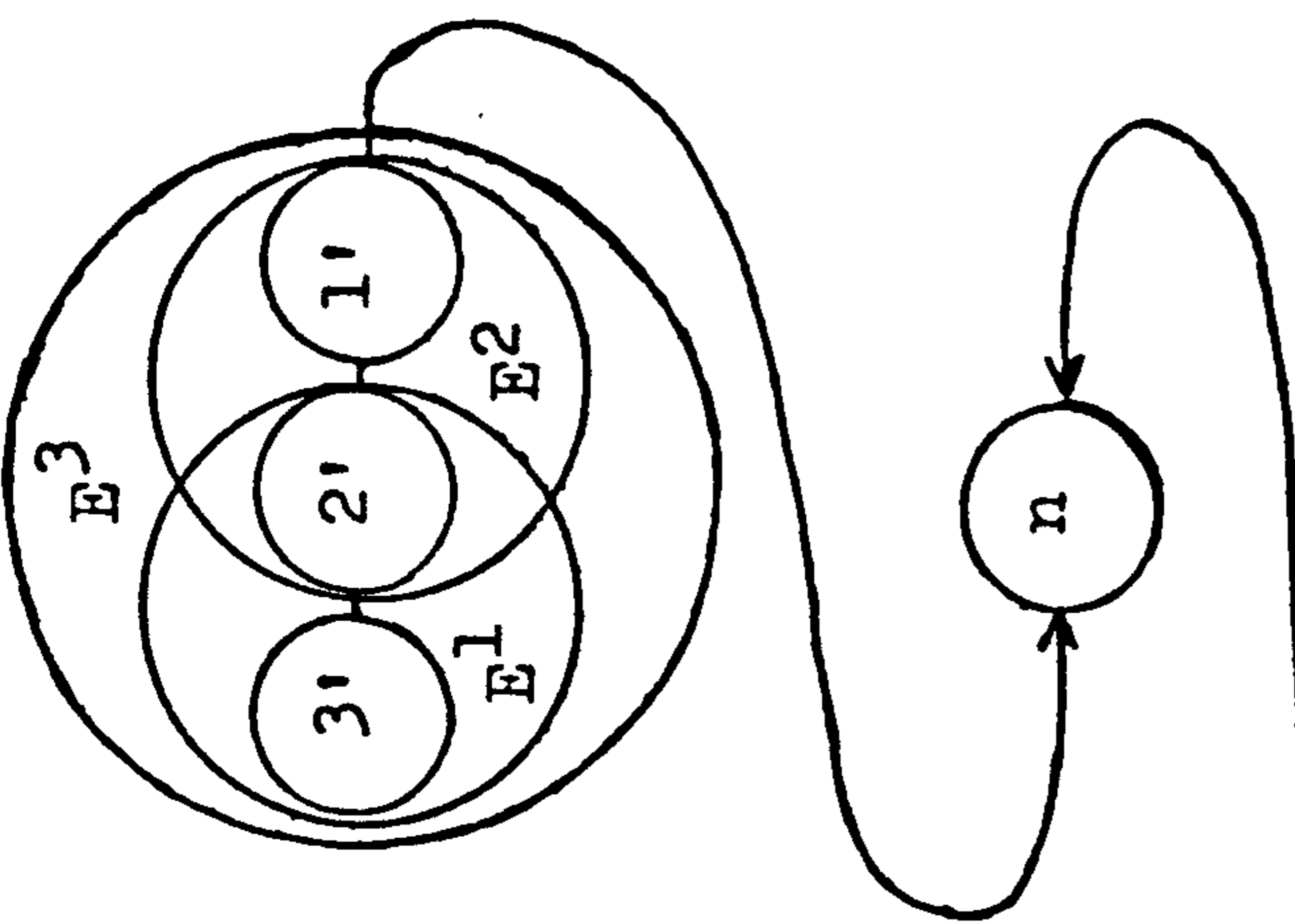
Having established three different kinds of underlying formal structure to accommodate versions of the two basic types of phonotagm in S.E., we may now take the liberty of emphasizing that these established structural models are definitely capable of accounting for the distribution of all types of phonological construction encountered in the language under consideration in a consistent and adequate manner. It will also be demonstrated in PART III of this work that, in addition to their relevance to the discussion of "phonotactic" issues, the basic conclusions which have so far been obtained will play a significant role in facilitating the descriptive account of certain sections of the para-phonotactic phenomena of "accentual prominence" in S.E.

Summing up, all the previously established types of underlying structural model - inclusive of the "major" - may, for simplicity reasons, be mapped onto an overall skeletal figure. This figure - or rather overall model - (which shows in detail the particulars of the situation as they currently stand as well as the "occurrence dependency"-type of relationship which holds between "major" and "minor" types of distributional structure) may be set up in terms of the modified mathematical form of "distributive lattices" in the following manner; thus,

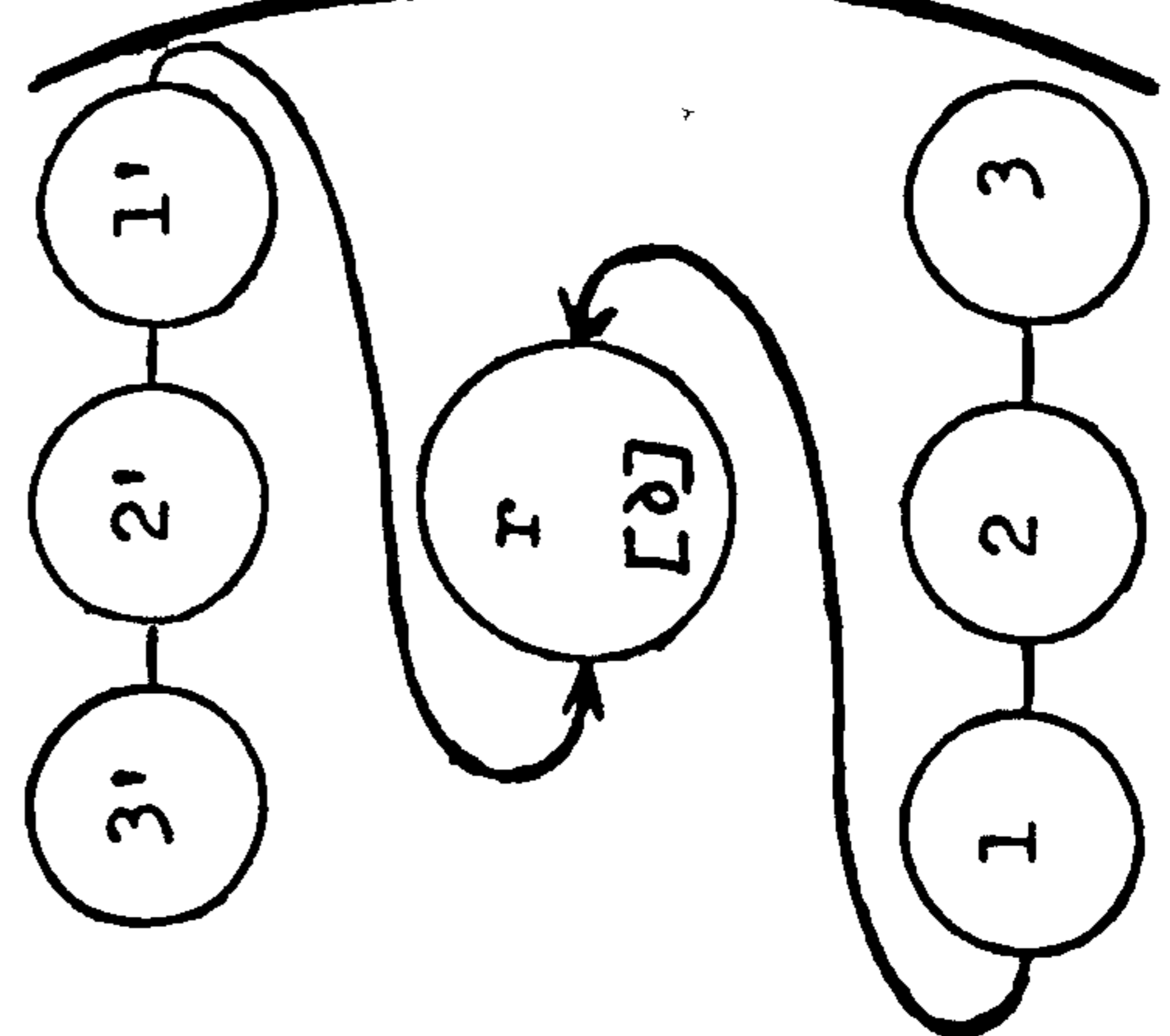
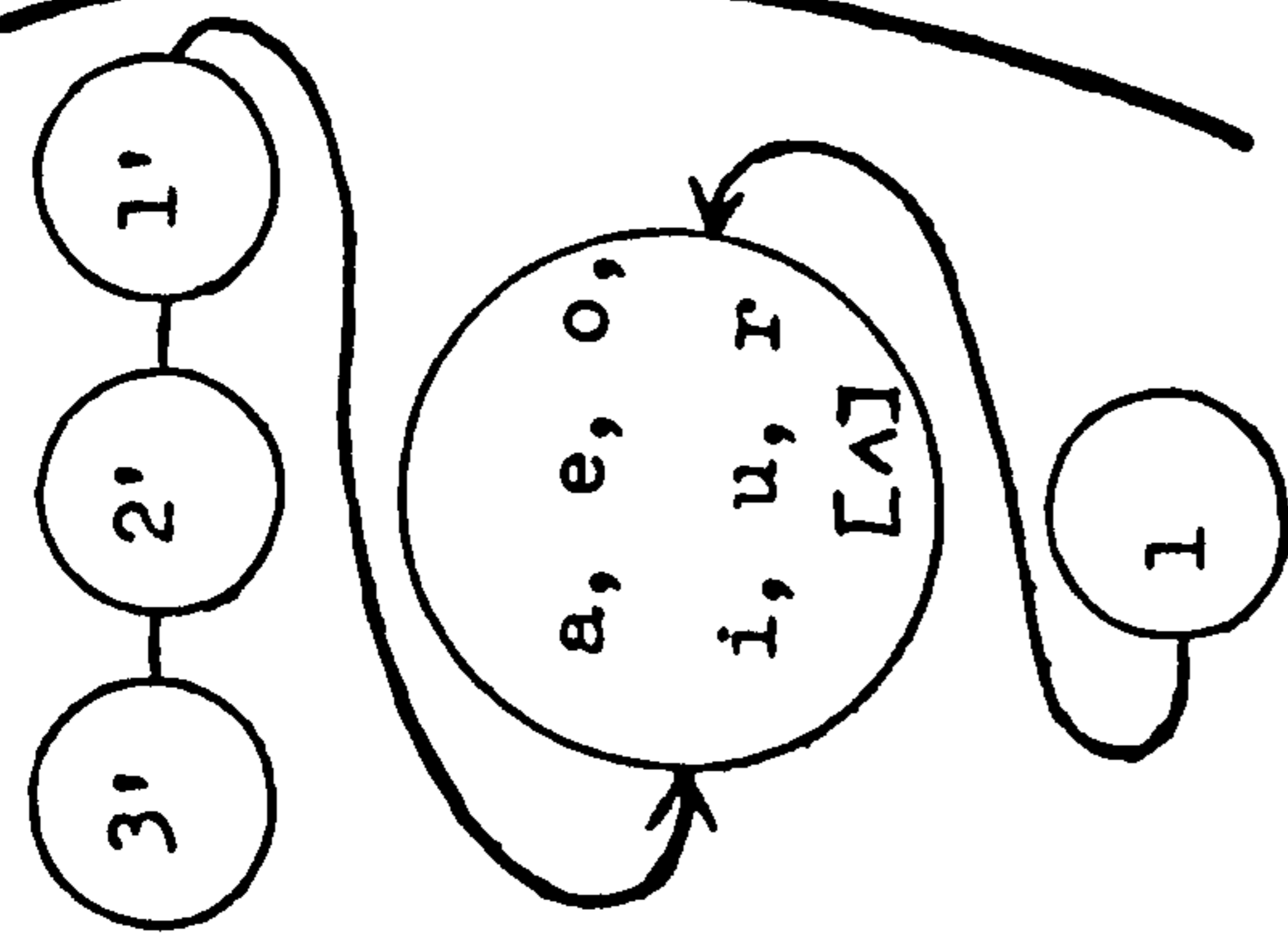
CODA



MAJOR



ONSET



(Figure 9)

Notes to Chapter 7.

1 - The following supplementary set of oppositions may also be proposed to corroborate the validity of the given hypothetical statement, e.g.

/i/-/r/ (i.e. [ð])	/Aidli/-/Aidlr/	idly-idler
/i/-/o/	/zAilil/-/zAilol/	xylyl-xylol
/o/-/r/ (i.e. [ʌ])	/sPrinjPok/-/sPrinjPrk/	springbok-springbuk
/o/-/r/ (i.e.)	/sPrrmrtOuzOurn/-/sPrrmrtOuzOuon/	spermatozoan-spermatozoon
	/formol/-/formrl/	formol-formal
/e/-/r/ (i.e. [ð])	/dolmen/-/dolmrn/	dolmen-dolman
/u/-/r/ (i.e. [ð])	/trrminus/-/trrminrs/	terminus-terminas
/a/-/r/ (i.e. [ð])	/formal/-/formrl/	formal-formal
/a/-/o/	/zOuan/-/zOuon/	Zoan-zoon
	/tikTak/-/tikTok/	ticktack-ticktock

etc.

2 - Since the purpose of formulating hypotheses is to explain the facts in an adequate manner, they should be definite in their conception in order to be put to the proof to verify their truth. Verification of the truth of given hypotheses is not only done by comparing the results that may be deduced from them with facts or laws, but also by excluding other rival hypotheses by proving them inadequate. If, however, hypotheses are formed in a way to elude all attempts to test them by facts, then they can never be proved by the facts nor add anything

to our understanding of them. Generally speaking, if the hypotheses are true, the conclusions are; the material evidence for both hypotheses and conclusions being the same, namely, uncontradicted experience.

- 3 - The phoneme /a/, for instance, may be distinctly realized as a "half-open, open, (neutral), front, unrounded, tight" vowel which conforms appropriately with the first type of speech-speed/style (see footnote 2 to the preceding Chapter). However, when this phoneme is subjected to a mild degree of under-articulation, it assumes a realization which is slightly "centralized" and "less tight" approximating a [ə]-like sound. This realization of /a/ is in complete harmony with the second type/style/speed of speech. Lastly, the phoneme /a/ may also be realized as a relatively fully "centralized, slack" sound overlapping entirely with the [ə] realization of standard reduced neutral phoneme /r/ in heavy cases of under-articulation. This type of realization, however, conforms most adequately with the third type/style/speed of speech.
- 4 - "Free-variance" is conceived by Mulder (1968, p.20) to account for the "realizations of the same phoneme, occurring in the same context, which strikes us as conspicuously different and of which we therefore choose to take note".

5 - The formula reads:-

The allomorph of the phonological form of a given signum in relation to a specific distinctive grammatical function.

6 - In fact, the present author has investigated the distribution of phonotactic elements in minor-type units. His conclusions have confirmed that the distribution of peripheral phonemes in such minor-type units match to a great extent the distribution of the peripheral phonemes in analogous sections of the major unit. However, since we are not postulating here a one-to-one correspondence between the distribution of the peripheral elements in both types of unit, slight discrepancies between the two types of distribution may be said to have been encountered. Among these discrepancies, one may refer to the non-attestedness of the pre-nuclear /sFr-/ in the major distributional unit, for example, and its attestedness in the pre-nuclear section of one of the three versions of the "Onset" minor-type underlying structure, i.e. the one whose nuclear position is filled by /r/ [ð], e.g. /sFr^vrd^vsisTik/ [sf^vɔdd^vzistik] "sphragistic", etc.

7 - Unless the post-nuclear section of the formula in question is restricted to one element only, the operability of the concept of "under-articulation" will be curtailed. In other words, the presence of two consonants, i.e. "C₂", in the post-nuclear section confirms the "upper limit" of the distinctive realization of the element in the nuclear position and prevents "under-articulation" from ever being activated.

PART III

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CHAPTER 1.The Para-Phonotactic System of
"Accentual Prominence" in S.E.Introduction:-

Of all the much buffeted -but rarely systematized- prosodic phenomena in S.E. phonology, the phenomenon of "prominence" (i.e. "accent"/"stress") is probably the least well understood. For, though it has received extra-ordinary treatment at the hands of almost all past and present prominent linguistic figures (most frequently at the expense of the descriptive adequacy of the remaining prosodic phenomena), its nature and linguistic function seem to have remained as ambiguous and misleading as they have always been. A brief look at some highly acclaimed literature on the subject will, sooner or later, force us to acknowledge the fact that we are actually dealing with a jumble of undefined linguistic terminology where everything merges into everything else and where linguistic, non-linguistic and extra-linguistic phenomena are lumped together indiscriminately and treated alike. This is probably most noticeable in the synonymous use in most theoretical frameworks and/or descriptive accounts of terms/ notions like "stress", "accent", "pitch accent", "rhythm", "rhythmic accent/stress", "prominence", etc., or terms like "stress pattern", "accentual pattern", "rhythmic unit", "tonic unit", etc., with reference to more or less the same linguistic phenomenon of "accentuation", i.e. "prominence" and/or "accentual prominence". One may even emphasize in the present context that much of the research which has been done into the nature of

"accent" (or "prominence") has in fact been into the nature of "stress", and most certainly vice versa; thus, Gimson, 1978; Gleason, 1969; Abercrombie, 1974; Trubetzkoy, 1969; Simpson, 1981; Trager and Bloch, 1941; Pike, 1957, et al; Brosnahan and Malmberg, 1976; and many many others. It is only on very rare occasions that one comes across some promising attempts at approaching the amorphous mass of prosodic phenomena from a logical point of view. The expressed views of Martinet, 1954, et al; Mulder, 1968 and 1974; and to some extent Allen, 1973; Berger, 1955; Stetson, 1945; Lyons, 1972; Robins, 1971; and some others, may, for instance, be considered to ultimately fall within the overall scope of this latter category. Be that as it may, since the present descriptive account of the phonology of S.E. has, from the very outset, conceded to adopt the A.F. theoretical point of view as the sole means for tackling the phenomena, only functional ideas, criteria and methodology will subsequently be allowed to have a bearing on the descriptive process, as well as on its final outcome. Explicitly, this boils down to implying that a critical appraisal of the theoretical and/or descriptive adequacies and inconsistencies of all non-functional approaches to the phenomena of "prominence" and "accent" in S.E. will neither be contemplated, nor performed, on the pages of the present Chapter, though casual references to some of them are not a priori excluded.

A Necessary Reconsideration of Some Theoretical Tenets on the

Subject:-

For the purpose of basing the subsequent descriptive account of the para-phonotactic phenomena of "prominence" and "accentuation" in S.E. on solid theoretical bases, it is necessary to

re-investigate in some detail the consistency and adequacy of the proposed definitions of the notions "contrastive" and "distinctive para-phonotactic features" as defined by Mulder, 1968, 1974 and elsewhere.

The reader recalls from earlier arguments (c.f. Chapter 8 of PART I) that the two notions of "contrastive" and "distinctive" para-cenotactic features have been defined in the theory of A.F. as:-

Def.18a "Contrastive para-cenotactic features" for "para-cenotactic features with the function of groupment over and above cenotactic groupment".

Def.18b "Distinctive para-cenotactic features" for "para-cenotactic features that are in a relation of direct opposition with one or more other cenotactic features, or with \emptyset ".

Though the suggested definitions of the two notions under consideration -as they currently stand- may practically (but very loosely) serve to distinguish between two fundamentally different types of para-cenotactic phenomenon (c.f. Gabjanda, 1976, and Gardner, 1984), they are still somewhat ambiguous and misleading.

Basically, the first significant set of inconsistencies and/or inadequacies which we encounter in the process of investigating the wording of the two definitions stems from the fact that while "Def.18b" takes care of theoretically postulating that "distinctive para-cenotactic features" are always in a state of

"direct opposition with one another ...", "Def.18a" does not look as though it contains any reference to an analogous -albeit different- type of relationship which holds between "contrastive para-cenotactic features". The main issue which the definition of the latter concept seems to wish to settle is the type of "function" which "contrastive para-cenotactic feature" are capable of performing in the system, i.e. they add "groupment over and above cenotactic groupment". Yet, it is precisely the question of the type of "function" which "distinctive para-cenotactic features" play in the system which seems to be either missing or vaguely implied in "Def.18b".

In particular, it is not clear from the formulation of the two definitions under consideration whether single para-cenotactic features are capable of performing any groupment function over and above complex phonotagmic bases, or whether this "groupment function" is a monopoly of a simultaneous group of gradiently established para-cenotactic features. For the immediate purposes of the present argument, it is worth emphasizing in very general terms that a single para-cenotactic feature (which is not contrasted/opposed to any other feature of the same nature in the pattern) is heuristically endowed with a formative groupment function if and only when it co-occurs with the totality of simple phonotagmic bases, i.e. non-gradient bases. When a complex phonotagmic base (which, by definition, is gradient) is involved, the formative groupment function becomes the sole responsibility of internally gradient para-cenotactic patterns. (These issues will receive further attention in due course).

The above special type of co-occurrence relationship which holds between complex phonotagmic bases and analogously conceived para-cenotactic patterns -which incidentally belong to two different ontological levels of analysis- leads us straight into investigating the most serious of all the theoretical critical remarks against the way the two notions in "18a" and "18b" are conceived and defined. The reference here is to the theoretical postulations of paradigmatic/syntagmatic "oppositions"/"contrasts" between "distinctive"/"contrastive" para-cenotactic features and so-called "functional \emptyset "¹. Since our research into this issue has proved otherwise, we find ourselves forced to take a different view and refuse to identify such an oppositional/contrastive possibility. Our views, reasons and conclusions in this respect could be summed up as follows. If contrastive/distinctive para-cenotactic features are allowed to contract contrastive/oppositional relationship with " \emptyset ", then the consistency and adequacy of the theoretical concept of para-cenotactic "complexity" would consequently be open for refutation. Functionally speaking, a "complex" para-cenotactic entity -be it a base, a pattern, a unit, etc.- is by definition and implication an entity which is formed by two or more smaller positive (-valued) sub-entities (c.f. Chapter 7 of PART I). If any component of such a distinctive/contrastive para-cenotactic entity (which barely satisfies the minimum requirement of complexity, i.e. one which is made up of two such positive component features only) is allowed to be contrasted with/opposed to " \emptyset ", we shall be automatically left with something which could hardly be identified as a "complex", let alone as a "pattern" in the strictest sense of the term. However, because the individual features of complex

para-cenotactic patterns correspond to those of the complex bases and co-occur with them, it is inconceivable for any of the individual members (of either level) to be substituted for a "∅" and then correlated on the other level with a positive feature/component. Put differently, a para-cenotactic feature is solely there because it can be correlated with a certain cenotagmic part of the base, and vice versa. Since there is a one-to-one relationship between the particulars of complex bases and those of the correlated complex para-cenotactic patterns, we may emphasize that the occurrence of a base-related cenotagmic component is a necessary condition for the occurrence (on the other level of abstraction) of an accompanying para-cenotactic feature in an analogously constructed correlated pattern, and vice versa. And, because para-cenotactic units are theorematologically conceived and defined in A.F. as being conjunctions of "features" and "bases" (note that the "bases" themselves are features of a different kind, as well), it is therefore theoretically impossible for any such units (no matter how simple or complex they may be) to be constructed of one simple positive element (i.e. feature) while the other correlated parameter is occupied by a "∅" (i.e. nothing). In consequence, we find Mulder's (1968) postulation of a "∅" para-phonotactic feature for Mandarin Chinese to be theoretically and descriptively inconsistent and inadequate, i.e. the statement which assumes a co-occurrence relationship between a syllable-base like /ma/ and the para-phonotactic tonal feature "∅", e.g. /ma⁰/, can not be considered under whatever conditions to be a well-formed and self-contained para-phonotactic unit in the language under consideration.

In view of the above refutations of the consistency and adequacy of the two definitions in "18a" and "18b", we believe that we are in a much improved position to propose alternative rigorous definitions to the two terms in question. Accordingly, we define "contrastive para-cenotactic features" and "distinctive para-cenotactic features" as follows:-

Def. 18a "Contrastive para-cenotactic features" for "formal non-tactic cenological entities which are in syntagmatic contrast with one another, i.e. they co-occur with complex cenotactic bases only and add ordinary cumulative groupment (i.e. unity) over and above cenotactic groupment"; (see below).

Def. 18b "Distinctive para-cenotactic features" for "formal non-tactic cenological entities which are in a relation of paradigmatic opposition with one another; i.e. they accompany simple or complex cenotactic bases (depending on the nature of the system) and confer unique formative groupment (i.e. unity) over and above cenotactic groupment". (The "uniqueness" of this type of groupment will be discussed further down in the Chapter).

With the above conclusions, we shall now move into investigating in brief the basic "contrastive" and "distinctive" types of para-phonotactic phenomena which are presently known to be manipulated in human languages. Of course, special concern will be paid to S.E. -the language currently under description. (Remember that "ceno-" and "phono-" are equivalent terms, except

that it is more appropriate to use the latter when we deal with spoken natural languages).

"Contrastive" and "Distinctive" Para-Cenotactic/Para-Phonotactic Phenomena with Special Reference to S.E.:-

Like all other notions in the theory of A.F., the concepts of "contrastive" and "distinctive" para-cenotactic features are used as cover terms to designate the various types of phonologically relevant para-cenotactic phenomena in given systems of communication. The most typical -and probably the most linguistically significant- of all such para-phonotactic phenomena in this respect are the widely acknowledged para-phonotactic systems of "tone" and "accent/prominence". This by no means implies that these are the only para-phonotactic systems which are manipulated by the phonologies of the different languages. Our investigation into the possible types of para-phonotactic phenomenon available in S.E. has, for instance, corroborated a hypothesis concerning the establishment of an auxiliary para-phonotactic system called "permutation/mutation"². The reason why the descriptive account of the system in question will not appear in the present work may be attributed to the fact that it has very limited application in the language under consideration³. Be that as it may, we shall restrict ourselves in this section to discussing in brief the differences between the aforementioned two para-phonotactic systems of "tone" and "accent/prominence".

Functionally speaking, all natural languages known to date may be roughly divided -from the view-point of the para-phonotactic

systems operable within them- into so-called "tone languages" and "accent languages".

A language is considered to be "tonal" if it utilizes a limited set of non-tactic formal differences in tone levels (called "tone registers" or "pitch variations", by some) for the sake of achieving distinctive differences between analogous forms of lexical items in communication. Though tone languages differ from one another with respect to the necessary number of tones which require establishment and taxonomization, it is logically inconceivable for any tone-language to possess less than two such relevant distinctive tones, e.g. Serbo-Croat, Norwegian, Swedish, etc. For instance, it has been definitely confirmed by many linguistic researchers that all Chinese dialects are tonal; thus, Lord, 1974. However, it is noticed that the tonal systems of these dialects contain substantial qualitative and quantitative differences. While Mandarin (or North Chinese), for instance, is said to be in possession of four distinctive tones, Cantonese is thought to employ seven (officially, more than seven) such tones, Amoy-Hokkien has five, and Chu'an Miao is presumed to use nine. It is worthwhile remarking that distinctive tonal systems have also been identified and established in/for a number of Asian, African and Algonquian languages; thus, Lord, *ibid*; Robins, 1971; Bloomfield, 1973; Lyons, 1972; Lehiste, 1970; O'Connor, 1978; Pike, 1957, et al; etc. However, irrespective of the number of the established distinctive tones in each system, the most significant issue which should always be remembered is that:

The tonal features of any given system should be potentially opposable to one another over constant

(or specific sections of constant) phonotagmic bases. Of course, the nature and degree of complexity of these phonotagmic bases vary from one tonal language to the other. These may well be phonotagmically simple, complex, or a combination of both. To put it differently, the phonotagmic bases onto which the distinctive para-phonotactic features of tone could be mapped and over which they demonstrate paradigmatic opposition may be formed of one, or a juxtaposition of more than one, syllabic/phonotagmic structure. Unlike Mandarin Chinese, for instance, where the four distinctive tonal features have been widely attested to alternate and commute most significantly over and above some simple bases (note that Robins, 1971, gives instances where the opposition could be performed over complex bases in the named language), the tones in some other African, European, Asian and Algonquian languages can only do so over and above complex bases -most commonly over biphonotagmic bases (though longer baseline extensions are not a priori excluded for certain languages). The following sets of examples will hopefully demonstrate our contention, noting that slight modifications have been applied to the quoted instances to suit our explanatory purposes. Thus, we have:-

Japanese:

"hana" + "normal (level) pitch on both syllables" = "hana" (nose)
 "hana" + "higher pitch on the first syllable and normal (level) pitch on the second" = "hana" (flower)

(Quoted from Bloomfield, 1973).

Lonkundo (Congo):

"lokolo" + "low tone on all three syllables" = "lokolo" (dates)
 "lokolo" + "low tone on the first syllable and high tone on the remaining two syllables" = "lokolo" (exorcism)

(Quoted from Martinet, 1969).

Mandarin Chinese:

"chu" + "tone 1" = "chu¹" (pig, pork)

"chu" + "tone 2" = "chu²" (bamboo)

"chu" + "tone 3" = "chu³" (master; sir; lord)

"chu" + "tone 4" = "chu⁴" (to live; to dwell)

(Quoted from Brosnahan and Malmberg, 1976; see also Mulder, 1968 and Bloomfield, 1973).

Mixteco:

/ʒuku/ + "two mid level tones" = /ʒukū/ (mountain)

/ʒuku/ + "mid level and low tone" = /ʒukū/ (brush)

(Quoted from Robins, 1971).

What is significant about the co-occurrence dependency type of relationship between the "tactic bases" and the "tonal features" in all the given instances is its "uniqueness" - a quality which has been especially emphasized in the formulation of "Def.18b", but not in that of "Def.18a". This is because the co-occurrence relationship which holds between the "bases" and the "distinctive" para-phonotactic features (of whatever kind) is closer than that which holds between the "bases" and the "contrastive" para-phonotactic features. Though both types of para-phonotactic feature belong ontologically to a different (and higher) level of phonological analysis from that of the bases, it seems quite interesting to point out that the ontological distinction between the distinctive para-phonotactic features and their correlated bases tends to be more transparent and less stringent than the corresponding ontological distinction between the contrastive para-phonotactic features and their associated bases. In this

sense, "distinctive para-phonotactic features" do not merely add a simple type of formative groupment over and above phonotagmic/phonotactic groupment, but they also add distinctiveness to the lower level phonotagmic bases, i.e. they mark them as being potentially opposable entities in equivalent contexts. In fact, had it not been for the rigorous ontological and systemological differences between the levels in A.F., the slim theoretical distinction between the distinctive para-phonotactic features and their phonotactic bases could have been overlooked and eroded in favour of treating all such co-occurrences as unified instances of well-formed and self-contained phonotactic structures -albeit of a special nature.

However, though the above discussion of the nature and function of distinctive "tones" in tonal spoken languages does not precisely apply to S.E., it is nevertheless relevant for the description of the marginal distinctive role which "accent" performs in the phonological system of the language in question.

On proper investigation of the phonological structures of S.E. lexical items, all known linguistic approaches have come to the unanimous conclusion that S.E. is in fact an "accent/stress" language, i.e. a language which has "accents/stresses", but no "tones". So far, so good. However, if we go beyond this point, we find that the same linguistic opinions part ways with respect to the nature, functions and number of the necessary "accents/stresses" which require establishment in/for S.E. It is precisely on these issues that we also break away as we embark on describing the same para-phonotactic system in S.E. from the view-

point of A.F. For, though we are initially in full agreement with the general trend which maintains that S.E. is an "accent language" in the explained sense, we disagree with the majority of the views which stop at this point and refrain from contributing further systematic and systemic elaboration. As we see it, the so-called para-phonotactic feature of "accent" in S.E. phonology may

- a- either be viewed as a single phenomenon which is entrusted with the function of adding "ordinary groupment" over and above phonotagmic bases;
- b- or it may be considered as a single phenomenon which is capable of performing the dual function of providing "ordinary groupment" and "unique groupment" to specified phonotagmic bases;
- c- or it may be treated as representing two different theoretical types of para-phonotactic phenomenon each one of which is endowed with a specific kind of function to perform in the system, i.e. "contrastive accent" which adds "ordinary groupment", and "distinctive accent (i.e. tone)" which adds "unique groupment".

Though the last option is probably the most consistent and adequate of the three alternatives, it is unlikely that it will ever offer us anything more than a profound insight into a limited number of minority lexical items in S.E. However, even if this were to be considered a descriptive venture which is worth performing, the formal diversity which the hundred or so lexical items demonstrate would, most certainly, transform the descriptive attempt into an unnecessarily complicated descriptive account. We are obviously referring here to the numerous problems which are

involved in attempting to describe minimal pairs⁴ of the types mentioned in the following table, noting that while the so-called "nouns" (designated by "n" 's) are traditionally viewed as being accented/stressed on the first syllable in each case, the so-called "verbs" (referred to by "v" 's) are said to be accented/stressed on the second. The dubious instances where a "noun" and a "verb" are analogously accented/stressed, or where either is potentially alignable with more than one phonological form, are also referred to in the table; thus,

imprint	(n)	/iNpɹɪnt/	:	/iNpɹɪnt/	imprint (v)
addict	(n)	/ədɪkt/	:	/rɪdɪkt/	addict (v)
permit	(n)	/pɹɪmɪt/	:	/pɹmɪt/	permit (v)
compound	(n)	/kɒNpAund/	:	/krNpAund/	compound (v)
compress	(n)	/kɒNpɹes/	:	/krNpɹes/	compress (v)
concrete	(n & v)	/kɒNkrɪɪt/	:	/krNkrɪɪt/	concrete (v)
concert	(n)	↙ /kɒnsɹt/ ↘ /kɒnsɹrt/	:	/krnsɹrt/	concert (v)
import	(n & v)	/ɪNpɔrt/	:	/ɪNpɔrt/	import (v)
export	(n & v)	/ekSPɔrt/	:	/ɪkSPɔrt/	export (v)
etc.				etc.	

Of course, an adequate and exhaustive descriptive account of the above phenomena would necessarily entail the establishment of an intricate network of models (or sub-models) and the formulation of long lists of descriptive statements to account for each one of them. In this context, we consider the claim -which maintains that the "sameness" of the forms in the above table is phonotactically comparable to homonyms in grammar (c.f. Mulder,

1968 and Martinet, 1969)- to be no more than an imprecise ad hoc descriptive statement which lacks appropriate validation, i.e. it is descriptively inadequate and misleading. A proper look at the given examples in the table will suffice to corroborate our view that the probable "sameness" of some phonotactic structures in S.E. is merely an "accidental" phenomenon which applies only to a dozen or so instances in the language, i.e. it is not a phenomenon which finds general application among so-called "distinctive minimal pairs".

In view of the complexity of the above phenomena and the diminishing rewards which we are bound to obtain from attempting to deal with them separately in the description, we are of the opinion of not recognizing a "distinctive accent (i.e. tone)" alongside the "contrastive accent" in S.E. even though this would probably entail sacrificing a slight degree of the consistency and adequacy of the description. Actually, we are confident that this minor sacrifice could be tolerated in an elaborate and exhaustive phonological description of the totality of the language. As such, one is inclined to emphasize that S.E. is in possession of a basic "contrastive" type of "accent" (i.e. accentual prominence) which pervades the whole of its phonology and that the occasional -apparently distinctive- cases are no more than accidental by-products of what is in essence a contrastive system. In fact, this definitive descriptive statement seems to be in complete harmony with the explicit intention of the modified version of "Def.18a" which specifies that "contrastive para-phonotactic features" co-occur with phonotagmic bases and add ordinary formative groupment (unity) over and above phonotagmic

groupment (c.f. "option a", above)⁵. However, in order to appreciate the way "contrastive para-phonotactic features" achieve their formative function, it is worth emphasizing that, like the phonotagmic sub-chains onto which they are grafted, the participants in a self-contained complex group of simultaneously combined para-phonotactic features should, by necessity, be conceived to be analogously juxtaposed to/contrasted with one another in well-formed and self-contained contexts, i.e. these being the established "accentual patterns"; (see further below, as well as the succeeding Chapter). In other words, the "togetherness" of two internally juxtaposed types of feature, i.e. that of the base and the other of the accent group (or pattern), constitutes the necessary framework for the positive creation of a higher level para-phonotactic entity called the "para-phonotactic unit"⁶. This newly outputted entity -which may be equivalent to the form of a "phonotagm", of a "phonological word", or to that of a "phrase"- assumes an entirely different ontological existence from the mere conglomeration of the bases and the correlated accentual prominences in given patterns. Theoretically speaking, this unit is situated on one of the highest possible levels of abstraction available in the phonological sub-system of the systemology. Since, however, the different versions of the "Postulates" are not unanimous in identifying or defining the concept of "para-cenotactic unit", we shall define it for our purposes as follows:-

"para-cenotactic unit" for "well-formed and self-contained formal structure constituted of a conglomeration of one or more juxtaposed phonotagmic components and a grafted group (pattern) of one or more simultaneous para-cenotactic features"⁷.

Of course, what happens to such a "unit" beyond this point, i.e. when it is inputted into the grammatical sub-system, is an entirely different matter which does not concern us in the present work. This immediately leads us towards examining, in brief, the nature of the formal qualities of para-tactic bases.

The Nature of the Para-Tactic Concept of "Base":-

Though the discussions in the preceding sections have actually included references to the nature of para-phonotactic "bases", the information which they contain does not seem to be sufficient for the determination of the exact theoretical status of the concept in question. It is hoped that the brief argument in this section will complement the picture and contribute positively towards eliminating any possible ambiguity.

Probably, the best way to approach the issue is by quoting the definition of the notion "base" as it appears in the recent version of the "Postulates" (to be included in Mulder, forthcoming). Thus,

Def.20a "Base" for "in a para-tactic entity, the total complex of those features that corresponds (on another level) to tactic entities"⁸.

As it currently stands, the above proposed definition may practically (but very generally) be used in connection with any descriptive account of the para-tactic phenomena in natural languages. Yet, it is noticed that whenever the notion of "base" is being used for such descriptive purposes, the ingenuity of the linguist and his competent knowledge of the theory of A.F. subsequently intervene to assist him/her deduce the correct

meaning which the ambiguous formulation of the definition is unsuccessfully attempting to communicate. Put differently, the wording of the proposed definition of the notion "base" is vague on account of the following:-

1- The opening words of the definition can be pronounced superflously redundant since (a) one neither theoretically discuss nor descriptively operate with "bases" on any level other than the two para-tactic ones and, (b) the notion of "base" has, by implication, no independent theoretical existence away from established para-tactic units/entities, i.e. it only exists by virtue of being an integral part of any such "unit/entity".

2- The use of the terms "features" and "entities" in the definition is unsuccessful and highly ambiguous, because, according to the way they are defined in the "Postulates" (c.f. "Def.1c¹" and "Def.1c²"), the two terms may be used with reference to a multitude of incompatible phenomena including, among other things, "elements", "analytical properties of elements", "relations between elements", "relations between analytical properties of elements", etc. For the immediate purposes of the present description, the terms "features" and "entities" will be subsequently replaced by the phrases "analytical entities" and "tactic entities", respectively, in our proposed modification of the definition.

3- The definition does not clearly specify on which level(s) of analysis the correspondence between "the total

complex of features" and "tactic entities" could be theoretically achieved. (Note in this context that one could probably -with some effort- identify the level(s) on which the above postulated correspondence actually takes place if one paid special attention to the presence of the term "tactic" in the definition. Though this specific critical remark seems to constitute a minor definitional issue, no harm will be done if it is taken into consideration when attempting to formulate a modified version of the definition).

In the light of the above criticisms and objections to the definition of the notion "base" in the "Postulates", and in the interest of approaching the phenomena from as clear an angle as possible, we propose re-defining the theoretical concept of "base" in the following fashion:-

Def.20a "Base" for "the total complex of those juxtaposed analytical entities (elements/features) which corresponds (on the immediately adjoining lower level of analysis) to well-formed and self-contained simple or complex tactic entities".

The theoretical consistency, adequacy and clarity of the above proposed alternative definition speak for themselves and require no special comments. However, what is significant about the way the above definition is conceived and formulated is that it provides us with an improved insight into the precise nature of all possible types of "base". For, according to the definition, the "base" of a given para-tactic unit may be either simple or complex. If the overall composition of the base is pronounced

complex, then, by definition and implication, it is decomposable into a certain number of sub-bases (c.f. Chapter 7 of PART I and Chapter 6 of PART II). The relationship which holds between these sub-bases is that of juxtaposition within the borders of the larger maximal base. Note here that though this juxtapositional type of relationship is frequently used in such contexts by A.F. researchers, no attempt has previously been made to define it and incorporate it in the main body of the "Postulates". Since the term in question actually appears in the modified definition of the concept "base", we find it strategically more advantageous for the correct understanding of the para-tactic phenomena if the term in question is rigorously defined. Therefore, we suggest defining it as follows:-

"Juxtaposition" for "non-constructional relationship which holds between isolable analytical entities (elements/features) within a group of such entities".

It remains to be said that despite the one-to-one correspondence between the whole (or parts) of the form of a given base and its correlated tactic/tagmic construction (or its parts), the two phenomena are theoretically different and belong to two separate spheres of ontological existence. While the former could be viewed as a mere conglomeration or juxtaposition of analytical entities, the latter necessarily implies the presence of tactic relations between its constituent elements. Moreover, while a tactic structure could be pronounced well-formed and self-contained, the form of a para-tactic base can only acquire such a status of overall well-formedness and self-containedness if it is correlated with a para-tactic feature

(or a group of such features) to form a para-tactic unit.

With the above concluding remarks, we consider the stage ready for the discussion and establishment of the para-phonotactic phenomenon of "accentual prominence" in S.E.⁹.

The Phenomenon of "Accentual Prominence" in S.E.:-

The most immediately relevant notions for a discussion of the phenomenon of "accentual prominence" in S.E. are the two much-buffed concepts of "accent" and "prominence" themselves. Though these two notions figure in almost every linguistic account of the phenomena of "word-" or "phrase-" accentuation in S.E., they are by and large viewed as undefined and synonymous terms within the framework of each separate description; c.f. Gimson, 1978; Gleason, 1969; etc. On the rare occasions where a phonological distinction is thought to have been postulated between the two concepts, only one of them is usually defined while the other is left floundering about; thus, Crystal, 1969. Alongside the aforementioned -and almost parallel to them- we encounter attempts at resolving the controversy by means of assigning the two concepts in question to two different ontological levels, i.e. "phonological accent" and "phonetic prominence"; thus, Robins, 1971. However, the picture becomes even more complicated when the phonological/phonetic status of either of the two concepts (or of both of them) is either totally ignored, substituted for some other concept (or concepts), or treated as an ancillary phenomenon to those of "rhythm"¹⁰, "tone", or some other fancy label; c.f. Schane, 1979; Giegerich, 1985; Simpson, 1981; Pike, 1967, et al; Kingdon, 1939, 1949 and 1958; and many others.

In view of the above, we believe that much of the confusion which is involved in the treatment of the two phenomena of "accent" and "prominence" has most certainly evolved from attempting to reconcile linguistic ideas and ontologies which are a priori irreconcilable for various theoretical reasons. As one expects from such encounters, the obtained conclusions are "as weird as if a Newtonian physicist were to come across Einstein, admit that relativity was probably a factor of some importance, and then attempt to carry on as before, under the impression that occasional acknowledgement would absolve him from the necessity of further thought about it", (Jones, 1972). Obviously, views and descriptions which fall within the scope of such a conception -and they are in abundance- not only confuse the most competent of scholars, but they rarely contribute anything which could help in understanding the para-phonotactic phenomena in question.

In our opinion, the identification of either of the two phenomena of "accent" or "prominence" necessarily entails and logically implies the identification of the other. It is descriptively inconceivable for an adequate discussion of the "accentual" system of S.E. not to include references to the phenomenon of "prominence", as much as it is impossible and implausible for "prominence" to assume a separate identity in S.E. if there is no contrastive type of "accent" in the language. Since, however, every newly introduced notion is expected to be rigorously defined, the following definitions will hopefully reflect the theoretical signification of the two concepts as well as their affinities. Thus,

"Accent" for "the degree of prominence functioning in the capacity of a para-phonotactic feature",

and,

"Prominence" for "the intensity and/or loudness and/or segmental length of a phonotagm as part or whole of a phonotagmic base".

However, since the above two concepts are noted to overlap with respect to much of their theoretical scopes, they may be lumped together to form one type of para-phonotactic phenomenon called "accentual prominence". As a neutral cover term which designates the totality of the foregoing concepts (and their definitions), "accentual prominence" does not seem to require either a separate definition or any further discussion. Suffice it to point out that it is what the joint significations of the original two notions are.

It is worth remarking in passing that it is theoretically and ontologically inconsistent and inadequate to stipulate any "overall groupment function" for the feature of "accentual prominence" over and above phonotagmic bases. This is because the postulated "groupment function" is solely associated with the linguistically established "accentual (prominence) patterns" in the system; (see further below, as well as the succeeding Chapter).

Let us now concentrate on discussing the phonetic correlates (or parameters) of the phonological concept of "accentual prominence".

The Phonetic Correlates of "Accentual Prominence" in S.E.:-

It is imperative for the material adequacy of any established descriptive model in an A.F. description (or any other functional description, for this respect) to be supplemented by a sufficient number of realizational statements. The function of these statements, as pointed out on many occasions, is to link the descriptive model directly to the real world of the facts (which it is supposed to represent) for actual corroboration. A model which is not thus linked should, in the very least, be pronounced vacuous and subsequently rejected. Vacuous models are, by logical implication, meaningless. In this explained sense, the totality of any functional descriptive act -inclusive, of course, of its parts, models and minute details- is required to account for each observed phenomenon in a consistent and materially adequate manner regardless of its size or ontological status. It is only by virtue of their correspondence with certain sections of the phenomena, that the establishment of descriptive models seems to be justified. This, in fact, ties up logically with the present discussion of the phonetic correlates of the phenomenon of "accentual prominence" in S.E.

As a phonological descriptive concept, "accentual prominence" is a feature and a model which represents (and is represented by) the various types of relationship which hold between a number of phonetic factors. However, since the discussion of the factual correlates of "accentual prominence" logically precedes the discussion of the ways these phonetic parameters combine to generate different levels of accentual prominence in S.E., we shall henceforth restrict ourselves to investigating the phonetic

groundwork on which the functional phenomenon of "accentual prominence" is eventually based. Following this, the intricate ways in which these phonetic parameters combine with one another to produce levels of accentual prominence will be separately examined in the immediately succeeding section. The climax of the para-phonotactic description of the phenomenon of "accentual prominence" in S.E. will understandably be the establishment of simple and complex simultaneous bundles of "accentual prominence patterns". These will be established and corroborated by direct evidence from S.E. phonological forms in the following Chapter.

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It is worth pointing out from the very outset that the subsequent conclusions have been literally extracted from surveying a sizeable body of printed literature on the subject of "accentual prominence" in S.E. The reader who is interested in developing the argument beyond this point, or dissatisfied with the adequacy of our conclusions, is advised to consult some of the provided references in the "BIBLIOGRAPHY".

We recall from the discussion in the preceding section that the phonological concept of "accentual prominence" has been posited as a cover term for phenomena resulting from the various types of intersection between the phonetic parameters of "intensity", "loudness" and "segmental length". Though these factors are well-known to the majority of workers in the linguistic field, they have never been previously brought together (as analytical properties -and not as separate suprasegmental systems) in connection with the phenomenon of

"accentual prominence" in S.E. Furthermore, because the present functional account is expected to be intrinsically different from all previous attempts at dealing with the same factual area, it seems necessary -for the adequacy of the description- that the relevance of each of the three phonetic parameters in question for the identification of "accentual prominence" in S.E. be briefly investigated. The final results of this investigation -as we shall see- will also be used to highlight the significance of the established types of interrelationship between the three factual parameters per se. Understandably, the totality of the phonetic form of the three-term parametrical dimension is ultimately equivalent to the sole phonological feature of "accentual prominence". Let us now consider the articulatory and/or acoustic nature and/or meaning of each of the three factual parameters under consideration. Though it is logically immaterial as to which of the three factors is discussed first, it is strategically better if the discussion follows the order in which the three terms are named in the definition of the notion "prominence". The factor of "intensity" will therefore be discussed first.

Intensity

The relevance of this phonetic analytical property for the identification of the phonological concept of "accentual prominence" in S.E. is debated (and corroborated) by linguists and phoneticians. For, with the exception of the very few (c.f. Mol and Uhlenbeck, 1956; Bolinger, 1958; etc.) who have disputed the value of this factor as a cue to "accentual prominence", the majority of linguists/phoneticians seem to have

come out in support of its significance to the phenomenon in question; thus, Brosnahan and Malmberg, 1976; O'Connor, 1978; Taylor, 1975; Berger, 1955; Fry, 1968; Newman, 1946; Lehiste, 1970; etc. Since we have already taken up a definite position in favour of acknowledging a positive role for the substance-factor of "intensity" in the recognition of "accentual prominence" in S.E., the subsequent discussion will concentrate on investigating the nature of this parameter. The significance of the phonetic factor of "intensity" can only be appreciated if its articulatory and acoustic implications are highlighted and brought together in the same context. Basically, from the view-point of articulatory phonetics, "intensity" is used with reference to the degree of energy (force/effort) which is employed by the speaker in the process of physically realizing each isolable phonotagmic component in actual communication; thus, Jones, 1960, et al; Stetson, 1945; Allen, 1973; Gimson, 1978; Potter, 1957; etc. Obviously, the discussion of the mechanical process which is responsible for the production of identifiable degrees of energy is so complicated to be discussed in this section. For, alongside the relevant role which the speech organs play in the determination of the different degrees of "intensity", the investigation of the nature of the phonetic factor in question must necessarily take into account the valuable contributions which the sub-glottal, abdominal, respiratory, etc., activities provide in this respect (c.f. Stetson, 1945; Lehiste, 1970; etc.). However, what is significant about the above articulatory conception of the "intensity" factor is its "prophetic" insight into the hierarchically structured nature of the phenomenon in question, i.e. via the presence of the term "degree". This view

will, of course, be exploited to the maximum in the succeeding section.

As to its acoustic signification, the phonetic parameter of "intensity" is viewed in acoustic theories as referring to the measurable amount of energy which is transmitted through the air at a particular point in the process of vocal articulation; thus, O'Connor, 1978; Brosnahan and Malmberg, 1976; etc. Though the measurement of this energy flow per unit area, e.g. in watts per square metre, is possible, there is a great difficulty in attempting to cope "with the enormous range of sound intensities, either by expressing them in units of energy or even as ratios", (Taylor, 1975). Rather than directly measuring the "intensity" factor of sounds (in isolation or in combination), researchers have got into the habit of measuring the amplitude and/or pressure fluctuations that the sound waves create before converting them into equivalent "intensity" figures. According to O'Connor (1978), "if the amplitude of a sound is doubled, the intensity will increase four times; if the amplitude is trebled, the intensity will increase nine times, so the intensity of a sound is proportional to the square of the amplitude". (Note that analogous conclusions have also been obtained by Taylor, 1975). Of course, the measurement of some other related phenomena, e.g. particle velocity, particle displacement, particle frequency and its oscillation, etc., may actually have some bearing on the accurate measurement of the intensity factor of any given sound. Since I have been unable, due to lack of access to equipment to replicate or perform basic experimental work, I shall be relying on the findings of other researchers in

this field. Thus, the foregoing brief account will suffice as a simplistic bird's-eye view of what is meant by the term "intensity" in acoustic phonetics. The reader is referred to the above cited authors for primary information.

Pending corroboration from attested instances in S.E. (to be provided in the following section), we are in a position to hypothesize phonologically distinctive status for three degrees of intensity within the overall "intensity" parameter of S.E. These will be labelled as "intense", "semi-intense" and "lax". Moreover, it will also be demonstrated in the succeeding section that the factual parameter of intensity (inclusive of its three degrees) is potentially capable of playing a dual role in the system. In the first instance, it will be used to account for the intensity distinctions between the phonotagmic members of each separate category, e.g. category of accentually prominent phonotagms, category of semi-accentually prominent phonotagms, and category of accentually weak prominent phonotagms. In the second instance, its services will be manipulated in relation to the intralevel distinctions between the members of all the categories in attested combinations. (Note that the same dual role is also attested to be performed by the remaining two phonetic parameters of "loudness" and "segmental length"). These issues will become clearer in due course.

Loudness

The most striking issue about the factor of "loudness" is the lack of concensus on its significance as a factual cue. While its phonetic relevance for the positive identification of "accentual

prominence" in S.E. complex phonotagmic forms has been referred to (and at times ascertained) by many linguists/phoneticians including Bloomfield, 1973; O'Connor, 1978; Fry, 1968; Lehiste, 1970; Trager, 1941; Bloch and Trager, 1942; Crystal, 1969; Dinneen, 1967; Laver and Trudgill, 1979; etc., it has not been specifically singled out as a separate factor by others, e.g. Pike, 1971; Bolinger, 1958, 1961, et al; Gleason, 1969; etc. The differences of opinion between these authors, which may be attributed to the previously cited reason, do not actually concern us in the present study. The significant point which should be emphasized in this context -and which has been confirmed by our investigation into the issue- is precisely the fact that the relevance and independence of the factual parameter of "loudness" to the realization and identification of "accentual prominence" in S.E. actually stems from the fact that it is not associated with the articulatory/acoustic activity of sound production, but with the actual perception/audibility of the product of that activity by the human ear. In this sense, "loudness" may be understood to refer to the mass volume of the realization of "accentual prominence" as perceived by the hearer. Accordingly, "loudness" is not a purely physical phenomenon (as is "intensity"), but an impressionistic physio-/psycho-perceptual factor¹¹ which -nevertheless- can be empirically tested and measured; thus, Lehiste, 1970. Unfortunately, no such reliable measurements have actually come our way throughout the period of this research. The only tangible piece of information which seems to serve our immediate purposes are the experimental conclusions which maintain that a human being (in his capacity as a hearer) can distinguish between more than "250 degrees of

loudness of a pure tone" without any inconvenience or damage to his hearing, (O'Connor, 1978). If it is so, then any British subject is expected to be capable of recognizing and positively responding to the difference between as few as three attested degrees of "loudness" in his language, labelled "loud", "semi-loud" and "soft". As we shall see below, these degrees are basically correlated with three different types of phonotactic structure of the base. Note here that the establishment of more than two degrees of "loudness" should not be viewed as an extraordinary consequence, but as one which has been anticipated -though not rigorously manipulated- by Jones, 1960, et al, and many others. It will be shown further down in the Chapter that the establishment of exactly three basic levels of "loudness" is not a luxury, but a phonological necessity which is dictated to us by the material facts of S.E. as they currently stand. However, it should be emphasized that a comprehensive discussion of the factual factor of "loudness" must necessarily involve investigating the roles which other phonetic phenomena may play in its creation. The list of the chief contributors of "loudness" in this respect could probably include the realizational "quality" of the components of complex phonotagmic bases and their "frequency" and "intensity", the "size" (i.e. "quantity") of the segmental structure of the phonotagmic component, the amount of the "muscular effort" which goes into the production of the segmental components, the "volume" of the "air pressure" (which is proportional with the "muscular effort"), and last, but not least, the "amplitude" of the vibration of the vocal cords. However, because the discussion of these subsidiary factors is so complicated, it must be omitted from the present context. The

interested reader may be referred to the sizeable body of specialized literature on the subject. A specimen of this literature is given in the "BIBLIOGRAPHY".

Segmental length

The examination of the significant role which the factual parameter of "segmental length" plays in the identification of "accentual prominence" in S.E. is probably the oldest and the most thoroughly investigated of the three postulated parameters; thus, Trubetzkoy, 1968; Bloch and Trager, 1942; Allen, 1973; Stetson, 1945; Martinet, 1955, et al; Gimson, 1978; to name but a few. It normally appears in the writings of ancient and contemporary linguists/phoneticians under headings like "length", "quantity", "duration", "weight", etc. Yet, despite initial successes in this area of investigation, the results which have been obtained for S.E. suffer from two notable setbacks, i.e.

- a- they are still under the spell of earlier studies into the nature of the prosodic phenomena in Latin;
- b- they are arbitrarily arrived at via the direct/indirect imposition of an extra-linguistic system of "metrical rhythm" onto phonotagmic bases; (c.f. "footnote 3").

Obviously, considerations like these can not be made to figure in a description which is entirely based on the theory of A.F. Thus, the only point which seems to be relevant for our immediate purposes concerns the corroboration of the phonetic significance of the parameter of "segmental length" for the identification of "accentual prominence" in S.E. If, in this context, the factual factor of "segmental length" is approached from the view-point of

articulatory phonetics, then it will necessarily refer to the total length of time which is taken by the organs of speech to realize a phonotagmic segment in the process of actual communication. However, since experimental evidence has positively confirmed that the peripheral segments which precede the nuclei in S.E. forms are barely endowed with any significant quantitative properties (Abercrombie, 1974; Delattre, 1965; etc.), the phrase "total length of time" should be understood to refer to the actual time which has gone into the realization of the nucleus and the succeeding peripheral elements in a given form¹²; thus, Jakobson and Halle, 1971; Berger, 1955; etc. Henceforth, we may note that the temporal-spacial length of any given phonotagm will be taken in this description to be equivalent to the combined spacial/durational lengths of the nuclear element as well as of those peripheral elements which sequentially succeed it within the same form.

Now, if the phenomenon in question is considered from the viewpoint of the acoustic study of sounds, we expect to arrive at analogous conclusions to the above. Basically, the parameter of "segmental length" is generally employed in acoustic phonetics with reference to the spatio-temporal duration of the realization of a given phonotagm from the time its initial phoneme is realized (under neutral conditions) by a speaker to the time the realization of its final phonotactic element hits the ear drum of a hearer. However, since present-day experiments have so far failed to provide us with precise measurements of the different types of syllabic structure in S.E. (Fry, 1968), we shall re-interpret the signification of the above acoustic view as follows:

"Segmental length" refers to the impressionistic identification of varying degrees of spatio-temporal length contrast within the realization of simple or complex phonotagmic bases.

As a matter of fact, it will be demonstrated in the succeeding section that an adequate description of the simple and complex phonotagmic bases of S.E. strictly requires the identification of no less -and definitely no more- than three such degrees of spatio-temporal length contrast in the language. These will be subsequently designated as "long", "semi-long" and "short", respectively.

Phonological Hierarchy of "Accentual Prominence" in S.E.:-

We recall from earlier arguments in this Chapter that the phonological phenomenon of "accentual prominence" in S.E. is essentially contrastive, and not distinctive. The phonetic correlates of this contrastive para-phonotactic feature have also been postulated and discussed in the immediately preceding section. In between these arguments, other relevant issues have either been raised and resolved, or merely referred to at the time in order to avoid complicating the logical progression of the discussion. Among the significant issues which have been referred to, but not resolved, are the hierarchically structured nature of the concept of "accentual prominence" and the phonologically established set of "accentual patterns". If the discussion of the latter issue is postponed once more to a later stage, we shall presently devote ourselves in this section to discussing the hierarchically structured nature of "accentual prominence" in S.E.

Before we set out on this, it is worth re-iterating in brief that all identified complex entities are constantly conceived in A.F. as constructs consisting of yet smaller analytical properties. This, of course, holds theoretically and descriptively true for any type of complex entity irrespective of its ontology, abstraction or degree of complexity. Accordingly, the form of any given complex para-phonotactic entity -be it that of a phonotagmic base, an accentual pattern, or the like- is by definition and implication a conglomeration/juxtaposition of a number of isolable phonotagms/degrees of accentual prominence. Obviously, the number of the functionally identified phonotagmic components/degrees of accentual prominence in a complex phonotagmic form/pattern hinges, among other things, on the successful identification of the vocalic/semi-vocalic nuclei in the form in question. In this sense, the number of the isolable phonotagms/degrees of accentual prominence in a form/pattern is always isomorphic with the identified number of vocalic/semi-vocalic nuclei in the same form. The more nuclei a form has, the more complex it becomes on the structural and prosodic levels. A complex form like /rmiIuz/ "amuse", for instance, which is decomposable into two separate phonotagmic components, i.e. /rm/ and /miIuz/, is structurally and accentually (see further below) less complex than a form of the /aNplifikei^Vn/ "amplification" type which is analysable into four separate phonotagms, i.e. /aNp/, /plif/, /fik/ and /kei^Vn/; (see Chapter 7 of PART I). Since any complex phonotagmic form of the base is by definition made up of a juxtaposition of simple phonotagms, and since these components are in a one-to-one correspondence with the particulars of the accompanying

"accentual pattern", the establishment of the relevant number of "accentual prominences" for S.E. must necessarily start from investigating the nature of these simple phonotagmic blocks in isolation. The results which are expected to emerge from this investigatory study will -as we shall shortly see- have significant bearing on the overall hierarchical structure of the "accentual prominence" system in S.E.

Strictly speaking, the best way to initiate a scientific argument is by launching one or more hypotheses and then attempt to corroborate them by direct evidence from actual facts in the universe of discourse. The first set of hypotheses in this respect may be phrased as follows:-

- 1- All monophonotagmic forms in S.E. are accentually prominent in isolation.
- 2- The degree of accentual prominence which is assigned to any monophonotagmic form of a base is proportional to the nature of its phonotactic structure.
- 3- Three primary degrees of accentual prominence may be presently postulated to account appropriately for all monophonotagmic forms in S.E. These are:-
 - /P¹/: primary accentual prominence of the first degree;
 - /P²/: primary accentual prominence of the second degree;
 - /P³/: primary accentual prominence of the third degree.

(Note that the concept of "primary accentual

"prominence" will be rigorously defined in due course).

Of course, we know from the philosophy of science that any formulated hypothesis should not only fit the facts which brought about its creation, but it should also be compatible with the rest of the body of the science. The most important characteristic about a hypothesis -as emphasized by philosophers and logicians- is that it is a "trial idea", a tentative suggestion concerning the nature of things. Until it has been tested and verified, a hypothesis should not be confused with a law even when it seems to be "plausible". Though "plausibility" in such a context may truly be a virtue, it is not a substitute for evidence and adequate testing; thus, Read, 1901; Wilson, 1952; Hodges, 1978; Ayer, 1971, et al; Russell, 1973; etc. In view of this, we shall attempt in the following to corroborate the validity (i.e. material adequacy) of the three formulated trial ideas for S.E. This being the case, let us now concentrate on examining the phonotactic structures of a selected sample of attested examples from the language under consideration. The chosen monophonotagmic lexical items may be visually arranged as:-

	<u>1</u>	<u>2</u>	<u>3</u>
a-	dean	dint	din
b-	port	pottle	pot
c-	main	meant	men
d-	sight	sanked	sat
e-	robe	robbed	rot
f-	marred	manned	mad
	etc. etc.	etc.	etc.

(Table 1a)

And, their corresponding phonological and phonetic forms may be subsequently tabulated as:-

	<u>1</u>		<u>2</u>		<u>3</u>
a-	/di:n/ [di:n]		/dint/ [dint]		/din/ [din]
b-	/port/ [pɔ:t]		/potl/ [pɔtɔɫ]		/pot/ [pɔt]
c-	/mein/ [mejn]		/ment/ [mɛnt]		/men/ [mɛn]
d-	/sAit/ [sajt]		/sant/ [sɔŋkt]		/sat/ [sɔt]
e-	/rOub/ [rowb]		/robT/ [rɔbd]		/rot/ [rɔt]
f-	/mard/ [mɑ:d]		/mand/ [mænd]		/mad/ [mæd]
etc.	etc.		etc.		etc.

(Table 1b)

If the classified information in "Table 1b" is properly considered, we are bound to conclude that,

there are -para-phonotactically and with regard to accentual prominence- three basic types of base which correlate respectively with three basic types of monophonotagmic structure.

These three types of "base:phonotagm" correlation may be outlined as follows,

- a- the phonotagms in column "1" demonstrate affinity with an underlying base-line structure whose form is

$$/\sim \longrightarrow V/S^V \longleftarrow S^V \longleftarrow C/$$

(The significations of the abbreviations/symbols in this and all subsequent formulae are analogous to those which have been previously used in other contexts);

- b- the phonotagms in column "2" correlate with a base-line structure of the type

$$/\sim \longrightarrow V/S^V \longleftarrow C \longleftarrow C/;$$

c- the phonotagms in column "3" are associated with a base-line structure whose form is

$$/\sim \longrightarrow V/S^V \longleftarrow C/.$$

Obviously, the above conclusions allow us to point out -and emphasize- that because of the noticeable differences between the para-phonotactic bases of the classified forms in "Table 1b", the three types of base-line structure can not therefore be functionally equivalent. By the same token, since the degrees of accentual prominence which co-occur with these bases have been postulated earlier to be proportional with the nature of these base-line structures, they can not be consistently viewed as analogous, either. However, before the proportionality of the relationships between the different types of underlying base-line structure and the correlated degrees of "primary accentual prominence" could be possibly postulated and established, it is worth subjecting the formulaic shapes of the underlying base-line structures to slight -though significant- modification. The aim of this modification is simply to increase the descriptive predictability of the models by widening the scopes of their ostensive applicability. Thus, the three formulae in question could be restated as follows:-

$$a- / \sim \longrightarrow V/S^V \longleftarrow S^V \longleftarrow C_{0-2}/$$

$$b- / \sim \longrightarrow V/S^V \longleftarrow C_{2-n}/$$

$$c- / \sim \longrightarrow V/S^V \longleftarrow C_{0-1}/.$$

Suffice it to say that, had not these modifications been introduced at this stage, the established models in "a" and "b" would have fallen short of accounting for forms like /botlS/ "bottles", /biIuglS/ "bugles", /sTreitnz/ "straightens", etc.

whose peripheral post-nuclear extensions outweigh the limitations imposed on the first rigid set of formulae. On the other hand, the modification which has been introduced to the post-nuclear section of formula "c" allows the model to cater for the distributional requirements of attested bound open-type phonotagms in prominent locations, i.e. "+ prominence" phonotagmic components (in complex phonological words) which figure in the major distributional unit with "zero" right-hand dependants; (c.f. "Bound major" phonotagms in Chapter 6 of PART II).

In view of the above modifications, we can now set up proportional relationships between the structural bases in question and the correlated degrees of accentual prominence. We postulate that,

a- all phonotagms with the structure

$$/\sim \longrightarrow V/S^V \longleftarrow S^V \longleftarrow C_{0-n}/$$

correlate with $/P^1/$ when constituting the whole of a para-phonotactic base;

b- all phonotagms with the structure

$$/\sim \longrightarrow V/S^V \longleftarrow C_{2-n}/$$

correlate with $/P^2/$ when constituting the whole of a para-phonotactic base;

c- all phonotagms with the structure

$$/\sim \longrightarrow V/S^V \longleftarrow C_{0-1}/$$

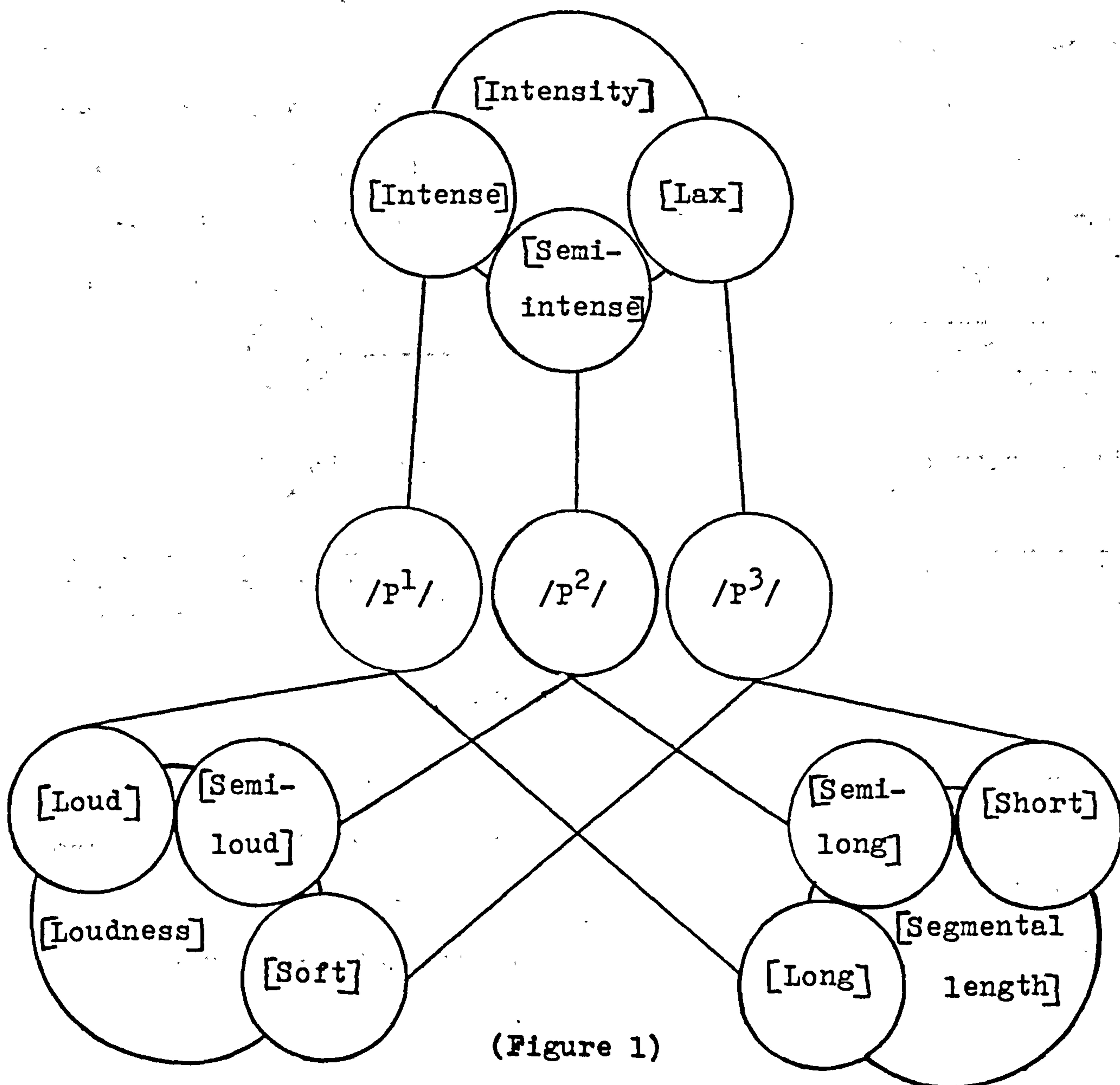
correlate with $/P^3/$ when constituting the whole of a para-phonotactic base.

(Note that the above set of formulae apply also to all major-type phonotagms which, for accidental reasons, are incapable of forming attested monophonotagmic bases by themselves, e.g.

$/-teis^n/$ in "citation", $/-vist^T-/$ in "atavistic", $/-lom-/$ in

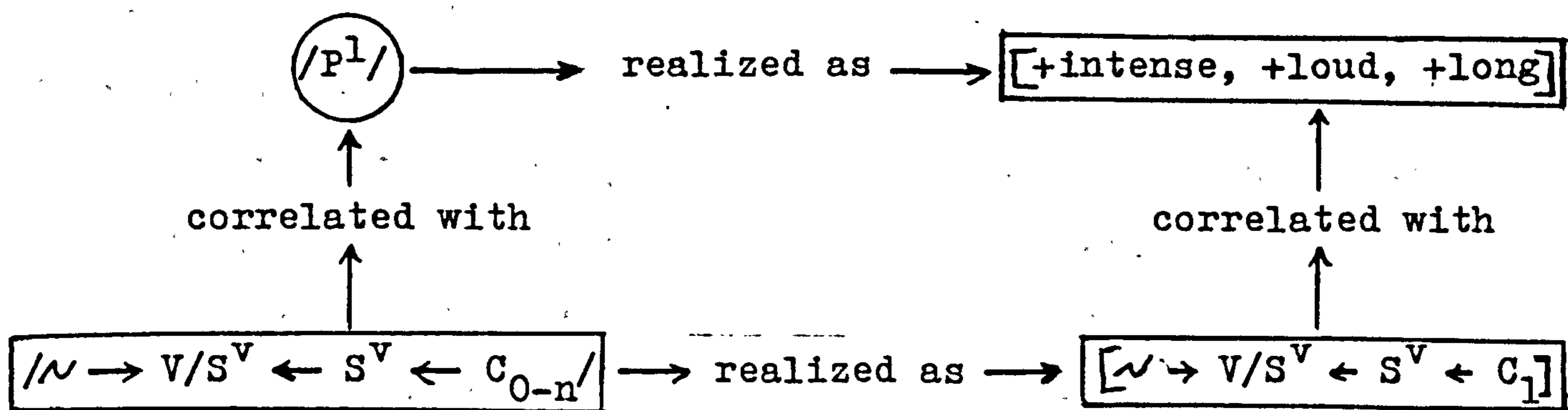
"cephalometer" and /o-/ in "orange"; c.f. Chapter 6 of PART II).

The adequacy of the postulated proportionality of relationship between the phonotagmic bases and the correlated degrees of accentual prominence seems to be materially corroborated by the phonetic facts of the phenomenon of "accentual prominence" itself. For, if the realizations of the formal constructions in column "1" are compared with those of columns "2" and "3", the systemic interlevel hierarchical relationships and contrasts between the three established degrees of "primary accentual prominence" may be expressed by dint of the following figure. This figure contains the three factual parameters of "accentual prominence" and their internal trichotomous offshots. Thus,



(Figure 1)

Though the above Figure is specific for the description of the systemic interlevel affinities and contrasts between all /P/ degrees of accentual prominence in S.E., its potential adequacy is in fact neither exhausted nor restricted to providing this type of information only. For, alongside the foregoing, the Figure is also potentially capable of indirectly corroborating the phonetic adequacy of the previously attested contrasts between the three types of base-line structure. Of course, this corroborative act takes place on a higher-than-base level of abstraction. If, in this context, the first of the previously established formulae is reconsidered in the light of the phonological and phonetic representations of the lexical items in "Tables 1a" and "1b", and if the conclusions are then mapped onto the descriptive information of "Figure 1", we shall definitely be in a position to infer and construct a rigorously informative diagram which appropriately sums up the most significant issues of the whole argument. This diagram may be set up as follows:-



(Figure 2)

So far, the previous study has -as pointed out earlier- only concerned itself with attempting to resolve the issue of the interrelationship between all monophonotagmic forms in S.E. and their correlated degrees of accentual prominence in an adequate

manner. However, since the totality of S.E. lexicon is not composed of items with forms para-phonotactically made up of monophonotagmic bases together with associated degrees of primary accentual prominence, it is therefore necessary -for the adequacy of the description- to develop the argument beyond the imposed restrictions. In order to do so, we shall investigate in detail the relationships which hold between the para-phonotactic system of accentual prominence and forms of lexical items whose phonotagmic base-line structures are constituted of juxtapositions of two or more isolable phonotagmic components. Since the discussion of these issues has -in the past- posed serious problems to the adequacy of many descriptive accounts of the phenomena, we find it methodologically more advantageous if the subsequent investigation falls back on the previously obtained conclusions and commence the argument from where it was terminated. This seems to be not only essential for the logical progression of the discussion, but is also necessary for the consistency, adequacy and simplicity of the present descriptive account of the para-phonotactic system of "accentual prominence" in S.E. Yet, before the argument could be possibly initiated, it is expedient that the phonological concept of "primary accent" (i.e. "primary accentual prominence") is rigorously defined in this context. We propose defining it as:-

"Primary accent" for "the objective, constant and intrinsic type of prominence which is assigned to a phonotagm when it functions as the whole or as the most salient part of the base of a para-phonotactic unit". It constitutes the point of reference against which the distribution of the subsidiary types of prominence over the remaining phonotagmic components in a unit-base are compared and determined.

The most significant issues which the foregoing phonologically-orientated definition is trying to emphasize are the nature of this type of accentual prominence and the linguistic function which it performs in the overall system. As to its nature, the phonological concept of "primary accent" has been described in the definition as an "objective, constant and intrinsic type of salience". In simple terms, this amounts to saying that it is "objective" because it is conventionally agreed on and measurable in relative terms; it is "constant" because its fixed location is unchangeable, and it is "intrinsic" because it is essentially correlated with the whole or part of specific types of isolable component in complex phonotagmic bases. In fact, by virtue of its attested correlation with whole phonotagms, this type of "accentual prominence" may be independently arrived at and established in isolation from the rest of the data. On the one hand, the type of linguistic function which the definition postulates for "primary prominence" in the system may be said to bear an uncanny resemblance (though a misleading one) to that of nuclear elements in phonotactic structures (except that ordering relations are not implied). In its capacity as a "governing entity", it is responsible for the determination and distribution of all other types of accentual prominence (but not their degrees which are identified and established internally) over and above the remaining phonotagmic components of a complex unit-base.

Let us now -as we have done before- launch a number of hypotheses and then attempt to corroborate them by direct evidence from attested forms in S.E. Accordingly, our (second) set of hypotheses may be formulated in the following manner,

- 1- every complex para-phonotactic base has one and only one phonotagmic component which is correlated with a (certain degree of) "primary accent";
- 2- the types of accentual prominence which could be postulated over and above the remaining phonotagmic components of a complex para-phonotactic base are determined by direct comparison with prominent accent as the point of reference. Two types of accentual prominence may in this context be said to have been identified. These are (a) "medial accent" (represented by an /M/) and, (b) "weak accent" (symbolized by a /W/);
- 3- the concept of "medial accent" may be defined as:-
 "Medial accent" for "non-primary type of objective, constant and intrinsic prominence which accompanies (a) "closed"-type phonotagmic parts (of complex para-phonotactic bases) that do not figure in minor-type phonotagmic structures, (b) "open"-type phonotagms which essentially figure in a major distributional unit, but which may -under certain conditions- figure in minor-type structures, and, (c) "minor"-type phonotagmic components whose nuclei are succeeded by at least two peripheral consonants". "Medial accent" functions to mark these phonotagmic components as internally well-formed and self-contained phonotactic structures/sub-chains;
- 4- the concept of "weak accent" may accordingly be defined as:-
 "Weak accent" for "non-primary type of objective, constant and intrinsic prominence accompanying closed and open parts of complex para-phonotactic bases which figure only in minor-type phonotagmic units". "Weak accent" functions to

mark these phonotagmic components as internally well-formed and self-contained phonotactic structures/sub-bases;

5- the degrees of accentual prominence which could be identified and established within each of the latter types of prominence are proportionally determined with respect to the internal phonotactic formulation of their underlying base-line structures. Functionally speaking, the following basic degrees of accentual prominence within the latter two types of accent may be said to have been identified and established:-

/M¹/ representing "medial accent" of the "first degree";

/M²/ representing "medial accent" of the "second degree";

/M³/ representing "medial accent" of the "third degree";

/W¹/ representing "weak accent" of the "first degree";

/W²/ representing "weak accent" of the "second degree".

(It is worth pointing out that the above postulated degrees of accentual prominence may require further refinement in order to generalize their ostensive applicability. These will of course be introduced in due course).

In the rest of this section, we shall attempt to corroborate the material adequacy of the foregoing hypotheses. In order to avoid over-complicating the argument, we shall initially concentrate on discussing the /M/-type of accentual prominence and its degrees; following that, the /W/-type of accentual prominence and its attested degrees will be investigated.

Probably, the most appropriate way to approach the phonological phenomenon of "medial accent" (/M/) in S.E. is by contrasting it

-in equivalent contexts- with the previously obtained conclusions for "primary accentual prominence". Put differently, the determination of the intralevel value of the unknown /M/ logically hinges on what is already known about /P/. Not only is this mode of reasoning simpler, but it is also in complete harmony with the deductive method of logical inference. In consequence, we propose selecting a set of monophonotagmic data whose members are individually marked for primary accent. This marked set of data will be subsequently used as basis for further expansion to form specific types of complex para-phonotactic base-line structure. The similarities and differences between the juxtaposed marked and unmarked components will provide us with the necessary clues for the determination of the accentual prominence values of the unknowns and for the corroboration of the formulated hypotheses. If we now resort to the previously used method of representing the data, we should have two separate tables. The first of these will take care of classifying the selected lexical items, and the second will be concerned with tabulating their correlated phonological and phonetic forms. Thus, our first table which includes our chosen set of lexical items may be set up as follows:-

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
A {	a- arm	armhole	armrest	armet
	b- candle	candlelight	candlepins	candlenut
	c- back	backache	backpend	backfill
B {	a- form	re-form	inform	deform
	b- tend	portend	extend	pretend
	c- dress	re-dress	undress	redress

(Table 2a)

The phonological and phonetic forms which correspond to the particulars of the above selected set can be arranged in the second table in the following manner:-

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	
A	a- p^1 /arm/ [ɑ:m]	p^1 /armhOul/ [ɑ:mhowɫ]	p^1 /armrest/ [ɑ:mɹɛst]	p^1 /armet/ [ɑ:mɛt]	
	b- p^2 /kandl/ [kændɔɫ]	p^2 /kandllAit/ [kændɔɫlajt]	p^2 /kandlPinz/ [kændɔɫpinz]	p^2 /kandlnrt/ [kændɔɫnɹt]	
	c- p^3 /bak/ [bæk]	p^3 /bakeik/ [bækejk]	p^3 /bakPend/ [bækpænd]	p^3 /bakFil/ [bækfiɫ]	
	B	a- p^1 /form/ [fɔ:m]	p^1 /rIiform/ [ɹi:fɔ:m]	p^1 /iNform/ [inɹfɔ:m]	p^1 /diiform/ [diɹfɔ:m]
		b- p^2 /tend/ [tænd]	p^2 /portend/ [pɔ:tænd]	p^2 /ikStend/ [ikstænd]	p^2 /pɹitend/ [pɹitænd]
		c- p^3 /dres/ [dɹɛs]	p^3 /rIidres/ [ɹi:dɹɛs]	p^3 /rndres/ [ɹndɹɛs]	p^3 /ridres/ [ɹidɹɛs]

(Table 2b)

The reader will undoubtedly have noticed slight differences between the two sub-sets of examples in the tables, i.e. those which are marked by capital "A" and capital "B". In the main, these differences pertain to the location of the marked phonotagmic component in relation to the location of the unmarked phonotagmic extensions in the given examples. While, for instance, the marked components in sub-set "A" are constantly situated on the left-hand side of the classified complex base-line structures, they are situated on the right-hand side of those in

sub-set "B". On the other hand, the unmarked phonotagms occur to the right-hand side of the marked ones in sub-set "A", but to the left of the marked one in sub-set "B"¹³. Basically, the reason why these two sub-sets of examples are used in the tables may be attributed to the arbitrary nature of the language itself. In other words, the language under consideration does not contain sufficient evidence which would allow us to annex specific types of phonotagmic segments to the already marked ones in order to generate six attested forms of complex base-structure alongside each horizontal axis. Though a serious attempt has been privately carried out on these lines, the resultant tables are observed to include a good number of unfilled (albeit potentially fillable) structural gaps, e.g. the non-attestedness of a complex base-structure of the type $"/\sim \rightarrow V/S^V \leftarrow C_{2-n}/ + /arm/^{P1}$ "; the non-attestedness of a complex base-structure of the type $"/tend/^{P2} + / \sim \rightarrow V/S^V \leftarrow S^V \leftarrow C_{0-n}/"$; etc. Be that as it may, the specifics of the latter two tables -as they presently stand- will suffice to satisfy the immediate purposes of the argument in hand.

If we now consider in detail the classified phonotagmic data in "Table 2b", we should be able to (1) determine the type and degree of accentual prominence which are correlated with the hitherto unmarked phonotagmic components, as well as to (2) directly corroborate the adequacy of some of the previously formulated hypotheses in this respect.

It is obvious from the way "Table 2b" is constructed that column "1" is specifically aimed at summing up the significant

conclusions which have been obtained for all monophonotagmic forms in isolation. It lists these conclusions in a descending/ascending hierarchically structured manner. The highest level of primary accentual prominence is located on the top of the scale, and the lowest is positioned at its bottom. In between the two, the medium level of primary accentual prominence is found to occur. Thus,



Of course, the same hierarchical structure is manifested vertically in columns "2", "3" and "4", except that these marked components are no more considered in isolation, but as basic parts of larger base-line structures. In these latter columns, each of the six marked monophonotagmic base-structures is expanded either rightwards (sub-set "A") or leftwards (sub-set "B") to form complex base-structures of the classified types. The nature of the appended unmarked phonotagmic components is deliberately kept constant in each separate column. While those of column "2" demonstrate an underlying base-structure of the form $/\sim \rightarrow V/S^V \leftarrow S^V \leftarrow C_{0-n}/$, those of column "3" display affinity with an underlying base-structure of the type $/\sim \rightarrow V/S^V \leftarrow C_{2-n}/$, and those of column "4" conform most appropriately with an underlying base-structure of the $/\sim \rightarrow V/S^V \leftarrow C_{0-1}/$ type. However, unlike the vertical representation of the hierarchical structure of the marked phonotagmic components, the hypothesized hierarchical nature of the hitherto unmarked phonotagmic components is horizontally

indicated alongside each separate line in "Table 2b". Thus,

$\xrightarrow{\hspace{1.5cm}}$
 Aa- /---hOul/ /---resT/ /--met/

.

.

$\xrightarrow{\hspace{1.5cm}}$
 Ba- /rIif---/ /iNf---/ /dif---/

.

.

Now, if the types of base-structure which underlie the specific unmarked phonotagmic components are -for the sake of the argument- compared with those which have been established earlier for the marked ones in the preceding tables, we should come to the tentative conclusion that the two classes -up to this point- demonstrate a potential for complete overlap with respect to their established types of underlying base-structure. In order not to complicate the descriptive account at this stage, the validity of the foregoing tentative conclusions will be temporarily maintained until further notice.

We recall from earlier discussions in this Chapter that "structural analogy", which is equivalent on this level of analysis to the phonetic parameter of "segmental length", constitutes one and only one of three established factual factors in this respect (the other two being "intensity" and "loudness"). Accordingly, the consistency and material adequacy of the postulated types and degrees of accentual prominence which are said to co-occur with the unmarked phonotagmic components in "Table 2b" can only be corroborated if the "intensity" and "loudness" substance-values of the phonotagmic components in

question are investigated and determined. As pointed out earlier, the proper way of dealing with this issue must firstly touch upon the interlevel relationships and differences between the unmarked phonotagmic components per se before moving on to examine their intralevel status within the overall system. Obviously, the latter point implies comparing the totality of the conclusions which will be gathered from the interlevel examination of the components with the already known facts about the /P/-type phonotagmic structures.

If the unmarked phonotagmic components of "Table 2b" are theoretically considered in isolation from the marked data, we notice that they potentially exhibit varying degrees of "intensity" and "loudness". On the top of the pyramidal structured hierarchy, one can easily locate the unmarked items of column "2". Immediately below these -and still within the pyramidal structure- the unmarked components of column "3" are found to be situated. The unmarked components of column "4" occupy the lower stratum of this interlevel sub-systemic hierarchy. If the results of the previous application of the phonetic parameter of "segmental length" to the description of the unmarked phonotagmic components are added to these latter conclusions, it becomes obvious that,

a- any of the unmarked components of column "2" has the para-phonotactic accentual value

[+ intense, + loud, + long];

b- any of the unmarked components of column "3" has the para-phonotactic accentual value

[+ semi-intense, + semi-loud, + semi-long];

c- any of the unmarked components of column "4" has the para-phonotactic accentual value

[+ lax, + soft, + short].

If these conclusions are now located within the overall perspective of the previously formulated definitions and hypotheses in this section, we should be able to provisionally correlate the three unmarked types of phonotagmic component in "Table 2b" with the three postulated degrees of "medial accent"; thus, /M¹/, /M²/ and /M³/, respectively. It is worth re-emphasizing that the hitherto obtained hierarchical conclusions for the unmarked components in the table solely represent the interlevel relationships and contrasts which hold between those components in their capacity as forming/belonging to a separate sub-system within the overall system of accentual prominence in S.E. In this sense, the particular "plus" substance-values alongside any of the /P/ or /M/ degrees of accentual prominence are specifically meaningful in the context of referring to the interlevel examination of each separate set of data. When these specific phonetic values are employed in the context of any intralevel comparative investigation of accentual prominence in the overall system, they are noticed to undergo some form of transformation for the sake of facilitating their incorporation within the overall system. Of course, one should not forget that while the attested levels of accentual prominence in S.E. are established by direct comparison and juxtaposition between the identified types of phonotagmic component, the functionally identified degrees of accentual prominence are internally established with reference to the nature of the structural

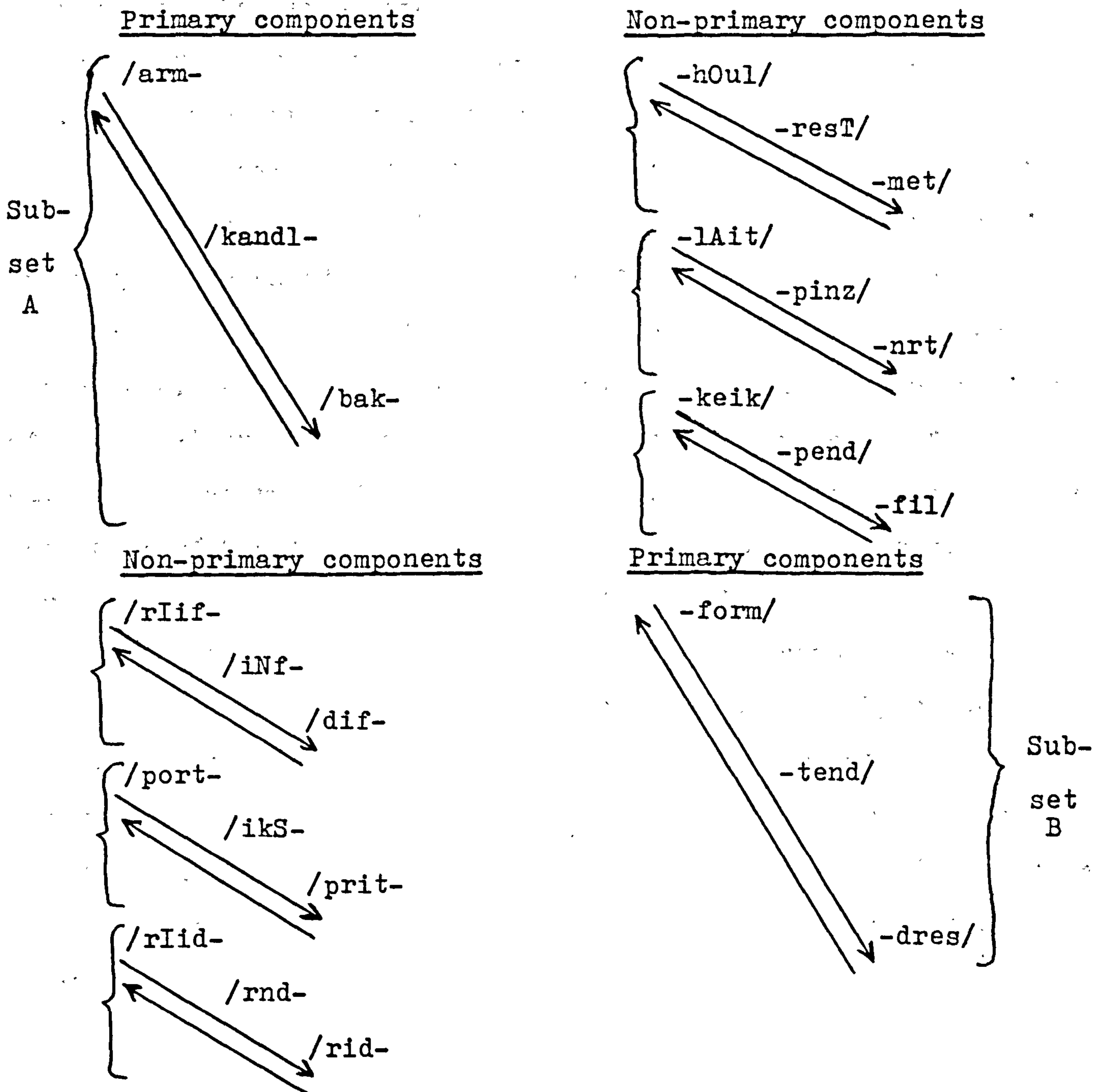
formation of the components within each separate type. If this methodological difference is constantly kept intact, we should soon be able to determine and confirm the exact intralevel status, phonetic values and interrelationships and contrasts which hold between all /P/ and /M/ types of phonotagmic component in the overall system. The best way to achieve these ends is by examining the ramifications of putting all the hitherto obtained conclusions in close proximity, i.e. by contrasting them in so-called "equivalent contexts". The classified information of tables "2a" and "2b" may -in this respect- be considered exemplary for these purposes.

If we firstly start by considering the nature of the juxtaposed phonotagmic/phonetic components of the complex lexical item "armhole", we notice that the two components in question appear to share a common base-line structure whose form is $/\sim \rightarrow V/S^v \leftarrow S^v \leftarrow C_{0-n}/$. In other words, the phonotactic structure of the para-phonotactic bases is not actually capable of providing us with any reliable information for the identification of the most significant component in the complex, i.e. the component which assumes a "primary function". However, since it is functionally impossible for two accentually prominent entities to be present alongside one another in the same form (as much as it is impossible for two vocalic/semi-vocalic elements to figure in the nucleus of a single phonotagm in S.E.), one must necessarily pursue the matter beyond the limitations of the parameter of "segmental length" and investigate the issue from the view-point of the other two factual factors. It is precisely in these contexts that the difference between the two phonotagmic

components of the complex lexical item "armhole" seems to lie. For, if the complex item in question is properly located within the perspectives of the two factual parameters of "intensity" and "loudness", one may instantly observe that the "arm-" component is manifestly heavier than the "-hole" component in the complex, i.e. the component "arm-" is noticeably louder and more intense than its rival. The reverse is equally correct, i.e. the rival candidate is definitely less loud and less intense (under neutral conditions) than the "arm-" component. In view of this, we are theoretically and descriptively entitled to conclude that while the component "arm-" (in the complex "armhole") assumes the status of a (governing) "primary entity", the component "-hole" must be a "non-primary entity" (or a "non-prominent entity") of certain specifications. As such, the two phonotagmic components of the complex in question can not therefore be treated as belonging to the same category of accentual prominence. (Note that analogous treatment also applies to the complex item "re-form", except that the "primary entity" is not the first component, but the second).

However, in order to be capable of abstracting the exact phonetic values of the above components, the juxtaposed phonotagms of the remaining complex instances in tables "2a" and "2b" must be subjected to analogous scrutiny. Since this investigation is expected to be carried out on parallel lines to the above, it seems simpler and more economical if the results of the thorough investigation are abstracted and stated in a clear-cut manner. In this sense, the argument itself needs not be re-produced in this context. Accordingly, the following table -which may be said to have been based on such an extensive

study of the particulars of tables "2a" and "2b"- classifies the juxtaposed phonotagmic components of the provided forms in terms of two basic categories only, i.e. "primary components" and "non-primary components". The hierarchically structured nature of the individual members of each category and their inter- and intra- types of relationship and contrast will also be visually accounted for within the same table. Thus, our abstracted results may be presented in terms of the following table as follows:-



(Table 3)

If the specific information which is contained in the recent table is properly evaluated, it becomes clear that the "segmental length" parameter does not seem to play a decisive role in determining the systemic distinctions between the "primary" and the "non-primary" types of component. For, though it contributes positively towards, say, confirming that the "segmental length" of the primary components /arm-/ and /-form/ are attestedly longer than those of /-rest/, /-met/, /-pinz/, /-nrt/, etc., it is neither capable of highlighting the differences between primary components like /arm-/ and /-form/, on the one hand, and "non-primary" components like /-hOul/, /-lAit/, /-keik/, /rIif-/, etc., on the other, nor is it capable of providing us with the necessary logical justification for promoting segmentally short phonotagmic components like /bak-/ and /-dres/ to the status of "primary components" at the expense of segmentally longer phonotagmic components within the borders of the same complex forms, e.g. /-keik/ or /-pend/. However, if the proportionality of the relationship between the phonotagmic components of each category is appropriately re-considered, we may emphasize that the parameter of "segmental length" constitutes in fact the sole factor which provides us not only with the functional means for distinguishing between the components of the respective categories, but also for arranging them alongside a hierarchically structured scale. Furthermore, it will also be soon demonstrated that the parameter in question may also serve to differentiate between the "accentually weak phonotagms" and all the other types of phonotagm in the system from the accentual and distributional points of view.

If we now resume our investigation of the juxtaposed

phonotagmic components of "Table 3", we may conclude that in complex forms

- a- the "primary components" are consistently louder and more intense than the "non-primary components", and vice versa;
- b- the "primary components" demonstrate relatively constant degrees of loudness and intensity when placed in close proximity to "non-primary components"; (the same is also noticed to recur for the "non-primary components", i.e. they display approximately equal degrees of loudness and intensity);
- c- the factor of "segmental length" is responsible for determining the internal distinctions between what could have otherwise been treated as analogous phenomena within the scopes of the two categories.

It is worth remarking here -before we draw any further conclusions- that, when open "major bound" phonotagms like /o-/ in /orakiulr/ "oracular", /e-/ in /erisTik/ "eristic", /a-/ in /arrmatik/ "aromatic" and /sr-/ in /srrrrpTisrs/ "surreptitious" figure in accentually non-prominent locations (as they do in the quoted instances), they are conceived to fall within the scope of the previously constructed base-line structure for all the unmarked sections in column 4 of tables "2a" and "2b", i.e. $/\sim \rightarrow V/S^V \leftarrow C_{0-1}/$. This amounts to saying that, under neutral conditions, open-type "major bound" phonotagms are always associated with an /M³/ degree of accentual prominence in non-prominent contexts. This is because their correlated phonetic factors are noted to be analogous in many respects to

those which have been assigned to the unmarked sections of the classified information in column 4 of the aforementioned tables. Suffice it to point out that, it was purely for simplicity and practical reasons that the small residue of non-prominent "major bound" phonotagms were neither included in the earlier tables, nor referred to in the main body of the discussion.

Obviously, the totality of the foregoing conclusions only pertain to the description of the classified complex phonotagmic forms in tables "2a", "2b" and "3", as well as to all open "major bound" phonotagms in non-prominent contexts. However, since the description of the overall structure of the para-phonotactic system of "accentual prominence" in S.E. is not exhausted -as we shall see- by the mere establishment of a two-term dichotomy, i.e. accentually "primary components" and accentually "non-primary components", we should be prepared to accept the subsequent division of the category of (accentually) "non-primary phonotagms" into two further sub-categories. These are

- a- "non-primary phonotagms" which figure in the major distributional unit (except one instance to be discussed below; c.f. the definition of the concept of "medial accent");
- b- "non-primary phonotagms" which figure only in minor-type phonotagmic structures; c.f. the definition of the concept of "weak accent".

For the immediate purposes of the present discussion, the hitherto /M/-marked information of the previous argument may be said to exclusively belong to the first sub-category, and the

accentually "weak phonotagms" (see below) may be treated as belonging to the second sub-category. In consequence, the "comparative" terms which have been used in the formulation of the latest set of conclusions must now be substituted for "superlative" terms. If we may put the cart before the horse for a moment, the prop re-formulation of the conclusions in question may be indicated as follows,

- a- the "primary phonotagms" are consistently the loudest and the most intense of all phonotagmic components in complex para-phonotactic bases;
- b- the "non-primary phonotagms" which may figure in a major distributional unit (and one instance which figures in minor-type structures; see below) are noticeably less loud and less intense than the adjacent "primary phonotagms" in complex bases;
- c- the "non-primary phonotagms" which figure only in correlation with minor-type underlying structures are consistently the least loud and the least intense of all the phonotagmic components in complex para-phonotactic bases.

In view of the preceding discussion and remarks, we are in a position to determine (in a consistent and adequate manner) the overall intralevel phonetic values of all /P/ and /M/ degrees of accentual prominence in S.E. Thus, we have:-

/P¹/ = [+ intense, + loud, + long]

/P²/ = [+ intense, + loud, + semi-long]

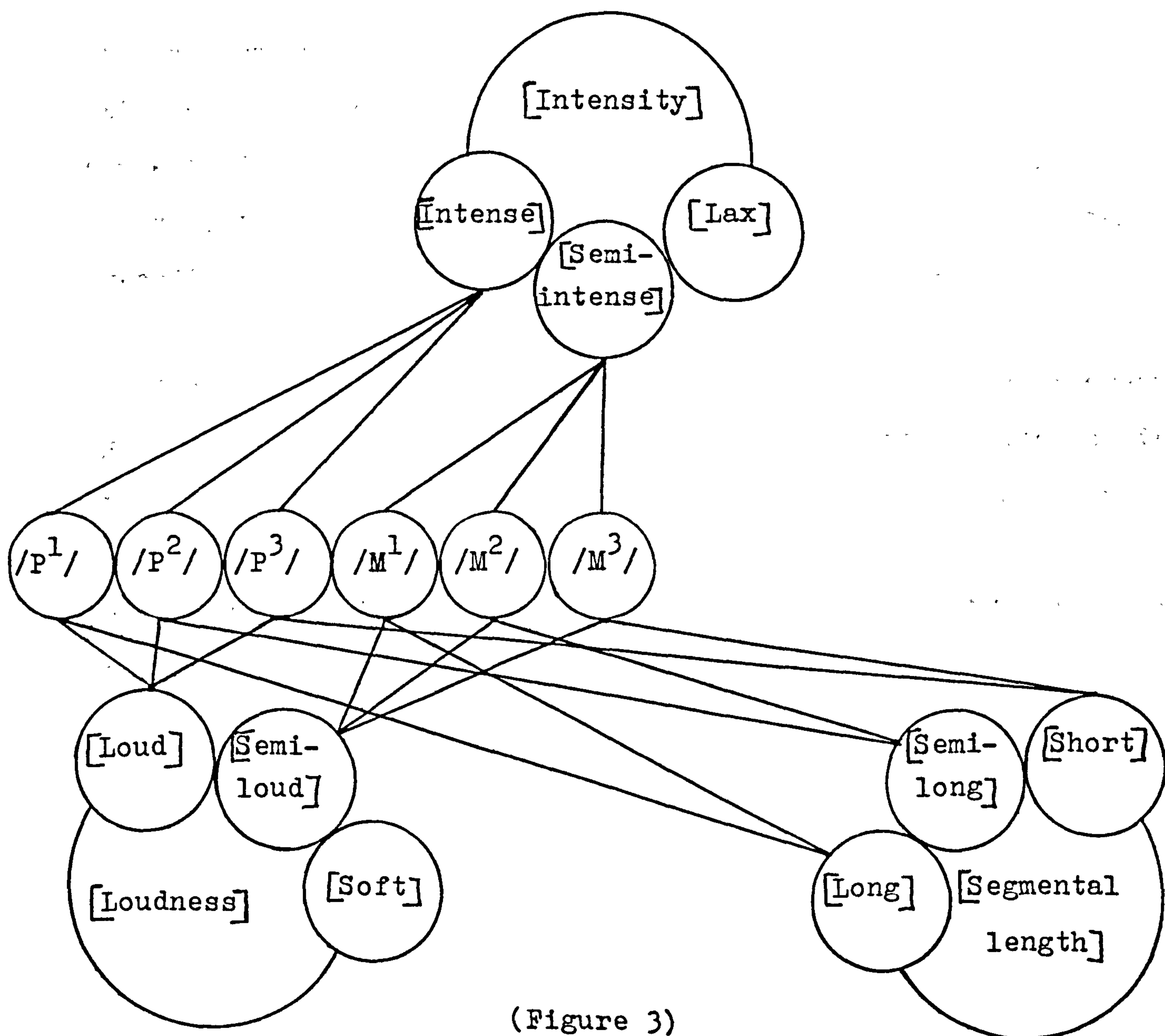
/P³/ = [+ intense, + loud, + short]

/M¹/ = [+ semi-intense, + semi-loud; + long]

/M²/ = [+ semi-intense, + semi-loud, + semi-long]

/M³/ = [+ semi-intense, + semi-loud, + short]

Now, if these intralevel values are mapped onto a specially designed visual device (whose general specifications resemble those of "Figure 1"), the systemic proportionality of the relationships and contrasts which hold between the /P/ and /M/ degrees of accentual prominence will become even more evident. Thus, we may have:-



(Figure 3)

The connecting lines in the above "Figure" simply represent the phonological/phonetic configurations of the six established degrees of accentual prominence and their correlated phonetic parameters. Since each circle in the "Figure" is capable of emitting/receiving at least two lines, the visual representation of the intralevel relationships and contrasts between the /P/ and /M/ degrees of accentual prominence and their phonetic correlates may consequently be pronounced consistent and adequate. In other words, it complies with the minimum requirement of the "functional principle"; (see PARTS I and II). However, before one jumps to any false conclusions, it is worth pointing out that the relevance of the "lax" and "soft" offshots of the "intensity" and "loudness" parameters for an exhaustive and adequate account of the para-phonotactic system of "accentual prominence" in S.E. will be shortly demonstrated in the context of discussing the weakest of all types of accentual prominence in the language. However, the questions which have been left unanswered in the preceding discussion will be resolved in due course.

Since the hypothetical postulations which concern the weakest type of accentual prominence have already been formulated earlier in this Chapter (pp. 604-605), we should find no difficulty in examining the attested information which is included in the following two tables. The first table which contains the chosen set of lexical items may be set up as:-

A	a-	constit <u>u</u> ent	evac <u>u</u> ee	int <u>o</u>
	b-	ant <u>i</u> halation	di <u>h</u> isce	ci <u>t</u> y
	c-	aw <u>a</u> it	arm <u>o</u> ury	sit <u>t</u> er
B		ag <u>a</u> pe	ca <u>d</u> et	mel <u>t</u> ers
C		pr <u>o</u> rt <u>a</u> bles	sil <u>e</u> nced	sac <u>r</u> ament
		fr <u>a</u> gility	admiss <u>i</u> ble	con <u>v</u> ention

(Table 4a)

The corresponding table which re-introduces the tabulated information in terms of the phonological and phonetic types of representation look like the following:-

A	a-	/krns <u>t</u> i <u>u</u> rn <u>t</u> /	/iv <u>a</u> ki <u>u</u> Ii/	/int <u>u</u> /
		[kɔnstɪtʃuɔnt]	[ivækjuwi:]	[intu]
	b-	/ant <u>i</u> hrleis <u>n</u> /	/di <u>h</u> is/	/sit <u>i</u> /
	[antihɔlejsɔn]	[dihis]	[siti]	
B	c-	/r <u>a</u> eit/	/arm <u>r</u> ri/	/sit <u>r</u> /
		[ɔwejt]	[a:mɔɹi]	[sitɔ]
B		/r <u>g</u> eip/	/k <u>r</u> det/	/mel <u>t</u> rz/
		[ɔgejp]	[kɔdɛt]	[mɛɹtɔz]
C		/p <u>o</u> rt <u>r</u> bl <u>s</u> /	/s <u>a</u> il <u>r</u> ns <u>t</u> /	/s <u>a</u> kr <u>r</u> mnt/
		[pɔ:tɔbbɔlz]	[sajɹɔnst]	[sækɔmɔnt]
		/fr <u>r</u> rd <u>s</u> iliti/	/rd <u>m</u> is <u>r</u> bl/	/kr <u>N</u> vik <u>s</u> n/
		[fɹɔddzistik]	[ɔdmisɔbbɔɹ]	[kɔnviksɔn]

(Table 4b)

(Note that the realization of the phoneme /l/ is always "dark" when it figures post-nuclearly in isolable phonotagms, but "clear" otherwise).

The reason why the overall set of examples is divided into three sub-sets will become clear in the course of the argument. Moreover, it should be borne in mind that the subsequent investigation will specifically concern itself with examining and determining the para-phonotactic status of the underlined phonotagmic components of the classified information, only. This restriction is necessary in order to preserve the concentrated nature of the argument and restrain it from running loose.

If we firstly concentrate our attention on examining the phonotactic structures of the underlined phonotagmic components which are mentioned alongside the letters "a", "b" and "c" (sub-set "A"), we may conclude that these structural units comply with an underlying para-phonotactic base-line structure whose form is

$$/\sim \longrightarrow S^V \longleftarrow C_0/;$$

(the signs "S^V" and "C₀" represent "semi-vowels" and "zero consonants", respectively).

Since the phonotagmic components in question overlap with respect to their base-structures, they must be functionally treated as equivalent from the view-point of the "segmental length" factual parameter.

Now, if the same phonotagmic components are subsequently projected onto the other two phonetic factors in the postulated dimension -or alternatively, if the factors are projected onto them- they are seen to demonstrate very low and insignificant differences in terms of "intensity" and "loudness". In other words, the "intensity" and "loudness" phonetic values of the phonotagmic components of sub-set "A" seem also to match and

overlap. In view of this, one has no other option but to treat all the underlined phonotagmic components of sub-set "A" as being functionally equivalent and intrinsically different from those of sub-set "B", let alone those of sub-set "C". For, if the underlined phonotagmic components of sub-set "B" are analogously investigated from the view-point of the three factual parameters, we should obtain the following conclusions,

- a- the "segmental lengths" of all the underlined phonotagmic components of sub-set "B" are analogous to one another and noticeably longer than those of sub-set "A". They unequivocally conform with a base-line structure whose form is

$$/\sim \longrightarrow S^v \longleftarrow C_1/$$

and whose nuclear position is always occupied by the neutral reduced (non-under-articulated) phoneme /r/ (i.e. [ɾ]).;

- b- the degrees of "intensity" and "loudness" which are associated with the above type of phonotagmic components are internally analogous but attestedly higher than those which could be assigned to the underlined components of sub-set "A".

However, before we could possibly correlate the foregoing results with any of the previously postulated degrees of "weak accent" in neutral realizations, the nature of the underlined phonotagmic components which are tabulated alongside the capital letter "C" (sub-set "C") in the latter tables should be considered.

The remarkable character of the phonotactic formation of the

underlined components of sub-set "C" actually stems from their potentiality to be associated with an underlying base-line structure which is -in many respects- analogous to the one which has been postulated and established for all /M²/-type of phonotagmic components. The only difference which may be detected between the underlined components of sub-set "C" and those which co-occur with an /M²/ degree of accentual prominence is virtually restricted to the nature of the vocalic/semi-vocalic element which figure in the nuclear position in each case. However, since it is the totality of the phonotactic base structure which finally counts in the present descriptive account of the para-phonotactic system of "accentual prominence", the elements which figure in the nuclear position are only significant when they occur in equivalent isolable phonotagmic contexts. To put it differently, it is the phonotagm as a unified whole (inclusive, of course, of the nucleus and all the succeeding peripheral appendages, if any) which is of primary interest to our present investigation of the phenomena on the para-phonotactic level of analysis¹⁴.

Having made our point, let us now approach the underlined phonotagmic components of sub-set "C" from the "intensity" and "loudness" angles. On close inspection of the phonotactic structures of these components it turns out that the distributionally weak nucleus /r/ ([ɹ]) -which figures in all the components in question- can only be made loud and intense by virtue of the presence of two or more peripheral consonants in each case. The degrees of "intensity" and "loudness" which could be associated with the underlined phonotagmic components of sub-set "C" are therefore noticeably higher than those which

could either be correlated with the underlined phonotagmic components of sub-sets "A" and "B", or with those which have been previously linked to an /M³/ degree of accentual prominence, but approximately equivalent to those which co-occur with an /M²/ degree of prominent accentuation. This conclusion not only seems to be consistent with the other parts of the descriptive account, but it also looks as though it is materially adequate with respect to the facts of the language as they present themselves. This result is, of course, predicted and covered by the previously formulated definitions and descriptive postulates.

In view of the above, we may now confirm that all the phonotagmic components of sub-set "C" are descriptively correlated with an /M²/ degree of accentual prominence; thus,

$\overset{M^2}{/---trbl/}$

$\overset{M^2}{/---lrnst/}$

$\overset{M^2}{/---krrmnt/}$

$\overset{M^2}{/frrdS-----/}$

$\overset{M^2}{/-----srbl/}$

$\overset{M^2}{/krNv-----/}$

This leaves us with the minor issue of deciding the phonetic correlates of the underlined phonotagmic components of sub-sets "A" and "B" (and their degrees of accentual prominence) on both the sub-systemic and systemic levels of juxtapositional analysis. These are, of course, necessary not only for the corroboration of the previously postulated two internal degrees of weak accent, but also for confirming the overall "weak" status of the components in question in the system as a whole.

If the underlined components of sub-sets "A" and "B" are re-considered from the view-point of their interrelational kinships and contrasts, we may note the following,

- a- the contrastive significance of the phonetic qualities "intense:semi-intense", "loud:semi-loud" and "long:semi-long" are suspended on the sub-systemic level for all the underlined phonotagmic components of sub-set "B";
- b- the phonetic value of any phonotagmic component which belongs to sub-set "B" would therefore be [+ intense/semi-intense, + loud/semi-loud, + long/semi-long];
- c- and, the phonetic value of any of the phonotagmic components which are classified in sub-set "A" would consequently be [+ lax, + soft, + short].

Accordingly, the phonotagmic components of sub-set "B" may be correlated with the $/W^1/$ degree of "weak accent", and those of sub-set "A" may be said to co-occur with the $/W^2/$ degree of "weak accent".

Now, if the foregoing interlevel substance-values are projected onto the previously constructed Figure on page 621 for all the attested and established intralevel relationships and contrasts between the established levels and degrees of accent and their phonetic correlates, it becomes clear that,

- a- the phonetic factors which are associated with the phonotagmic components of sub-sets "A" and "B" are drastically lower in degree than all the other types of phonotagmic structure in the overall system;
- b- the two types of phonotagmic components in sub-sets "A" and "B" overlap with respect to their "intensity" and "loudness" degrees in the context of the overall system;

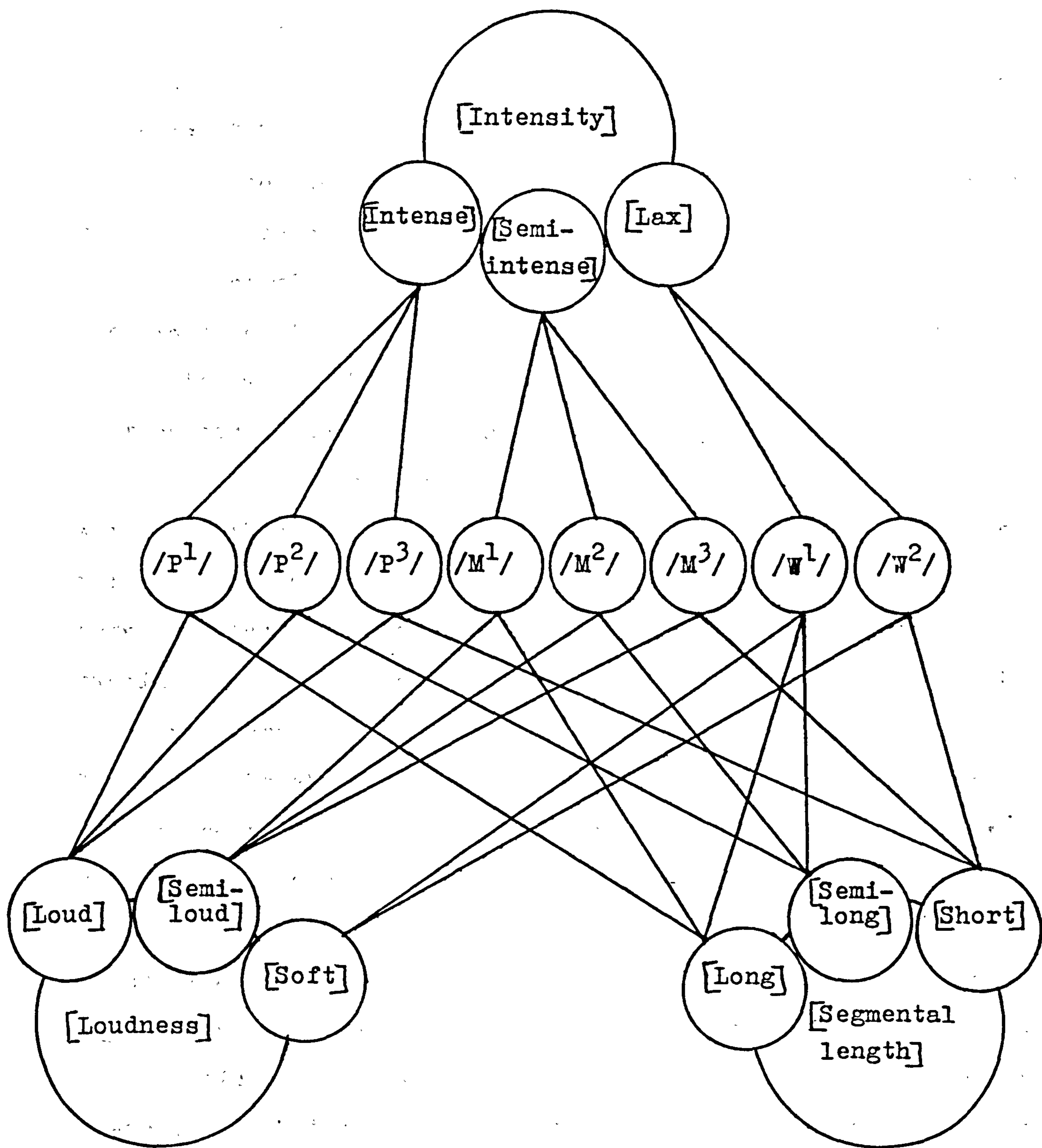
c- the parameter of "segmental length" which remains unscathed carries the distinction between the two types of weak phonotagmic structure over from the interlevel to the intralevel and confirms it.

In consequence, the re-adjusted intralevel content-values of the /W¹/ and the /W²/ types of phonotagmic component would necessarily have to be:-

$$/W^1/ = [+ \text{ lax}, + \text{ soft}, + \text{ long/semi-long}]$$

$$/W^2/ = [+ \text{ lax}, + \text{ soft}, + \text{ short}].$$

If, for the sake of the argument, the above conclusions are grafted onto the representational device in "Figure 3", the connecting lines which were not indicated at the time may now be added to fill up the gaps and complete the picture. With the addition of this new information, the functionality of the aforementioned "Figure" may be strongly emphasized. Thus,



(Figure 4)

However, before this section could be brought to a fruitful ending, and before we could claim to have hypothesized what we believe to be a consistent and adequate descriptive account of the para-phonotactic system of "accentual prominence" in S.E.,

it is necessary for the exhaustiveness of the description to investigate in some detail the roles which the semi-phonological concepts of "under-articulation" and "free-variance" play in affecting the standard neutral realizations of certain types of phonotagmic component and their co-occurring degrees of accentual prominence. Since the theoretical significations of the two concepts have already been discussed in sufficient detail in Chapter 6 of PART II, it seems superfluous to re-introduce the particulars of the arguments once again here.

Perhaps, the best way to investigate the types of pressure which the theoretical concepts of "under-articulation" and "free-variance" may exert in due course of communication on the para-phonotactic system of "accentual prominence" in S.E. is by examining the underlined phonotagmic components of the classified complex information in the following table. The established linguistic levels and degrees of "accentual prominence" which are correlated with all the phonotagmic components of the complex bases will also be indicated for the convenience of the reader. It should also be noted that our selected set of data (which the succeeding table will contain) has actually been used previously in the context of discussing the overall structure of "minor"-type phonotactic components in S.E. Our immediate and ultimate aim in operating with the same set of instances may be attributed to our interest in facilitating the argument and preserving the logical unity of the entirety of the present descriptive account. In view of this, our proposed table -inclusive of all the necessary information- may be arranged and set up as follows:-

<u>accrescent</u>	$M^3 P^2$ /akresnt/ [akɹɛsɔnt]	<u>aromatic</u>	$M^3 W^1 P^3 M^3$ /armatik/ [aɹɔmætɪk]
<u>degeneration</u>	$M^2 M^3 W^2 P^1$ /didʒɛnrreɪʒn/ [dɪdʒɛndʒeɪʒɔn]	<u>eristic</u>	$M^3 P^2 M^3$ /eristik/ [ɛɹɪstɪk]
<u>alcohol</u>	$P^2 W^2 M^3$ /alkrhol/ [ɔlkɔhɔɫ]	<u>oracular</u>	$M^3 P^3 M^3 W^2$ /orakiulr/ [ɔɹækjʊɫɔ]
<u>deadwood</u>	$P^3 M^3$ /deduud/ [dɛdwud]	<u>into</u>	$P^2 W^2$ /intu/ [intu]
<u>pinfish</u>	$P^3 M^3$ /pɪnfɪʃ/ [pɪnfɪʃ]	<u>city</u>	$P^3 W^2$ /siti/ [siti]
<u>puppeteer</u>	$M^3 W^1 P^1$ /prɹprtɪr/ [pɹpɔtɪɔ]	<u>surreptitious</u>	$M^3 M^2 P^3 W^1$ /sɹrrɹptɪʃɹs/ [sɹɹɔptɪʃɔs]

(Table 5)

Let us now concentrate our attention on investigating the ramifications of applying the semi-phonological concepts of "under-articulation" and "free-variance" to the description of the underlined phonotagmic components of all the classified complex information in the preceding table. We basically recall from the previous arguments in Chapter 7 of PART II that,

a- "minor"-type phonotagms may either be "open" or "closed";

b- the nuclear position of all minor "open"-type phonotagms is potentially fillable by

(1) /u/ or /i/ (or by their reduceable realizations),

(2) the reduceable realizations of /a/, /e/, /o/ and /r/ (i.e. [ʌ]) in the context of a succeeding [ɹ] realization of the phoneme /r/;

(3) the neutral reduced phoneme /r/ (whose realization is as [ɔ]);

- c- the nuclear position of all minor "closed"-type phonotagms may either be filled by the neutral reduced phoneme /r/, or by any of the six basic vocalic/semi-vocalic elements in the inventory if and only if these vocalic/semi-vocalic nuclei demonstrate tendencies for potential reduceability to [ɔ]-like sounds in realization;
- d- "minor"-type phonotagms are not attested as being able to figure alone in communication.

However, on further re-examination of the foregoing conclusions, two significant facts are noted to emerge; primarily that,

- a- minor "open"-type phonotagms can neither figure alone in monophonotagmic forms, nor (because of the reduced or reduceable nature of their nuclei) appear in the "major" distributional unit;
- b- the same is also true of minor "closed"-type phonotagms whose nuclear positions are either occupied by the neutral reduced phoneme /r/, or by any of the under-articulated [ɔ]-like realizations of all the six basic vocalic/semi-vocalic phonemes.

Furthermore, we also recall that whenever /i/ and /u/ figure as nuclei of minor "open"-type phonotagms, they are generally manifested -under neutral conditions- by the lowest levels of their distinctive realization. The same situation seems to apply to the rest of the vocalic/semi-vocalic phonemes, except that the lowest levels of the distinctive realization of the phonemes in question can only be identified as such under

non-neutral conditions. On many occasions, these lowest levels of distinctive realization are found to approximate to (and largely overlap with) the realization of the neutral reduced phoneme /r/ with which they may stand in direct opposition in minor-type contexts. The partial overlap between the lowest levels of the distinctive realization of the different nuclear phonemes in specific phonotagmic circumstance has logically been attributed to the influence of the semi-phonological phenomenon of "under-articulation". In fact, by virtue of their distributional and realizational qualities, all minor "open"-type phonotagmic components legitimately belong to the established minor-type models which are mostly associated (on the para-phonotactic level) with the lowest degrees of weak prominence in the whole system.

It should be pointed out at this stage that, the descriptive account of minor "open"-type phonotagms in S.E. complex phonotagmic forms can not be pronounced complete unless the phenomenon of "over-articulation" is equally investigated in the same context. Though the two phenomena of "under-" and "over-" articulation seem to represent each other's opposite, they are by no means equivalent with respect to their linguistic status. While "under-articulation" has been shown in previous discussions to be of a semi-phonological nature (which contributes positively towards the identification and establishment of some "minor"-type phonotactic structures), the phenomenon of "over-articulation" can not be demonstrated to serve any linguistic purpose. Its inclusion in a phonological description is merely a matter of convenience which is not at all obligatory. Qua its purely

non-significant phonetic nature, it is normally associated -to a certain extent- with the subjective phenomenon of "emphatic stress" in S.E. It most frequently affects the realization of lower-level phonotagmic components and provides them with non-linguistic significance on both the phonotactic and para-phonotactic levels of analysis. Thus, a form like /siti/ "city" which co-occurs -under neutral conditions- with an accentual prominence pattern of the form /P³ W²/ may be realized under "non-neutral" conditions either as [siti^δ], or as [siti(:)]. It is obvious from the foregoing that the realization of the "open"-type phonotagmic component /-ti/ -which is almost always accompanied by the /W²/ degree of accentual prominence under neutral conditions- has been stretched, emphasized and over-articulated to the extent that it seems to overlap partially with the realization of the /M¹/-type of phonotagmic components. In other words, the standard and neutral realization of the phonotagmic component /-ti/ becomes indeterminate and fluctuant when it is subjectively and deliberately over-articulated. When such a phenomenon is attested to take place, free-variance may be postulated on the realizational level if and only if neutralization is a priori excluded as a possibility. Following the A.F. method of reasoning, this could only be demonstrated by showing that the elements in question are potentially opposable to one another in given equivalent contexts. Though this approach seems to be logical and straightforward, we have encountered throughout the process of this investigation ambiguous A.F. claims which mix between "free-variance" and "neutralization". To quote Mulder (1968, p.203) "Such words as "merry", "marry" and "Mary" have the forms /mer(R)i, mar(R)i, merr(R)i/ respectively

(there is no opposition between /Ri/ and /i/, nor in fact between /rr/ and /r/, in unstressed syllables)". (Recall that /R/ is relatively equivalent to /I/ in this work). The ambiguous formulation of Mulder's descriptive statement is obviously not free of theoretical and descriptive inconsistencies and inadequacies. Actually, as it currently stands, the statement is somewhat misleading and uninformative. The whole ambiguity may be attributed to the fact that the statement in question is not certain as to whether "free-variance" (due to "over-articulation") or "neutralization" (due to lack of paradigmatic opposition) should be postulated and established in such contexts. To cut a long story short, we may emphasize that,

- a- the oppositions /i : Ii/ and /r : rr/ can never be corroborated in equivalent contexts since they are mutually exclusive and phonotactically inequivalent;
- b- unless this type of opposition is conceived as occurring between the totality of certain kinds of phonotagm (and not merely between the nuclei), it is hard to foresee how this type of opposition could either be corroborated, or refuted;
- c- if the oppositions between /i : Ii/ and /r : rr/ in so-called minor-type phonotagms are viewed phonotagmically, then Mulder's emphasis on the lack of any opposition between the aforementioned phonotactic nuclei could very easily be refuted by the following oppositional evidence from S.E., i.e.

"glossy"	/glosi/	-	/glosIi/	"glossae"
"reform"	/riform/	-	/rIiform/	"re-form"
"butterer"	/brtrrrr/	-	/brtrbrrr/	"butterburr"
"a bane"	/rbein/	-	/rrbein/	"urbane";

d- even if the above oppositions in "c" are pronounced valid, they basically belong to the "phonotactic" level of analysis and not to the "para-phonotactic" one, simply because the phonotagmic components of the complex base-structures are merely juxtaposed to one another on the para-phonotactic level and not opposed to one another in established paradigms. (This view is, of course, completely embedded in and entirely based on the contrastive nature and function of the para-phonotactic system of "accentual prominence" in S.E.);

e- if the above phonologically opposed phonotagmic components are mapped onto the previously established system of "accentual prominence", one may immediately conclude that the types and degrees of accent which correlate with the components in question are similarly inequivalent, i.e.

$$/glosi/ + /P^3 W^2/ = /glosi/$$

$$/glosii/ + /P^3 M^1/ = /glosii/$$

$$/riiform/ + /M^3 P^1/ = /riiform/$$

$$/riiform/ + /M^1 P^1/ = /riiform/$$

$$/brtrrrr/ + /P^3 W^2 W^2/ = /brtrrrr/$$

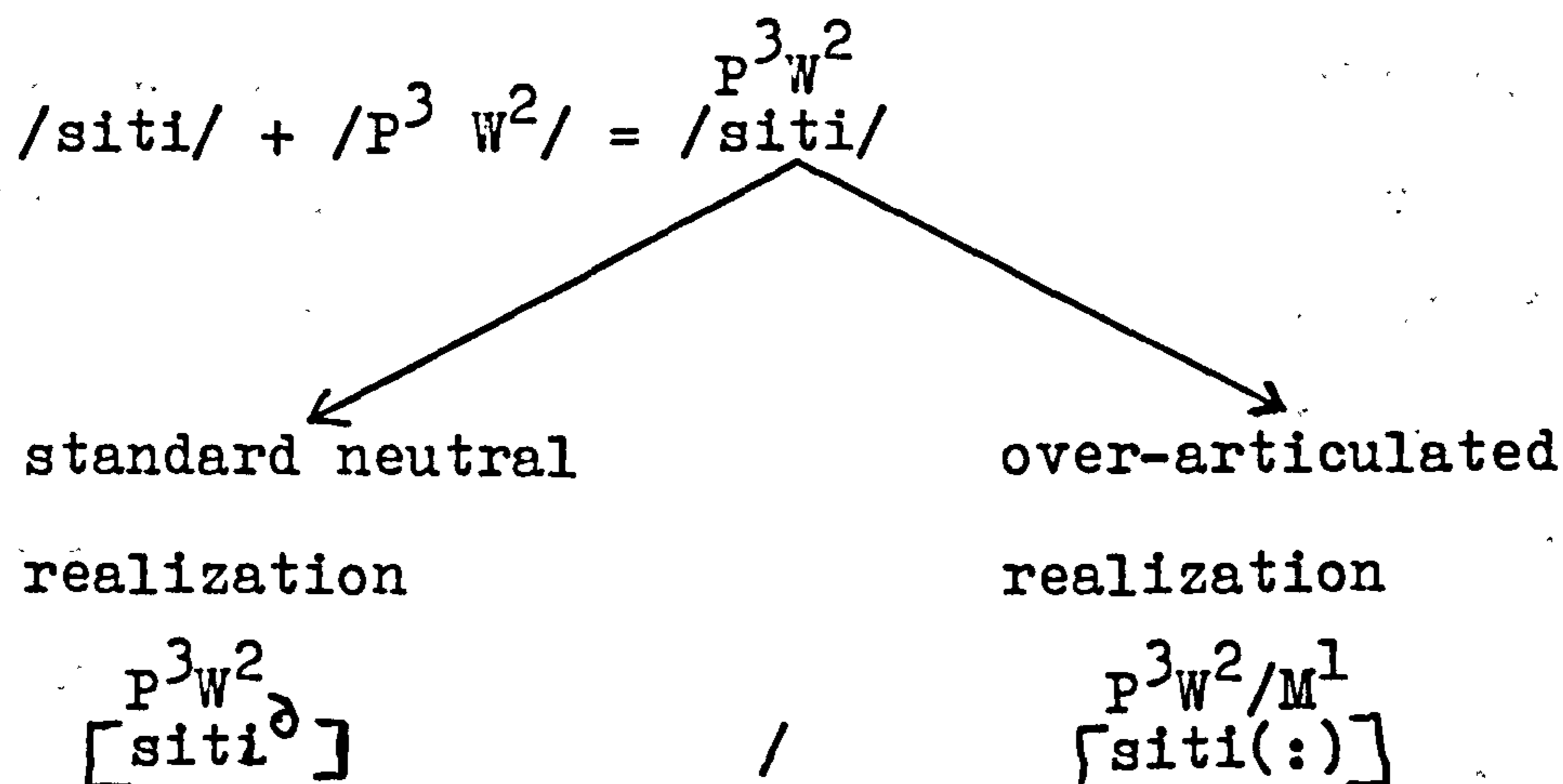
$$/brtrbrr/ + /P^3 W^1 M^1/ = /brtrbrr/$$

$$/rbein/ + /W^1 P^1/ = /rbein/$$

$$/rrbein/ + /M^1 P^1/ = /rrbein/$$

(These specific conclusions are sufficient to demonstrate that the phonotagmic components in question belong a priori to different tactic and para-tactic categories).

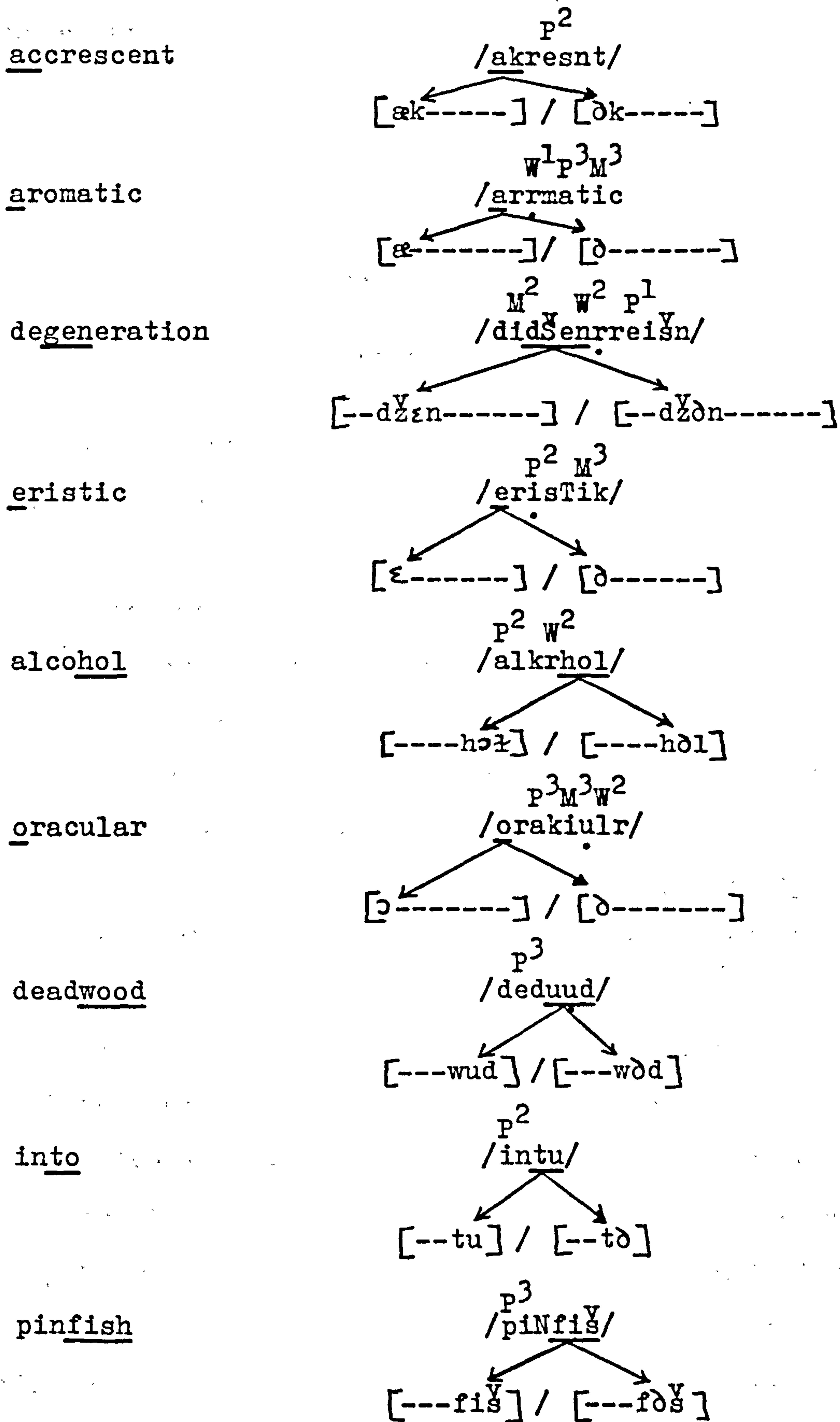
In view of the foregoing, we are left with the only functionally valid alternative solution of "free-variance". However, since the attested cases of "free-variance" which ensue from the application of the phenomenon of "over-articulation" are so numerous and diversified, their inclusion in the descriptive account is somewhat marginal and optional (see above). If all such cases were to be referred to and discussed, the description could turn out to be too complicated to be comprehended. Accordingly, we shall content ourselves in this work by solely identifying and establishing one type of "free-variance" on the para-phonotactic level. This type of "free-variance" accounts only for the potential realizational overlap (on the para-phonotactic level) between final /W²/-type phonotagmic components and /M¹/-type components in the system, but not vice versa. If the realizational possibilities of the form /siti/ "city" are re-considered in the light of the aforementioned explication, we get:-

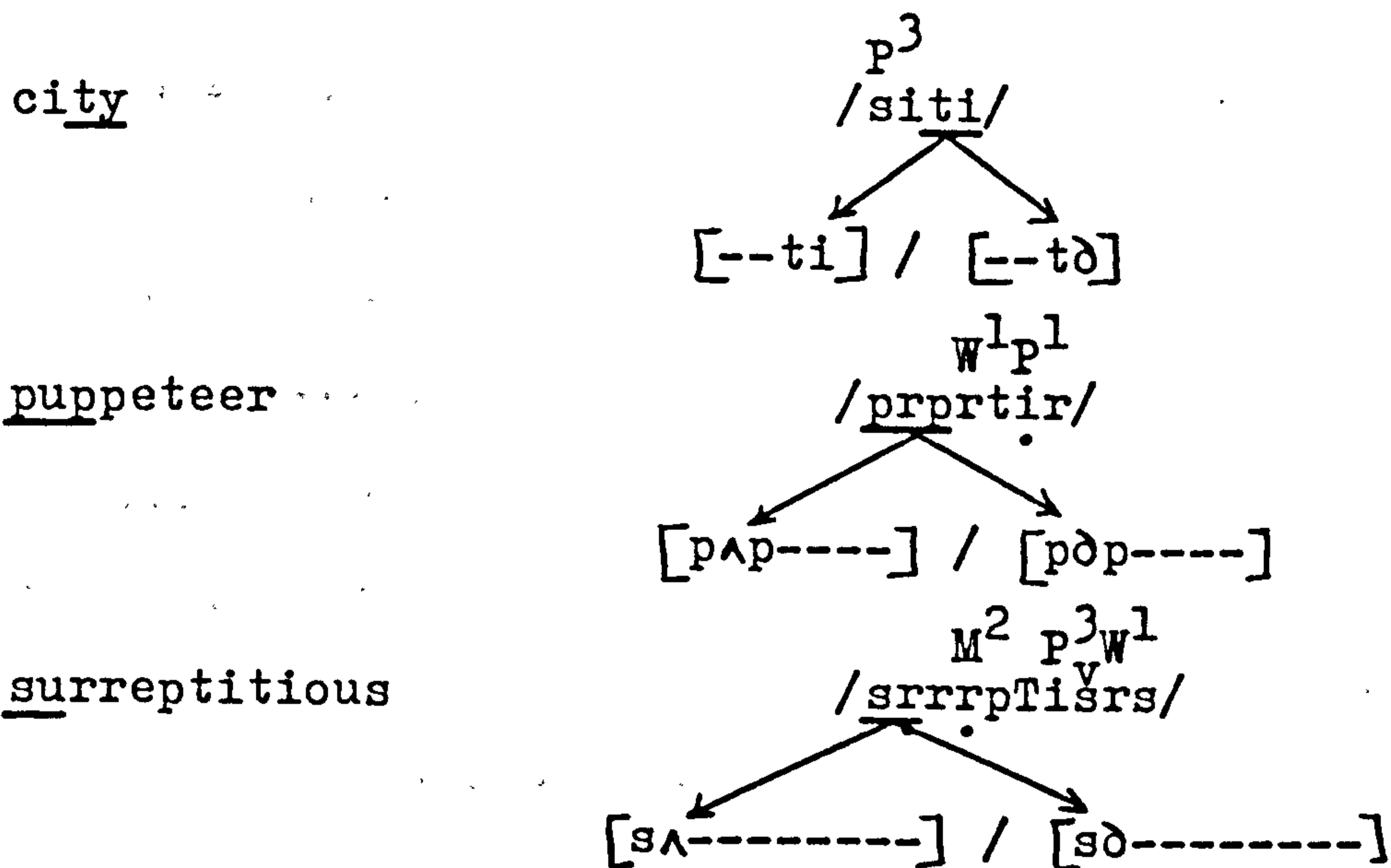


By the same token, analogous treatment may also be postulated for /-r : -rr/ -and probably for /-u : -Iu/- in forms like /tIit^Yr/ "teacher", /d^YSendr/ "gender", /intu/ "into", /lisIutu/ "Lesotho", etc.

Thus, the symbol " W^2/M^1 " will be specifically used on this level of analysis to represent the marginal realizational overlap (i.e. free-variance) between the "weakest" degree of accent in the system (i.e. " W^2 ") and the first degree of "medial accent" (i.e. " M^1 "). In this sense, the phonetic substance-value of this indeterminate realizational phenomenon is equivalent to [+ lax/semi-intense, + soft/semi-loud, + short/long]. The reader is required in this context to keep this type of free-variance (which is due to "over-articulation") constantly distinct from the more significant type of free-variance which results from the application of the phenomenon of "under-articulation" (see below). While the first type of free-variance -which is purely subjective- is not endowed with any linguistic function, the second type is semi-phonological and, therefore, functional. However, we recall that the establishment of minor-type phonotactic constructions/models owes partial credit to the phenomenon of "under-articulation"; c.f. Chapters 6 and 7 of PART II. This, in fact, logically leads us into considering in brief the ramifications of conflating the significant theoretical and descriptive conclusions which have been obtained from investigating the phenomenon of "under-articulation" in S.E. (Chapter 6 of PART II) onto certain sections of the linguistically established para-phonotactic system of "accentual prominence". If these conclusions are now applied to the underlined "closed"-type

phonotagmic components of "Table 5" (but not to their correlated degrees of accentual prominence for the time being), the following picture will necessarily come into existence:-





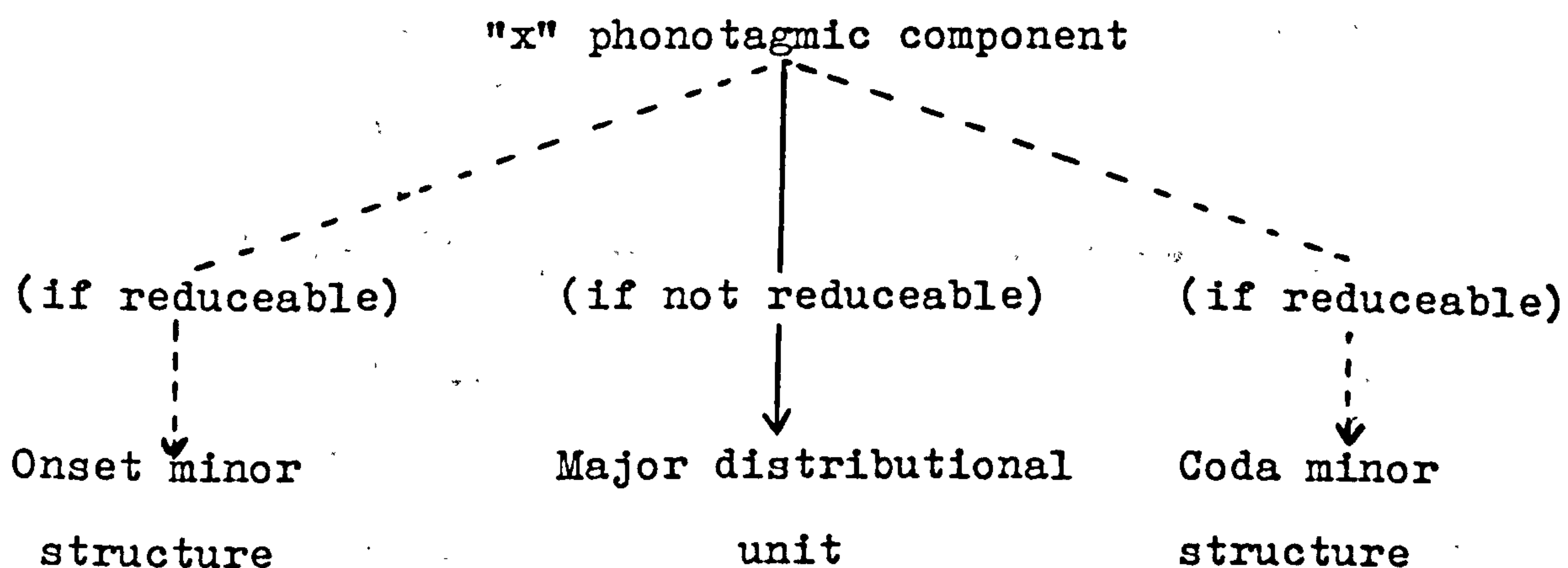
(Table 6)

The most important issue which the particulars of the classified information in "Table 6" are attempting to communicate and emphasize may be summed up as follows,

the lower limits of the distinctive realization of all non-primary phonotagmic components which (1) figure in the major distributional unit and, (2) whose underlying base-line structures are of the form $/\sim \rightarrow V/S^V \leftarrow C_{0-1}/$ may -under pressure from the phenomenon of under-articulation- partially overlap with the distinctive weak realization of the neutral reduced phoneme /r/.

Obviously, when such an overlap is attested, the distinctive (neutral) realizations of the non-primary phonotagmic components become relatively indeterminate and uncertain. These realizations fluctuate between what they "should have been" and what they "have actually become". Since "neutralization" is a priori excluded as a viable possibility (because of the attested oppositions; c.f. Chapter 7 of PART II), "free-variance" could be

postulated to account for and accommodate this semi-phonological realizational phenomenon. Accordingly, the two alternative realizations which are associated with each of the underlined phonotagmic components of "Table 6" may be said to stand in an "either ... or" or "both" type of realizational relationship with one another. This specific phenomenon is, of course, responsible for postulating an interlock between the established "major" distributional unit and some of the "minor"-type phonotactic structures on the lower level of linguistic analysis, i.e. that of "phonotactics". By doing so, it creates a precedence whereby certain sections of the facts may figure in "either" of the two basic types of phonotagm, or in "both" of them, simultaneously. The decision as to whether a certain phonotagmic component belongs to the one, to the other, or to both of the established underlying distributional structures is based -to a great extent- on the criterion of potential reduceability of phonotagmic nuclei to [ð]-like sounds by "under-articulation". By implication, the term "reduceable" (or any of its derivatives, except "reduced") applies most significantly to phonotagmic components which are a priori located in the "major" distributional unit. Only when their nuclear elements demonstrate potential tendencies for reduceability to [ð]-like sounds under specifiable conditions, can their affiliation with a minor-type structure be tolerated. In this sense, any of the underlined phonotagmic components in "Table 6" may be considered to exhibit this duality of potential. A descriptive result of such characteristics could be visually accounted for by means of the following representational device:-



(While the symbol "x" designates any "non-primary" phonotagmic component whose underlying structure is of the form $/\sim \rightarrow \left\{ \begin{matrix} a, o, e, \\ u, i, r \end{matrix} \right\} \leftarrow C_{0-1}/$, the "solid arrow" reads "alignable with if ..." and each of the "dotted arrows" means "potentially alignable with if ...").

Of course, one does not expect the foregoing phenomenon to recur on the para-phonotactic level without bringing about some alterations to the neutral realizations of certain established levels and degrees of accentual prominence which are linguistically correlated with the respective phonotagmic components. The only possible way to identify the exact nature of this type of alteration which is expected to accompany the oscillating phonotactic overlap on the para-phonotactic level is by investigating the results of mapping the obtained conclusions onto the established system of "accentual prominence", or vice versa. If this grafting process is successfully performed, the following set of remarks may be subsequently formulated:-

- a- any "non-primary" phonotagmic component whose underlying base-line structure correlate with either of the following two types, i.e.

$$/\sim \rightarrow \left\{ \begin{matrix} a, e, \\ o, r[\Delta] \end{matrix} \right\} \leftarrow C_{0-1}/ \text{ or } /\sim \rightarrow \{i, u\} \leftarrow C_1/, \text{ is}$$

phonologically associated under neutral conditions with an /M³/ degree of accentual prominence; thus,

$$/\nu \rightarrow \left\{ \begin{array}{l} a, e, \\ o, r[\Lambda] \end{array} \right\} \leftarrow C_{0-1}/ + /M^3/ = / \nu \rightarrow \left\{ \begin{array}{l} a, e, \\ o, r[\Lambda] \end{array} \right\} \leftarrow C_{0-1}/$$

$$\text{and, } / \nu \rightarrow \{i, u\} \leftarrow C_1/ + /M^3/ = / \nu \rightarrow \{i, u\} \leftarrow C_1/;$$

- b- if the nucleus of a "non-primary" phonotagmic component is momentarily incapable of maintaining its distinctive realization under pressure from the phenomenon of "under-articulation", then it becomes very difficult to ascertain whether the postulated correlation between the phonotagmic component in question and the /M³/ degree of accentual prominence still holds;
- c- when such a situation is attested in a given case, the nucleus of the phonotagmic component is said to approximate a [ɔ̃]-like sound in actual realization;
- d- since the comparable phonotagmic components whose nuclear positions are solely occupied by the neutral reduced [ɔ̃] realization of the phoneme /r/ have been postulated to correlate with either a /W¹/ or a /W²/ degrees of accentual prominence, it looks as though analogous degrees of weak prominence should also be assigned to any of the reduceable phonotagmic components which are referred to in "b";
- e- however, because it is not methodologically feasible for two degrees of accentual prominence to be separately correlated with a single base-line phonotagmic structure, it becomes clear that the proposed solution in "d" is not viable;
- f- the only logical possibility which seems to remain

functionally open is the identification and establishment of two cases of "free-variance" between the realizations of the /M³/ and the /W¹/ and /W²/ degrees of accentual prominence in the system. These will be represented by the symbols "M³/W¹" and "M³/W²", respectively;

g- the phonetic substance-value of these two established cases of "free-variance" will consequently be:-

"M³/W¹" = [+ semi-intense/lax, + semi-loud/soft, + short/long-semi-long].

"M³/W²" = [+ semi-intense/lax, + semi-loud/soft, + short];

h- while the "M³/W¹" case of free-variance designates the realizational indeterminacy of non-primary closed-type phonotagmic components, the "M³/W²" case refers to an analogous situation in relation to non-primary open-type phonotagms.

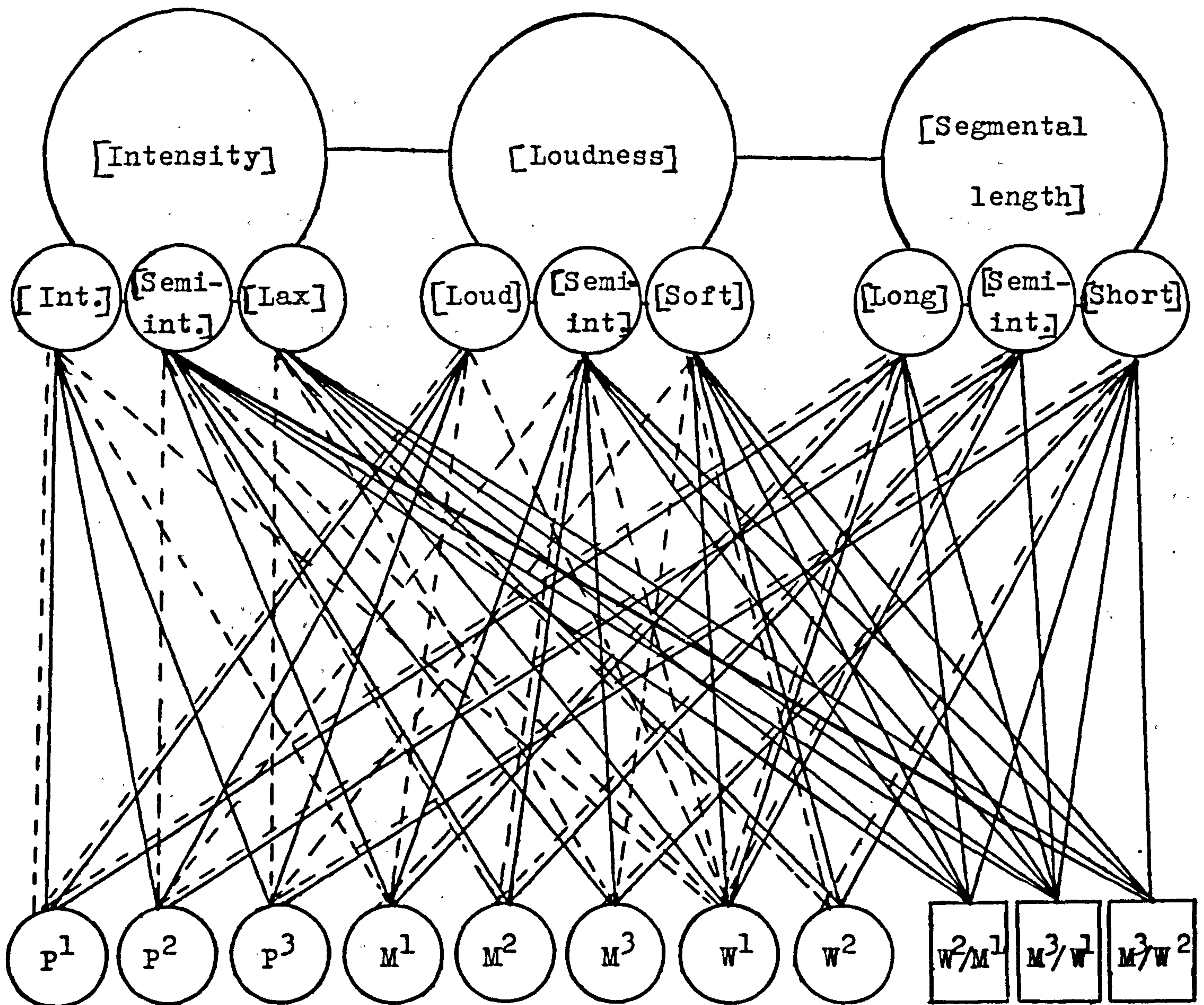
In view of the preceding argument, the underlined "closed"-type phonotagmic components of "Table 6" may now be most adequately re-produced in the following fashion, noting especially that while the "arrows" point out towards the phonetic realizations of the phonological forms and their correlated accentual patterns, the inserted "shwas" highlight the reduceable nature of certain vocalic/semi-vocalic nuclei; thus, we have:-

<u>accrescent</u>	M ³ P ² /akresnt/	→	M ³ /W ¹ P ² [<u>æ</u> k ↓ ε sɔnt]
<u>aromatic</u>	M ³ W ¹ P ³ M ³ /aromatik/	→	M ³ /W ² W ¹ P ³ M ³ /W ¹ [<u>a</u> ↓ ɔ m æ <u>t i k</u>]

<u>de</u> generation	$M^2 M^3 W^2 P^1$ /did ^V enrreis ^V n/	$M^2 M^3/W^1 W^2 P^1$ [did ^V ε [∂] n ∂ w ej ^V n]
<u>er</u> istic	$M^3 P^2 M^3$ /eris ^T ik/	$M^3/W^2 P^2 M^3/W^1$ [ε [∂] w ist i [∂] k]
<u>al</u> cohol	$P^1 W^2 M^3$ /alkr ^h ol/	$P^1 W^2 M^3/W^1$ [ælk ∂ h ɔ [∂] ɹ]
<u>or</u> acular	$M^3 P^3 M^3 W^2$ /orakiulr/	$M^3/W^2 P^3 M^3/W^1 W^2/M^1$ [ɔ [∂] w ak ju [∂] lɔ(:)]
<u>de</u> adwood	$P^3 M^3$ /deduud/	$P^3 M^3/W^1$ [d ε d w u [∂] d]
<u>in</u> to	$P^2 W^2$ /intu/	$P^2 W^2/M^1$ [int u (:)]
<u>pin</u> fish	$P^3 M^3$ /piNfis ^V /	$P^3 M^3/W^1$ [pi n f i ^{∂V} s]
<u>ci</u> ty	$P^3 W^2$ /siti/	$P^3 W^2/M^1$ [s i t i (:)]
<u>pup</u> peteer	$M^3 W^1 P^1$ /prprtir/	$M^3/W^1 W^1 P^1$ [p [∂] p ∂ t i ∂]
<u>surre</u> ptitious	$M^3 M^2 P^3 W^1$ /srrrp ^T is ^V rs/	$M^3/W^2 M^2 P^3 W^1$ [s [∂] w ∂ pt is ^V ∂ s]

(Table 7)

With these latter conclusions in mind, our proposed final modified version of the para-phonotactic system of "accentual prominence" for S.E. (inclusive of all the details that have so far been obtained) may be graphically represented as:-



(Figure 5)

(Note that while the "boxes" in the Figure surround cases of realizational "free-variance" between specific levels and degrees of accentual prominence, the "solid lines" represent intralevel phonetic values and the "dotted lines" signify interlevel phonetic values).

Before we end the argument in this Chapter, it is worth

recapitulating in brief some of the most significant issues which have so far been discussed and established in the foregoing arguments.

Firstly, according to our developed and established "accentual prominence" system for S.E., the phonotagms in the language may be divided into three basic types of linguistic entity. These are:-

- a- Accentually prominent phonotagms (represented by the symbol /P/). These are "primary phonotagms".
- b- Accentually medial phonotagms (represented by the symbol /M/). These are "non-primary phonotagms" of category "A"
- c- Accentually weak phonotagms (represented by the symbol /W/). These are "non-primary phonotagms" of category "B"

Moreover, within each of these types, different degrees of accentual prominence have also been postulated and established; thus,

- a- /P¹/, /P²/ and /P³/;
- b- /M¹/, /M²/ and /M³/;
- c- /W¹/ and /W²/.

In addition to the above, three further cases of realizational free-variance between certain levels and degrees of accentual prominence have also been identified and established. While the first two are semi-phonological and somewhat obligatory, the third is subjective and optional. These are:-

- a- "M³/W¹";
- b- "M³/W²";
- c- "W²/M¹".

Secondly, even if the established levels/types (or their degrees)

seem to intersect with respect to some of their phonetic parameters, no complete overlap between them is either possible or permissible under the present system of "accentual prominence" and its methodology. They are a priori inequivalent categories.

Thirdly, the developed and established system of "accentual prominence" in this Chapter is deemed consistent and adequate to account exhaustively for all formal structures on the para-phonotactic level irrespective of their degrees of complexity.

With the above remarks, we come to the end of this discussion. In the succeeding Chapter, however, we shall demonstrate in detail how the particulars of the established system in question combine to form "pattern" of accentual prominence. Each established "pattern" will be correlated with a single instance from S.E. to justify its postulation and corroborate its adequacy.

Notes to Chapter 1.

- 1- It is worth pointing out that,
- a- the absence of any clear and specific indication as to what is potentially commutable with "zero" in such contexts is, in fact, directly responsible for intensifying the ambiguity of the definition and rendering it totally unintelligible. Put differently, it is not obvious from the formulation of "Def.18b" whether it is the totality of a complex distinctive para-cenotactic pattern which is commutable with "∅", or whether it is only parts of such a pattern which are so privileged; and,
 - b- nowhere in the published literature of the theory of A.F. do we find any logical justification for not recognizing or explicitly postulating parallel "juxtapositional"/"contrastive" relationship between "contrastive para-cenotactic features" and "∅" in a given complex para-cenotactic pattern; c.f. "Def.18a".
- 2- The auxiliary para-phonotactic system of "permutation/mutation" actually operates on "phonotactic bases", on "accentual patterns", or on "both", leading in the final end towards the identification and establishment of a third type of economy which could be called "permutational/mutational economy". This type of economy is only operable on the para-phonotactic level.
- 3- Our thorough functional investigation of the different

possible types of para-phonotactic phenomena in S.E. has also proved the futility of establishing the much-talked-about system of "linguistic rhythm" as an independent and separate para-phonotactic system in S.E. The results of our extensive and lengthy research into this specific issue could be briefly summed up in the following statement:

"Rhythm is no more than the external aesthetic manifestation of linguistically established accentual patterns".

However, because of the negative character of the entirety of the extensive study, it has been decided not to include it in the present volume.

- 4- Though a complete list of all so-called "distinctive minimal pairs" in S.E. has actually been set up and examined, the obtained results will not be included in the present descriptive account. The reasons are simple: The conclusions have very little significant information to add to our understanding of the phonological system of the language under description.
- 5- Note that the reason why "option b" need not be seriously considered may be attributed to the fact that it is functionally inconceivable for any single linguistic entity/feature to perform two different functions in the system at the same time on the same level of analysis and abstraction.
- 6- It should be noted that while the notion of "para-tactic unit" has actually been identified and defined in the 1974 version

of the "Postulates", it has been replaced in the forthcoming version of the "Postulates" by the two ambiguous terms of "para-tactic entities" and "complex para-tactic entity". Needless to say that this substitution has brought about with it a good deal of redundancy, ambiguity and overlap not only between the wording of the definitions of the two terms in question, but also between them and the definition of the notion "entity" in the "Postulates". An even more complex picture (which also abounds with superfluity and overlap) is offered by Gardner (1984). In her attempt to project -what is thought to be- a neater version of the 1974 "Postulates", Gardner has unnecessarily introduced a huge number of concepts, among which one can mention the following: "Complex paratactic unit", "Paratactic entity", "Paracenotactic entity", "Parasyntactic entity", "Paracenotactic unit", "Parasyntactic unit", "Base", "Simple base", "Complex base". Be that as it may, the interested reader is advised to consult the given references for further information.

- 7- The reader is invited to compare the consistency and adequacy of our definition with Gardner's (1984) proposed modification of the same concept.
- 8- In the 1974 version of the "Postulates", the same definition of the notion "base" appears alongside "Def.20b".
- 9- The reader will have noticed the absence of any reference to the formal phonological representation of distinctive "intonation" in S.E. This could be primarily attributed to

the fact that "no useful purport is served by dealing with these forms under the heading of phonology", (Mulder, forthcoming). The validity of this statement has in fact been corroborated by our initial research into the system in question. However, though it is not our intention to get ourselves involved in any polemics, it may probably be useful to casually point out in this context that we find Harris's (1969) and Gardner's (1984) basic approaches to the para-syntactic phenomenon of "intonation" in S.E. to be somewhat questionable and argumentative. What seems to be particularly unsatisfactory about such approaches is that the presumed descriptive consistency and adequacy of any established functional/structural set of "non-decomposable" intonational pitch-contours (or patterns) ultimately depends on the successful preservation of the "closed" character of the system. In this sense, the mere introduction of just one more new intonation/pitch-contour to the set would understandably lead to (a) the refutation of its "closed" nature and, (2) the total collapse of the whole established system. If, however, the "intonation" phenomenon is conceived to be "decomposable" into gradiently established pitch-levels which combine to form different types of pitch-contours, then the immediate threat of refutation could be relatively minimized. Yet, this course of action leads to the problem of "how do we scientifically identify these pitch-levels?".

11- The treatment of "loudness" as a "physio-perceptual" issue may be at variance with the predominant conception which considers it to be a purely perceptual phenomenon. Our view in this respect may be briefly summed up as follows:

Since the recognition of "loudness" is entirely based on the materialistic presence in the particles of the atmospheric air of mass volumes of actual physical sound in progress, then the perception process can only be activated if and only if these mass volumes of physical sound (which are measurable) hit a human ear. In other words, if something has no mass volume, it is neither measurable nor perceivable by a hearer. This, in fact, confirms the thesis that "loudness" is a physio-perceptual phenomenon, and not an entirely "perceptual" one.

12- The reader recalls that our previous investigation into the nature of "minor"-type phonotagms in S.E. has actually -and independently- come to analogous conclusions. However, we have seen from previous arguments in PART II that the phenomenon of "under-articulation" can only operate in the context of certain types of phonotagmic component. The significance of the phonotagm/phonotagmic component as a basis for the phonological description of the para-phonotactic phenomenon of "accentual prominence" in S.E. has also been postulated, emphasized and corroborated earlier in this Chapter.

- 13- Though the respective location of an appended phonotagmic component may involve considerations which could affect the actual realization of the component itself (and probably that of the phonotagmic component which bears a primary degree of accentual prominence), these considerations are noticed to be functionally insignificant for the phonological description of the phenomenon. For instance, the realization of the appended phonotagmic component whose underlying base-line structure is of the type $/\sim \rightarrow V/S^V \leftarrow S^V \leftarrow C_{0-n}/$ is impressionistically shorter when it occurs to the left of a /P/ phonotagmic component than when it occurs to its right in analogous complex base-line structures, etc.
- 14- Of course, we are not denying here the fact that the nature of the nuclear vocalic/semi-vocalic element may play a significant role not only in classifying the phonotagms in S.E. into "major" and "minor" types of phonotagm, but also in determining the para-phonotactic status of some types of phonotagmic component. Nevertheless, this role should not be emphasized since some of these nuclear elements may lose their significance and status when they are slightly or heavily under-articulated.

CHAPTER 2.

"Accentual Prominence Patterns":

Establishment, Corroboration and Statements of
Realization

As the title indicates, the discussions in this Chapter will be primarily concerned with the postulation, establishment and corroboration of some "accentual prominence patterns" which are attested to correlate with bases corresponding to forms of simple and complex phonotactic structure. By implication, therefore, no reference will be made - and no attempt will be carried out - to account for the "accentual prominence patterns" which co-occur with bases underlying higher-than-phonological-word-level entities/units, e.g. forms of "phrases", "syntagms", "clauses", "sentences", or the like. However, before we could possibly start introducing and corroborating our exemplary set(s) of linguistically established "accentual prominence patterns", it is necessary for the consistency and adequacy of the descriptive account to settle and resolve certain definitional, representational and realizational issues. The first of these issues, and probably the most persistent and significant, is the determination of the exact nature and function of the descriptive para-phonotactic concept of "accentual prominence pattern" itself. As we know from previous experiences, this could only be done if the concept in question were adequately covered by a rigorously formulated definition. In consequence, we propose defining the concept of "accentual prominence pattern" as:

"Accentual prominence pattern" for "a simultaneous bundle of one or more contrastive degrees of non-tactic feature correlating with the whole or any

simple or complex phonotagmic base and marks it as being equivalent to a simple or complex para-phonotactic unit."

On proper investigation of the wording of the suggested definition of the concept in question, we may arrive at some significant conclusions; namely,

- a- "accentual prominence patterns" may potentially co-occur with "simple" as well as "complex" phonotagmic base-structures;
- b- when a phonotagmic base-structure is "simple", the correlated "accentual prominence pattern" is analogously "simple";
- c- when a phonotagmic base-structure is "complex" (which is, by implication, also "gradient"), the correlated "accentual prominence pattern" is analogously "complex" and "gradient";
- d- the occurrence dependency type of relationship which holds between phonotagmic base-structures and accompanying "accentual prominence patterns" logically leads to the creation of higher-level "complex" phonotactic entities called "para-phonotactic units". (Remember that any such "unit" is theoretically conceived in A.F. to be composed of two types of feature, i.e. the feature "base" and the feature "accentual prominence pattern");
- e- irrespective of the degree of complexity of any established "para-phonotactic unit", it is, by definition, envisaged as constituting a "well-

formed and self-contained entity" on the para-phonotactic level of analysis;

f- in view of the foregoing, the establishment of the traditional phenomenon of "external juncture" (which is normally entrusted with the function of marking the borders between well-formed and self-contained lexical items) may consequently be pronounced redundant and unnecessary. This is logical since the postulated function which justifies the existence of the concept in question in the system is tacitly implied in the definition of the concept of "accentual prominence pattern".

With the above conclusions in mind, one may remark that it is not required of phonotagmic bases to be themselves complex in order to figure on the para-phonotactic level of analysis. The reader will recall from preceding arguments that all simple monophonotagmic base-structures and their /P/ degrees of accentual prominence are conceived to constitute the essential corner-stones on which the totality of the phonology of S.E. and its varying degrees of tactic and para-tactic complexity are ultimately based. Yet, because none of the simple monophonotagmic base-structures in question - and none of their accompanying degrees of accentual prominence - demonstrates any potential for internal juxtaposition, we are logically permitted to preclude them from being classified alongside the other "para-phonotactic units" in the system. (Of course, the reference here is to those "bases" and "patterns" which demonstrate internal juxtaposition, i.e. "complex para-phonotactic units"). In consequence, we may categorically emphasize that

"para-phonotactic units" which are constructed of simple bases and correlated simple accentual prominence patterns belong to a primitive para-phonotactic sub-system which is directly attached to the overall system of accentual prominence in two ways (a) via the /P/ degrees of accentual prominence which solely accompany all simple base-structures and, (b) via the potentiality of these base-structures to figure as components in phonotagmic complexes of different extensions. In this sense, the simple monophonotagmic base-structures will be accounted for in the succeeding lists under the title of "primitive accentual prominence patterns". As we shall shortly see, only three such primitive accentual prominence patterns are required to cater for all the attested simple monophonotagmic bases in S.E.; (c.f. preceding Chapter).

This leads us into explaining the representational method which will be used in this Chapter for introducing and corroborating our established set of "accentual prominence patterns".

Basically - and in very simple terms - the phonological form of a postulated "accentual prominence pattern" will be firstly launched and then correlated (by means of a "+" sign) with the phonological form of a certain base-structure from S.E. Since this is merely a simple "addition" equation, it must necessarily be followed by an "equal" sign (i.e. "=") before the result of the equation is indicated. Logically speaking, unless there is something faulty about either of the two sides of the equation, the product of the togetherness of the two phenomena will, by the nature of things, lead to the establishment of attested "para-phonotactic units" of certain specifications and complexity.

If the neutral realization of a given "unit" constantly approximates the idealized standard norm, and if it does not undergo any form of "under-" or "over-" articulation, then the phonetic realization of that specific "unit" will be totally ignored. Alternatively, the reader may, if he/she wishes, map any of the resultant "units" onto a specially constructed realizational scale-like grid (to be shortly discussed and established) for the sake of pin-pointing the phonetic realizational correlates of any given "unit". Of course, the "bases" and their "patterns" are realized in actual communication as internally ordered spatio-temporal sequences.

However, the cases where the realizations of certain sections of an established "para-phonotactic unit" fluctuate between alternative realizations - due to "under-" or "over-" articulation - will form an exception. In these cases, the standard phonological norm will be firstly indicated and then supplemented by the alternative indeterminate realizations. Only when this task is completed, may the different types of realizational possibilities (which are connected with a certain unit) be consequently grafted onto the provided realizational scale-like grid for further corroboration.

The shape of the proposed realizational scale-like grid - as we conceive it - is fundamentally based on the idea of equating each phonological degree of "accentual prominence" with a realizational "curve movement" (represented by an "arrow") between two - and only two - points on the scale. As such, a realizational "curve movement" may be visualized as starting

from a certain identified point and moving on until it terminates at the point where another realizational "curve movement" takes over; and so on. Of course, a "curve movement" which is not succeeded in the pattern/grid by another "curve movement" starts to dip gradually into complete silence after asserting itself. This is symptomatic of the completion of the form, pattern, realization and message. However, it may well happen that instead of one "curve movement" moving away from a certain point, two "curve movements" may be noticed to leave in two different directions and terminate at points which are situated alongside the same column. Whenever such a phenomenon is identified, it is indicative of the active presence of the phenomena of "under-" or "over-" articulation over and above certain phonotagmic components of a complex base. (As pointed out in the preceding Chapter, this branching of specific "curve movements" actually represents a deviation from the standard neutral realization of certain degrees of accentual prominence). Now, if all these realizational "curve movements" (which correspond to established degrees of accentual prominence) are identified as being "locative curve movements" (for being associated with single degrees of accentual prominence), then the sum total of a complete set of such realizational "locative curve movements" may be understood to represent a single realizational curve movement called the "overall unified curve movement" (which intuitively corresponds to one "accentual prominence pattern"). In its turn, this latter type of "overall curve movement" is solely associated with the realizational manifestation of the totality of a given "para-phonotactic unit". However, before the realizational scale-like grid could be set up, some of the conventions which will be used in its construction require explanation.

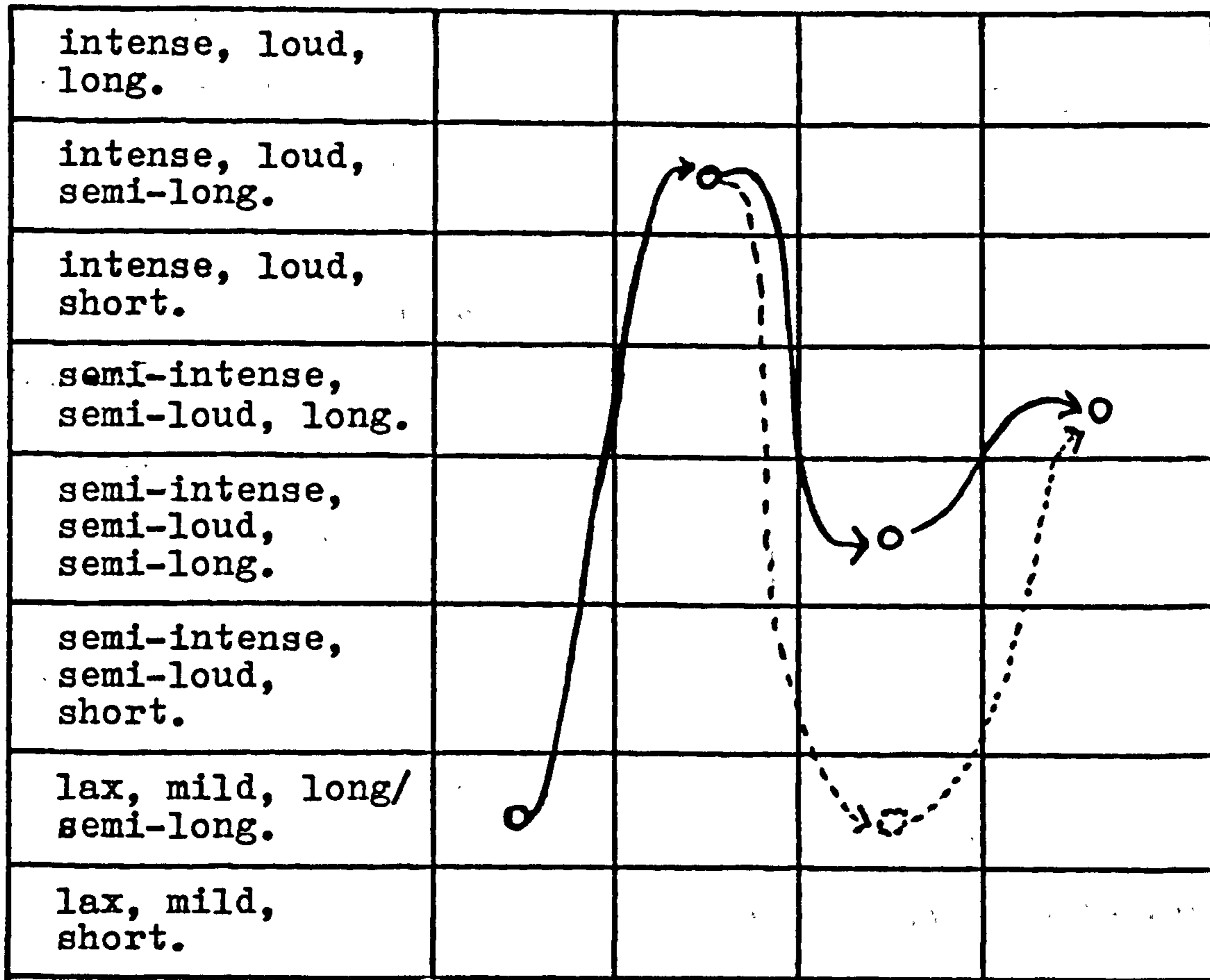
Intrinsically, the grid itself is merely a mesh of intersecting straight lines. Its utmost left-hand column will be reserved for the classification of the intralevel hierarchically structured phonetic substance values of the established degrees of accentual prominence. Each set of attested and established values - which explicitly corresponds to a specific degree of accentual prominence - will be located inside a box of its own. A "para-phonotactic unit" - inclusive of its "base" and accompanying "pattern" - will be indicated at the bottom of the grid, and the "grid" itself will be divided into squares/rectangles. The phonetic value of any degree of accentual prominence which is correlated with any one juxtaposed phonotagm in the base will be represented by a respective circle inside a corresponding square/rectangle in the realizational grid. The "locative curve movement" between any two points/circles will - as pointed out earlier - be symbolized by an arrow moving upwards, downwards or sideways. The identified realizational cases of "over-" and "under-" articulation will, of course, be represented, as expected, by means of two alternative arrows leading to two circles situated alongside the same column. If a solid arrow and a solid circle are taken to imply "neutral realization", then a dotted arrow and a dotted circle will necessarily come to refer to the alternative "non-neutral realization". With these concluding remarks, we consider the stage ready for the construction of our proposed realizational scale-like grid. The best way to justify its construction and corroborate its potential capability to account for the facts in an adequate and straightforward manner is by simply attempting to project a

pair of established "para-phonotactic units" onto its structure. For the immediate purposes of the present argument, we shall firstly attempt to project the established "para-phonotactic unit" of $\overset{p^1}{/armhOul/}$ "armhole" onto the structure of the grid. Following that, the "para-phonotactic unit" of $\overset{w^1}{/rprokSimeit/}$ "approximate (v)" will be analogously mapped onto the particulars of the same grid. The differences between the realizations of the two established "accentual prominence patterns" could be very easily calculated and abstracted from directly comparing the two grids with one another. Thus, the result of projecting the "para-phonotactic unit" $\overset{p^1}{/armhOul/}$ "armhole" onto the realizational scale-like grid may look as follows:-

intense, loud, long.		
intense, loud, semi-long.		
intense, loud, short.		
semi-intense, semi-loud, long.		
semi-intense, semi-loud, semi-long.		
semi-intense, semi-loud, short.		
lax, mild, long/ semi-long.		
lax, mild, short.		
	$\overset{p^1}{/a}$	$\overset{M^1}{O u l/}$

(Figure 1)

And, the realizational manifestation of the "para-phonotactic unit" $w^1 p^2 M^3 M^1$ /rprokSimeit/ "approximate (v)" on a similarly constructed scale-like grid may be represented as:



w^1 p^2 M^3 M^1
 /r p rokS im eit /

(Figure 2)

As the two latter Figures indicate, there is an obvious correlation between the complexity of the "para-phonotactic unit" and the complexity of the realizational "scale-like grid". The more complex the "unit" is, the larger the size of the "grid" becomes. This, of course, has direct consequences on the realizational "overall unified curve movement" which is associated with the totality of the "unit".

In this sense, the "curve" becomes analogously more complex and more diversified.

Some "Accentual Prominence Patterns" for S.E.:-

It has been referred to earlier in the Chapter that the overall set of "accentual prominence patterns" in S.E. may be divided into two categories, i.e. (a) "primitive accentual prominence patterns" and, (b) "complex accentual prominence patterns". While any pattern which belongs to the former category is conceived to be composed of a simultaneous bundle of one single degree of /P/ accentual prominence, a "complex accentual prominence pattern" must, by definition, be constructed of a simultaneous bundle of at least two degrees of accentual prominence. Moreover, our attempts at the establishment of the maximum extension of a "complex accentual prominence pattern" for S.E. phonotagmic complexes have consistently led to futile conclusions. This is primarily due to the fact that any so-called "common noun" in S.E. is virtually expandable to reach infinity by merely adding and alternating prefixes like "anti-", "pro-", "non-", etc. to the beginning of any such noun-base. In view of this, we shall consider a simultaneous bundle of eleven degrees of accentual prominence to represent the maximal extension of a "complex accentual prominence pattern" in S.E. The adequacy of this postulated pattern can very easily be corroborated if the following two lexical items from the language are successfully mapped onto its structure:-

"antidisestablishmentarianization"

and, "dichlorodipenyltrichlorethane".

Thus:-

$$\frac{M^2 M^3 M^3 M^2 M^2 M^2 M^1 W^2 W^1 M^1 P^1}{\text{antidisisTablismnterrirnAizeisn}}$$

i.e. $\left[\text{ant}(\frac{1}{\delta}) d(\frac{1}{\delta}) \text{sist} \text{a} \text{bli} \text{sm} \text{nt} \text{e} \text{r} \text{r} \text{i} \text{r} \text{n} \text{A} \text{i} \text{z} \text{e} \text{i} \text{s} \text{n} \right] +$

$$\left[M^2 M^3 M^3 M^2 M^2 M^2 M^1 W^2 W^1 M^1 P^1 \right] /$$

$$\left[M^2 M^3 / W^1 M^3 / W^1 M^2 M^2 M^2 M^1 W^2 W^1 M^1 P^1 \right]$$

and either $\frac{M^1 M^1 M^1 M^1 M^1 M^1 M^1 M^1 M^1 P^1 M^1}{\text{dAiklorrOudAifIinAiltrAiklorrOuIieein}}$

or $\frac{M^1 M^1 M^1 M^1 M^3 M^2 M^1 M^1 M^1 P^1 M^1}{\text{dAiklorrOudAifeniltrAiklorrOuIieein}}$

i.e. $\left[\text{daj} \text{klo} \text{:} \text{w} \text{ow} \text{daj} \text{f} \left(\frac{\epsilon}{\delta} \right) \text{n} \left(\frac{i}{\delta} \right) \text{lt} \text{waj} \text{klo} \text{:} \text{w} \text{ow} \text{i} \text{:} \text{eej} \text{n} \right]$

$$\left[M^1 M^1 M^1 M^1 \left(\frac{M^1}{M^3} \right) \left(\frac{M^1}{M^2} \right) M^1 M^1 M^1 P^1 M^1 \right] /$$

$$\left[M^1 M^1 M^1 M^1 \left(\frac{M^1}{M^3 / W^1} \right) \left(\frac{M^1}{M^2} \right) M^1 M^1 M^1 P^1 M^1 \right]$$

Now, if the totality of the developed methodology in this PART is constantly borne in mind, we can start introducing and corroborating our exemplary sets of "accentual prominence patterns" for specific types of S.E. form. The taxonomic lists in these sets will only include the "accentual prominence pattern" which are positively attested to correlate with forms of certain lexical items in the language. By implication, the "accentual prominence patterns" which are not attested to correlate with forms of existing instances will be ignored and excluded from the description. Since the subsequent sets of "pattern" are only given for the purposes of exemplifying the present approach, the reader who is interested in pursuing the matters beyond the imposed limits may very easily do so by basing himself/herself on the particulars of the preceding arguments.

"Primitive Accentual Prominence Patterns"

1- /P¹/ + /dIin/ = /^{p1}dIin/ "dean"

2- /P²/ + /dint/ = /^{p3}dint/ "dint"

3- /P³/ + /din/ = /^{p3}din/ "din"

"Complex Accentual Prominence Patterns"

A) Complex Accentual Prominence Patterns in Relation to Bases of Two Phonotagmic Components:-

1- /P¹ M¹/ + /horlmark/ (hallmark) = /^{p1 M1}horlmark/

2- /P¹ M¹/ + /dʃɜrnlist/ (journalist) = /^{p1 M2}dʃɜrnlist/

3- /P¹ M³/ + /beilif/ (bailiff) = /^{p1 M3}beilif/

i.e. [bej1(¹ɪ)f] + [P¹ M³] / [P¹ M³/W¹]

4- /P¹ W¹/ + /lOurd/ (lowered) = /^{p1 W1}lOurd/

5- /P¹ W²/ + /lOuli/ (lowly) = /^{p1 W2}lOuli/

i.e. [lOw1(¹i:)] + [P¹ W²] / [P¹ W²/M¹]

6- /P² M¹/ + /iNplarnt/ (implant) = /^{p2 M2}iNplarnt/

7- /P² M²/ + /makSiml/ (maximal) = /^{p2 M2}makSiml/

8- /P² M³/ + /endloŋ / (endlong) = /^{p2 M3}endloŋ /

i.e. [ɛnd1(³)ŋ] + [P² M³] / [P² M³/W¹]

9- /P² W¹/ + /sentrd/ (centred) = /^{p2 W1}sentrd/

10- /P² W²/ + /sentr/ (centre) = /sentr/

i.e. [sɛnt(ɜ:)] + [P² W²] / [P² W²/M¹]

11- /P³ M¹/ + /napuId/ (knapweed) = /napuId/

12- /P³ M²/ + /givrbl/ (giveable) = /givrbl/

13- /P³ M³/ + /akrid/ (acrid) = /akrid/

i.e. [ækw(ɪ)d] + [P³ M³] / [P³ M³/W¹]

14- /P³ W¹/ + /hazrd/ (hazard) = /hazrd/

15- /P³ W²/ + /siti/ (city) = /siti/

i.e. [sit(i:)] + [P³ W²] / [P³ W²/M¹]

16- /M¹ P¹/ + /hiIumein/ (humane) = /hiIumein/

17- /M² P¹/ + /elsuer/ (elsewhere) = /elsuer/

18- /M³ P¹/ + /setIi/ (settee) = /setIi/

i.e. [s(ɛ)ti:] + [M³ P¹] / [M³/W¹ P¹]

19- /W¹ P¹/ + /rbeit/ (abate) = /rbeit/

20- /W² P¹/ + /krhIuts/ (cahoots) = /krhIuts/

21- /M¹ P²/ + /grOutesK/ (grotesque) = /grOutesK/

22- /M² P²/ + /grvnmentl/ (governmental) = /grvnmentl/

23- /M³ P²/ + /imens/ (immense) = /imens/

i.e. [(ɪ)mɛns] + [M³ P²] / [M³/W¹ P²]

24- /W¹ P²/ + /rbaʃT/ (abashed) = /rbaʃT/

25- /W² P²/ + /kuiəsnt/ (quiescent) = /kuiəsnt/ ^{W² P²}

26- /M¹ P³/ + /hOutel/ (hotel) = /hOutel/ ^{M¹ P³}

27- /M² P³/ + /pasTel/ (pastel) = /pasTel/ ^{M² P³}

28- /M³ P³/ + /bifel/ (befell) = /bifel/ ^{M³ P³}

i.e. [b(¹/₃)fɛɪ] + [M³ P³] / [M³/W¹ P³]

29- /W¹ P³/ + /rbak/ (aback) = /rbak/ ^{W¹ P³}

30- /W² P³/ + /rreg/ (areg) = /rreg/ ^{W² P³}

B) Complex Accentual Prominence Patterns in Relation to Bases of Three Phonotagmic Components:-

1- /P¹ M¹ M¹/ + /mAikrOusKOup/ (microscope) = /mAikrOusKOup/ ^{P¹ M¹ M¹}

2- /P¹ M¹ M²/ + /hIudIuizm/ (hoodooism) = /hIudIuizm/ ^{P¹ M¹ M²}

3- /P¹ M¹ M³/ + /mAikrOudot/ (microdot) = /mAidrOudot/ ^{P¹ M¹ M³}

i.e. [majkwɔwd(³/₃)t] + [P¹ M¹ M³] / [P¹ M¹ M³/W¹]

4- /P¹ M¹ W¹/ + /IivldIurz/ (evildoers) = /IivldIurz/ ^{P¹ M¹ W¹}

5- /P¹ M¹ W²/ + /nOuturrɔi/ (noteworthy) = /nOuturrɔi/ ^{P¹ M¹ W²}

i.e. [nowtwɜ:ɔ(¹/₁)] + [P¹ M¹ W²] / [P¹ M¹ W²/M¹]

6- /P¹ M² M¹/ + /gormandAiz/ (gormandize) = /gormrndaiz/ ^{P¹ M² M¹}

7- /P¹ M² M²/ + /klAirtidS^v/ (clientage) = /klAirtidS^v/ ^{P¹ M² M²}

8- /P¹ M² M³/ + /bartendiŋ/ (bartending) = /bartendiŋ/ ^{P¹ M² M³}

i.e. [bɑ:tend(¹/₃)ŋ] + [P¹ M² M³] / [P¹ M² M³/W¹]

9- /P¹ M² W¹/ + /orkisTr̥rz/ (orchestras) = /orkisTr̥rz/

10- /P¹ M² W²/ + /garnit̥Sr/ (garniture) = /garnit̥Sr/

i.e. [gɔ:nit̥s̥(̥₃:)] + [P¹ M² W²] / [P¹ M² W²/M¹]

11- /P¹ M³ M¹/ + /barbikiIu/ (barbecue) = /barbikiIu/

i.e. [ba:b(̥¹)kju:] + [P¹ M³ M¹] / [P¹ M³/W¹ M¹]

12- /P¹ M³ M²/ + /beisifikST/ (basifixed) = /beisifikST/

i.e. [bejs(̥¹)fikst] + [P¹ M³ M²] / [P¹ M³/W¹ M²]

13- /P¹ M³ M³/ + /bleiNfulnis/ (blamefulness) = /bleiNfulnis/

i.e. [blejmf(̥^u)zn(̥¹)s] + [P¹ M³ M³] / [P¹ M³/W¹ M³/W¹]

14- /P¹ M³ W¹/ + /dAuNkr̥mrz/ (downcomers) = /dAuNkr̥mrz/

i.e. [dawnk(̥[^])m̥dz] + [P¹ M³ W¹] / [P¹ M³/W¹ W¹]

15- /P¹ M³ W²/ + /dAunsuiqr/ (downswinger) = /dAunsuiqr/

i.e. [dawnsw(̥¹)ŋ(̥[̥])₃:] + [P¹ M³ W²] / [P¹ M³/W¹ W²/M¹]

16- /P¹ W¹ M¹/ + /hAibr̥neit/ (hibernate) = /hAibr̥neit/

17- /P¹ W¹ M²/ + /harm̥nist/ (harmonist) = /harm̥nist/

18- /P¹ W¹ M³/ + /hiIum̥rf̥ul/ (humourful) = /hiIum̥rf̥ul/

i.e. [hju:m̥df(̥^u)z̥] + [P¹ W¹ M³] / [P¹ W¹ M³/W¹]

19- /P¹ W¹ W¹/ + /hiIum̥r̥sr̥m/ (humoursome) = /hiIum̥r̥sr̥m/

20- /P¹ W¹ W²/ + /sAitr̥tri/ (citatory) = /sAitr̥tri/

i.e. [sajt̥d̥t̥w(̥¹)₁:] + [P¹ W¹ W²] / [P¹ W¹ W²/M¹]

21- /P¹ W² M¹/ + /sPAidrurrt/ (spiderwort) = /sPAidrurrt/

$$\text{P}^1 \text{W}^2 \text{M}^1$$

22- /P¹ W² M²/ + /eieizm/ (atheism) = /eieizm/

$$\text{P}^1 \text{W}^2 \text{M}^2$$

23- /P¹ W² M³/ + /kardiak/ (cardiac) = /kardiak/

$$\text{P}^1 \text{W}^2 \text{M}^3$$

i.e. [kɑ:diʃ(ə)k] + [P¹ W² M³] / [P¹ W² M³/W¹]

24- /P¹ W² W¹/ + /dŠrnrirz/ (journazers) = /dŠrnrirz/

$$\text{P}^1 \text{W}^2 \text{W}^1$$

25- /P¹ W² W²/ + /bartrrr/ (barterer) = /bartrrr/

$$\text{P}^1 \text{W}^2 \text{W}^2$$

i.e. [bɑ:tɔʃ(ə)] + [P¹ W² W²] / [P¹ W² W²/M¹]

26- /P² M¹ M¹/ + /insOuleit/ (insolate) = /insOuleit/

$$\text{P}^2 \text{M}^1 \text{M}^1$$

27- /P² M¹ M²/ + /intrrnist/ (internist) = /intrrnist/

$$\text{P}^2 \text{M}^1 \text{M}^2$$

28- /P² M¹ M³/ + /pensAilnis/ (pensileness) = /pensAilnis/

$$\text{P}^2 \text{M}^1 \text{M}^3$$

i.e. [pɛnsajln(ɪ)s] + [P² M¹ M³] / [P² M¹ M³/W¹]

29- /P² M¹ W¹/ + /takSpeirz/ (taxpayers) = /takSpeirz/

$$\text{P}^2 \text{M}^1 \text{W}^1$$

30- /P² M¹ W²/ + /grrbSteikr/ (grubstaker) = /grrbSteikr/

$$\text{P}^2 \text{M}^1 \text{W}^2$$

i.e. [gʌbztejk(ə)] + [P² M¹ W²] / [P² M¹ W²/M¹]

31- /P² M² M¹/ + /konteNpleit/ (contemplate) = /konteNpleit/

$$\text{P}^2 \text{M}^2 \text{M}^1$$

32- /P² M² M²/ + /prinsiplŠipS/ (principalships) = /prinsiplŠipS/

$$\text{P}^2 \text{M}^2 \text{M}^2$$

33- /P² M² M³/ + /praktiklnis/ (practicalness) = /praktiklnis/

$$\text{P}^2 \text{M}^2 \text{M}^3$$

i.e. [pʌktikɔln(ɪ)s] + [P² M² M³] / [P² M² M³/W¹]

34- /P² M² W¹/ + /grandSTandrz/ (grandstanders) = /grandSTandrz/

$$\text{P}^2 \text{M}^2 \text{W}^1$$

$$35- /P^2 M^2 W^2/ + /iNfrnsi/ \text{ (infancy)} = /iNfrnsi/ \quad P^2 M^2 W^2$$

$$\text{i.e. } [inf\delta ns(\overset{i}{i}.)] + [P^2 M^2 W^2] / [P^2 M^2 W^2/M^1]$$

$$36- /P^2 M^3 M^1/ + /plantigreid/ \text{ (plantigrade)} = /plantigreid/ \quad P^2 M^3 M^1$$

$$\text{i.e. } [plænt(\overset{i}{\delta})gwejd] + [P^2 M^3 M^1] / [P^2 M^3/W^1 M^1]$$

$$37- /P^2 M^3 M^2/ + /pontifekS/ \text{ (pontifex)} = /pontifekS/ \quad P^2 M^3 M^2$$

$$\text{i.e. } [pønt(\overset{i}{\delta})feks] / [P^2 M^3 M^2] / [P^2 M^3/W^1 M^2]$$

$$38- /P^2 M^3 M^3/ + /plekTognae/ \text{ (plectognath)} = /plekTognae/ \quad P^2 M^3 M^3$$

$$\text{i.e. } [plekt(\overset{3}{\delta})gn(\overset{3}{\delta})e] + [P^2 M^3 M^3] / [P^2 M^3/W^1 M^3/W^1]$$

$$39- /P^2 M^3 W^1/ + /pendiulrm/ \text{ (pendulum)} = /pendiulrm/ \quad P^2 M^3 W^1$$

$$\text{i.e. } [pendi(\overset{u}{\delta})ldm] + [P^2 M^3 W^1] / [P^2 M^3/W^1 W^1]$$

$$40- /P^2 M^3 W^2/ + /piN$Peni/ \text{ (pinchpenny)} = /piN$Peni/ \quad P^2 M^3 W^2$$

$$\text{i.e. } [pint$P(\overset{\xi}{\delta})n(\overset{i}{i}.)] + [P^2 M^3 W^2] / [P^2 M^3/W^1 W^2/M^1]$$

$$41- /P^2 W^1 M^1/ + /plazmrlAiz/ \text{ (plasmolyse)} = /plazmrlAiz/ \quad P^2 W^1 M^1$$

$$42- /P^2 W^1 M^2/ + /glipTrdont/ \text{ (glyptodont)} = /glipTrdont/ \quad P^2 W^1 M^2$$

$$43- /P^2 W^1 M^3/ + /pentrgon/ \text{ (pentagon)} = /pentrgon/ \quad P^2 W^1 M^3$$

$$\text{i.e. } [pent\delta g(\overset{3}{\delta})n] + [P^2 W^1 M^3] / [P^2 W^1 M^3/W^1]$$

$$44- /P^2 W^1 W^1/ + /gosPrlrz/ \text{ (gospellers)} = /gosPrlrz/ \quad P^2 W^1 W^1$$

$$45- /P^2 W^1 W^2/ + /kantrbri/ \text{ (Canterbury)} = /kantrbri/ \quad P^2 W^1 W^2$$

$$\text{i.e. } [kænt\delta b\omega(\overset{i}{i}.)] + [P^2 W^1 W^2] / [P^2 W^1 W^2/M^1]$$

$$46- /P^2 W^2 M^1/ + /flrkTiueit/ \text{ (fluctuate)} = /flrkTiueit/ \quad P^2 W^2 M^1$$

47- /P² W² M²/ + /alkrhesT/ (alcahest) = /alkrhesT/ ^{P² W² M¹}

48- /P² W² M³/ + /tŠanfirrin/ (chamferring) = /tŠanfirrin/ ^{P² W² M³}

i.e. [tšamfɔw(i)ɳ] + [P² W² M³] / [P² W² M³/W¹]

49- /P² W² W¹/ + /sFijt̄rrrl/ (sphincteral) = /sFijt̄rrrl/ ^{P² W² W¹}

50- /P² W² W²/ + /katŠir/ (catchier) = /katŠir/ ^{P² W² W²}

i.e. [kətšij(ɔ:)] + [P² W² W²] / [P² W² W²/M¹]

51- /P³ M¹ M¹/ + /dŠenOusAid/ (genocide) = /dŠenOusAid/ ^{P³ M¹ M¹}

52- /P³ M¹ M²/ + /redOulrnt/ (redolent) = /redOulrnt/ ^{P³ M¹ M²}

53- /P³ M¹ M³/ + /monOuhrl/ (monohull) = /monOuhrl/ ^{P³ M¹ W¹}

i.e. [mɔnowh(ʌ)ɹ] + [P³ M¹ M³] / [P³ M¹ M³/W¹]

54- /P³ M¹ W¹/ + /haNbrgrz/ (hamburgers) = /haNbrgrz/ ^{P³ M¹ W¹}

55- /P³ M¹ W²/ + /kuitKleimr/ (quitclaim) = /kuitKleimr/ ^{P³ M¹ W²}

i.e. [kwitklejm(ɔ:)] + [P³ M¹ W²] / [P³ M¹ W²/M¹]

56- /P³ M² M¹/ + /ilrsTreit/ (illustrate) = /ilrsTreit/ ^{P³ M² M¹}

57- /P³ M² M²/ + /nolidŠrbl/ (knowledgeable) = /nolidŠrbl/ ^{P³ M² M²}

58- /P³ M² M³/ + /onisTnis/ (honestness) = /onisTnis/ ^{P³ M² M³}

i.e. [ɔnistn(i)s] + [P³ M² M³] / [P³ M² M³/W¹]

59- /P³ M² W¹/ + /banisTrz/ (banisters) = /banisTrz/ ^{P³ M² W¹}

60- /P³ M² W²/ + /imidŠri/ (imagery) = /imidŠri/ ^{P³ M² W²}

i.e. [imidʒɹ(i)] + [P³ M² W²] / [P³ M² W²/M¹]

61- /P³ M³ M¹/ + /peninAit/ (penninite) = /peninAit/ ^{P³M³M¹}

i.e. [pen(ⁱ_ə)nəjt] + [P³ M³ M¹] / [P³ M³/W¹ M¹]

62- /P³ M³ M²/ + /homilist/ (homilist) = /homilist/ ^{P³M³M²}

i.e. [həm(ⁱ_ə)list] + [P³ M³ M²] / [P³ M³/W¹ M²]

63- /P³ M³ M³/ + /bitiumin/ (bitumin) = /bitiumin/ ^{P³M³M³}

i.e. [bitj(^u_ə)m(ⁱ_ə)n] + [P³ M³ M³] / [P³ M³/W¹ M³/W¹]

64- /P³ M³ W¹/ + /platinrs/ (platinous) = /platinrs/ ^{P³M³W¹}

i.e. [plæt(ⁱ_ə)nðs] + [P³ M³ W¹] / [P³ M³/W¹ W¹]

65- /P³ M³ W²/ + /platinr/ (platina) = /platinr/ ^{P³M³W²}

i.e. [plæt(ⁱ_ə)n(^ə_{3:})] + [P³ M³ W²] / [P³ M³/W¹ W²/M¹]

66- /P³ W¹ M¹/ + /rezrlIut/ (resolute) = /rezrlIut/ ^{P³W¹M¹}

67- /P³ W¹ M²/ + /hazrdabl/ (hazardable) = /hazrdabl/ ^{P³W¹M²}

68- /P³ W¹ M³/ + /bekrniŋ/ (beckoning) = /bekrniŋ/ ^{P³W¹M³}

i.e. [bɛkən(ⁱ_ə)ŋ] + [P³ W¹ M³] / [P³ W¹ M³/W¹]

69- /P³ W¹ W¹/ + /hazdrɜs/ (hazardous) = /hazdrɜs/ ^{P³W¹W¹}

70- /P³ W¹ W²/ + /hɪlrki/ (hillocky) = /hɪlrki/ ^{P³W¹W²}

i.e. [hɪlɔk(ⁱ_{i:})] + [P³ W¹ W²] / [P³ W¹ W²/M¹]

71- /P³ W² M¹/ + /rɔrɜer/ (otherwhere) = /rɔrɜer/ ^{P³W²M¹}

72- /P³ W² M²/ + /hɒbɪst/ (hobbyist) = /hɒbɪst/ ^{P³W²M²}

73- /P³ W² M³/ + /gradiuit/ (graduate (n.)) = /gradiuit/^{P³W² M³}

i.e. [gʷædjuw(ⁱ/₃)t] + [P³ W² M³] / [P³ W² M³/W¹]

74- /P³ W² W¹/ + /vakiurs/ (vacuous) = /vakiurs/^{P³W²W¹}

75- /P³ W² W²/ + /kopir/ (copier) = /kopir/^{P³W²W²}

i.e. [kɔpij(^ɔ/₃:)] + [P³ W² W²] / [P³ W² W²/M¹]

76- /M¹ M¹ P¹/ + /dɪmarkeiʃn/ (demarcation) = /dɪmarkeiʃn/^{M¹ M¹ P¹}

77- /M¹ M² P¹/ + /hɪrɪntɪu/ (hereunto) = /hɪrɪntɪu/^{M¹M² P¹}

78- /M¹ M³ P¹/ + /arbitreiʃn/ (arbitration) = /arbitreiʃn/^{M¹ M³ P¹}

i.e. [ɑ:b(ⁱ/₃)tʃeɪʃɪn] + [M¹ M³ P¹] / [M¹ M³/W¹ P¹]

79- /M¹ W¹ P¹/ + /bɑɪdɪr/ (bayadere) = /bɑɪdɪr/^{M¹W¹P¹}

80- /M¹ W² P¹/ + /sɪʊprɦɪt/ (superheat) = /sɪʊprɦɪt/^{M¹W²P¹}

81- /M¹ M¹ P²/ + /dɪpɑrtmɛntl/ (departmental) = /dɪpɑrtmɛntl/^{M¹ M¹ P²}

82- /M¹ M² P²/ + /dɪrɪstrɪkt/ (derestrict) = /dɪrɪstrɪkt/^{M¹ M² P²}

83- /M¹ M³ P²/ + /ɑrtɪfɪʃl/ (artificial) = /ɑrtɪfɪʃl/^{M¹ M³ P²}

i.e. [ɑ:t(ⁱ)fɪʃɪl] + [M¹ M³ P²] / [M¹ M³/W¹ P²]

84- /M¹ W¹ P²/ + /fɪrmɛntl/ (firmamental) = /fɪrmɛntl/^{M¹W¹P²}

85- /M¹ W² P²/ + /ɑrbɪrɛsnt/ (arborescent) = /ɑrbɪrɛsnt/^{M¹W²P²}

86- /M¹ M¹ P³/ + /rɪtrɑnsmɪt/ (retransmit) = /rɪtrɑnsmɪt/^{M¹ M¹ P³}

87- /M¹ M² P³/ + /kɪɪɔntel/ (clientele) = /kɪɪɔntel/^{M¹M² P³}

88- /M¹ M³ P³/ + /rIisrbmit/ (resubmit) = /rIisrbmit/

i.e. [wɪ:s(̂)bmit] + [M¹ M³ P³] / [M¹ M³/W¹ P³]

89- /M¹ W¹ P³/ + /rIiprzes/ (repossess) = /rIiprzes/

90- /M¹ W² P³/ + /srrviet/ (serviette) = /srrviet/

91- /M¹ P¹ M¹/ + /AidirlAiz/ (idealize) = /AidirlAiz/

92- /M¹ P¹ M²/ + /meinteinrbl/ (maintainable) = /meinteinrbl/

93- /M¹ P¹ M³/ + /meinteiniŋ/ (maintaining) = /meinteiniŋ/

i.e. [mejntejn(̂)ŋ] + [M¹ P¹ M³] / [M¹ P¹ M³/W¹]

94- /M¹ P¹ W¹/ + /hAieitrs/ (hiatus) = /hAieitrs/

95- /M¹ P¹ W²/ + /sKrIuteitr/ (scrutator) = /sKrIuteitr/

i.e. [skɹu:tejt(̂)] + [M¹ P¹ W²] / [M¹ P¹ W²/M¹]

96- /M¹ P² M¹/ + /hAidroksAid/ (hydroxide) = /hAidroksAid/

97- /M¹ P² M²/ + /dSAigantizm/ (gigantism) = /dSAigantiym/

98- /M¹ P² M³/ + /dSAigantik/ (gigantic) = /dSAigantik/

i.e. [dʒæjgænt(̂)k] + [M¹ P² M³] / [M¹ P² M³/W¹]

99- /M¹ P² W¹/ + /dIikripTrz/ (decrypters) = /dIikripTrz/

100- /M¹ P² W²/ + /grOutesKli/ (grotesquely) = /grOutesKli/

i.e. [gɹowtɛskl(̂)] + [M¹ P² W²] / [M¹ P² W²/M¹]

101- /M¹ P³ M¹/ + /maršmalOu/ (marshmallow) = /maršmalOu/

102- /M¹ P³ M²/ + /harmonikS/ (harmonics) = /harmonikS/

103- /M¹ P³ M³/ + /harmonik/ (harmonic) = /harmonik/
^{M¹ P³ M³}

i.e. [hɑ:mən(ⁱ_δ)k] + [M¹P³M³] / [M¹ P³ M³/W¹]

104- /M¹ P³ W¹/ + /dʃɪrmanrs/ (germanous) = /dʃɪrmanrs/
^{M¹ P³ W¹}

105- /M¹ P³ W²/ + /hAuevr/ (however) = /hAuevr/
^{M¹ P³ W²}

i.e. [hɑwev(^δ_{3:})] + [M¹ P³ W²] / [M¹ P³ W²/M¹]

106- /M² M¹ P¹/ + /indorsii/ (endorsee) = /indorsii/
^{M² M¹ P¹}

107- /M² M² P¹/ + /egʃrlteisn/ (exultation) = /egʃrlteisn/
^{M² M² P¹}

108- /M² M³ P¹/ + /iNplikeisn/ (implication) = /iNplikeisn/
^{M² M³ P¹}

i.e. [impl(ⁱ_δ)kejʃðn] + [M² M³ P¹] / [M² M³/W¹ P¹]

109- /M² W¹ P¹/ + /halbrdir/ (halberdier) = /halbrdir/
^{M² W¹ P¹}

110- /M² W² P¹/ + /flrkTiueisn/ (fluctuation) = /flrkTiueisn/
^{M² W² P¹}

111- /M² M¹ P²/ + /koNpartmentl/ (compartmental) = /koNpartmentl/
^{M² M¹ P²}

112- /M² M² P²/ + /lodʃistisn/ (logistician) = /lodʃistisn/
^{M² M² P²}

113- /M² M³ P²/ + /insidentl/ (incidental) = /insidentl/
^{M² M³ P²}

i.e. [ins(ⁱ_δ)dentðz] + [M² M³ P²] / [M² M³/W¹ P²]

114- /M² W¹ P²/ + /noNkrmitl/ (noncommittal) = /noNkrmitl/
^{M² W¹ P²}

115- /M² W² P²/ + /koNprihend/ (comprehend) = /koNprihend/
^{M² W² P²}

116- /M² M¹ P³/ + /landorlet/ (landaulette) = /landorlet/
^{M² M¹ P³}

117- /M² M² P³/ + /iNkandes/ (incandescence) = /iNkandes/
^{M² M² P³}

118- /M² M³ P³/ + /srbSrkr̥s/ (subsuccuss) = /srbSrkr̥s/ ^{M² M³ P³}

i.e. [s^Λabs(^Λ)k^Λs] + [M² M³ P³] / [M² M³ / W¹ P³]

119- /M² W¹ P³/ + /obSrles/ (obsolesce) = /obSrles/ ^{M² W¹ P³}

120- /M² W² P³/ + /kolrret/ (collarete) = /kolrret/ ^{M² W² P³}

121- /M² P¹ M¹/ + /iNfir̥nOu/ (inferno) = /iNfir̥nOu/ ^{M² P¹ M¹}

122- /M² P¹ M²/ + /iNpartrbl/ (impartable) = /iNpartrbl/ ^{M² P¹ M²}

123- /M² P¹ M³/ + /grandiisip/ (grandeeship) = /grandiisip/ ^{M² P¹ M³}

i.e. [g^vændi:s(ⁱ)p] + [M² P¹ M³] / [M² P¹ M³ / W¹]

124- /M² P¹ W¹/ + /s^vaNpIurz/ (shampooers) = /s^vaNpIurz/ ^{M² P¹ W¹}

125- /M² P¹ W²/ + /iNpAur/ (impower) = /iNpAur/ ^{M² P¹ W²}

i.e. [impaw(^δ)₃:] + [M² P¹ W²] / [M² P¹ W² / M¹]

126- /M² P² M¹/ + /iNpostiIum/ (impostume) = /iNpostiIum/ ^{M² P² M¹}

127- /M² P² M²/ + /iNpalprbl/ (impalpable) = /iNpalprbl/ ^{M² P² M²}

128- /M² P² M³/ + /asPestos/ (asbestos) = /asPestos/ ^{M² P² M³}

i.e. [æspɛst(³)s] + [M² P² M³] / [M² P² M³ / W¹]

129- /M² P² W¹/ + /iNkrNbrd/ (incumbered) = /iNkrNbrd/ ^{M² P² W¹}

130- /M² P² W²/ + /abSKondr/ (absconder) = /abSKondr/ ^{M² P² W²}

i.e. [æbskɔnd(^δ)₃:] + [M² P² W²] / [M² P² W² / M¹]

131- /M² P³ M¹/ + /antenii/ (antennae) = /antenii/ ^{M² P³ M¹}

132- /M² P³ M²/ + /pontifi^vsl/ (pontifical) = /pontifi^vsl/ ^{M² P³ M²}

133- /M² P³ M³/ + /brɔNkitik/ (bronchitic) = /brɔNkitik/ ^{M² P³ M³}

i.e. [bɔNkit(ᵀ)k] + [M² P³ M³] / [M² P³ M³/W¹]

134- /M² P³ W¹/ + /iNpresrz/ (impressers) = /iNpresrz/ ^{M² P³ W¹}

135- /M² P³ W²/ + /misKopi/ (miscopy) = /misKopi/ ^{M² P³ W²}

i.e. [miskɔp(ᵀ)] + [M² P³ W²] / [M² P³ W²/M¹]

136- /M³ M¹ P¹/ + /repartii/ (repartee) = /repartii/ ^{M³ M¹ P¹}

i.e. [ɹ(ᵀ)pa:ti:] + [M³ M¹ P¹] / [M³/W¹ M¹ P¹]

137- /M³ M² P¹/ + /okrlteišn/ (occultation) = /okrlteišn/ ^{M³ M² P¹}

i.e. [(ᵀ)kɔltejšɔn] + [M³ M² P¹] / [M³/W¹ M² P¹]

138- /M³ M³ P¹/ + /defileid/ (defilade) = /defileid/ ^{M³ M³ P¹}

i.e. [d(ᵀ)f(ᵀ)lejd] + [M³ M³ P¹] / [M³/W¹ M³/W¹ P¹]

139- /M³ W¹ P¹/ + /sabrtrr/ (saboteur) = /sabrtrr/ ^{M³ W¹ P¹}

i.e. [s(ᵀ)bɔtɜ:] + [M³ W¹ P¹] / [M³/W¹ W¹ P¹]

140- /M³ W² P¹/ + /dekrreišn/ (decoration) = /dekrreišn/ ^{M³ W² P¹}

i.e. [d(ᵀ)kɔrejšɔn] + [M³ W² P¹] / [M³/W¹ W² P¹]

141- /M³ M¹ P²/ + /akorlesnt/ (acaulescent) = /akorlesnt/ ^{M³ M¹ P²}

i.e. [(ᵀ)ko:lɛsɔnt] + [M³ M¹ P²] / [M³/W¹ M¹ P²]

142- /M³ M² P²/ + /inigSakt/ (inexact) = /inigSakt/ ^{M³ M² P²}

i.e. [(ᵀ)nigzækt] + [M³ M² P²] / [M³/W¹ M² P²]

- 143- $/M^3 M^3 P^2/ + /obilisKl/$ (obeliscal) = $/obilisKl/$
 i.e. $[(\overset{3}{\delta})b(\overset{1}{\delta})lisk\delta\ddot{z}] + [M^3 M^3 P^2] / [M^3/W^1 M^3/W^1 P^2]$
- 144- $/M^3 W^1 P^2/ + /sakrrmentl/$ (sacramental) = $/sakrrmentl/$
 i.e. $[s(\overset{e}{\delta})k\ddot{w}dment\delta\ddot{z}] + [M^3 W^1 P^2] / [M^3/W^1 W^1 P^2]$
- 145- $/M^3 W^2 P^2/ + /reprihend/$ (reprehend) = $/reprihend/$
 i.e. $[w(\overset{e}{\delta})p\ddot{w}ihend] + [M^3 W^2 P^2] / [M^3/W^1 W^2 P^2]$
- 146- $/M^3 M^1 P^3/ + /silIuet/$ (silhouette) = $/silIuet/$
 i.e. $[s(\overset{1}{\delta})lu:\varepsilon t] + [M^3 M^1 P^3] / [M^3/W^1 M^1 P^3]$
- 147- $/M^3 M^2 P^3/ + /disiNkaš/$ (disencash) = $/disiNkaš/$
 i.e. $[d(\overset{1}{\delta})siŋkaš] + [M^3 M^2 P^3] / [M^3/W^1 M^2 P^3]$
- 148- $/M^3 M^3 P^3/ + /midinet/$ (midinette) = $/midinet/$
 i.e. $[m(\overset{1}{\delta})d(\overset{1}{\delta})net] + [M^3 M^3 P^3] / [M^3/W^1 M^3/W^1 P^3]$
- 149- $/M^3 W^1 P^3/ + /nrnŕrles/$ (nonetheless) = $/nrnŕrles/$
 i.e. $[n(\overset{1}{\delta})ŕ\delta l\epsilon s] + [M^3 W^1 P^3] / [M^3/W^1 W^1 P^3]$
- 150- $/M^3 W^2 P^3/ + /solrret/$ (solleret) = $/solrret/$
 i.e. $[s(\overset{2}{\delta})l\delta w\epsilon t] + [M^3 W^2 P^3] / [M^3/W^1 W^2 P^3]$
- 151- $/M^3 P^3 M^1/ + /libretOu/$ (libretto) = $/libretOu/$
 i.e. $[l(\overset{1}{\delta})b\ddot{w}\epsilon tow] + [M^3 P^3 M^1] / [M^3/W^1 P^3 M^1]$
- 152- $/M^3 P^3 M^2/ + /beletrist/$ (belletrist) = $/beletrist/$
 i.e. $[b(\overset{e}{\delta})l\epsilon twist] + [M^3 P^3 M^2] / [M^3/W^1 P^3 M^2]$

- 153- /M³ P³ M³/ + /inhibit/ (inhibit = /inhibit/^{M³ P³ M³})
 i.e. [d⁽ⁱ⁾nhib(dⁱ)t] + [M³ P³ M³] / [M³/W¹ P³ M³/W¹]
- 154- /M³ P³ W¹/ + /kolatrrl/ (collateral) = /kolatrrl/^{M³ P³ W¹}
 i.e. [k(d²)læ tδ w d z] + [M³ P³ W¹] / [M³/W¹ P³ W¹]
- 155- /M³ P³ W²/ + /inamr/ (enamour) = /inamr/^{M³ P³ W²}
 i.e. [d⁽ⁱ⁾næ m d] + [M³ P³ W²] / [M³/W¹ P³ W²/M¹]
- 156- /M³ P¹ M¹/ + /dikeinAi/ (decani) = /dikeinAi/^{M³ P¹ M¹}
 i.e. [d(dⁱ)kej n a j] + [M³ P¹ M¹] / [M³/W¹ P¹ M¹]
- 157- /M³ P¹ M²/ + /dibeitrbl/ (debatable) = /dibeitrbl/^{M³ P¹ M²}
 i.e. [d(dⁱ)bej t δ b d z] + [M³ P¹ M²] / [M³/W¹ P¹ M²]
- 158- /M³ P¹ M³/ + /sabeioe/ (Sabaoth) = /sabeioe/^{M³ P¹ M³}
 i.e. [s(d²)bej(d²)e] + [M³ P¹ M³] / [M³/W¹ P¹ M³/W¹]
- 159- /M³ P¹ W¹/ + /bitreirl/ (betrayal) = /bitreirl/^{M³ P¹ W¹}
 i.e. [b(dⁱ)twej d z] + [M³ P¹ W¹] / [M³/W¹ P¹ W¹]
- 160- /M³ P¹ W²/ + /dikeinli/ (decanally) = /dikeinli/^{M³ P¹ W²}
 i.e. [d(dⁱ)kej n d l(i_i)] + [M³ P¹ W²] / [M³/W¹ P¹ W²/M¹]
- 161- /M³ P² M¹/ + /salpinzIiz/ (salpinges) = /salpinzIiz/^{M³ P² M¹}
 i.e. [s(d²)z p i n d z i : z] + [M³ P² M¹] / [M³/W¹ P² M¹]
- 162- /M³ P² M²/ + /rizeNblrns/ (resemblance) = /rizeNblrns/^{M³ P² M²}
 i.e. [w(dⁱ)z e m b d l d n s] + [M³ P² M²] / [M³/W¹ P² M²]

$$163- /M^3 P^2 M^3/ + /ilekTrik/ (electric) = /ilekTrik/$$

$$i.e. [(\overset{1}{\delta})l\acute{e}k\tau(\overset{1}{\delta})k] + [M^3 P^2 M^3] / [M^3/W^1 P^2 M^3/W^1]$$

$$164- /M^3 P^2 W^1/ + /dibeN\check{S}rd/ (debentured) = /dibeN\check{S}rd/$$

$$i.e. [d(\overset{1}{\delta})bent\check{S}rd] + [M^3 P^2 W^1] / [M^3/W^1 P^2 W^1]$$

$$165- /M^3 P^2 W^2/ + /dibeN\check{S}r/ (debenture) = /dibeN\check{S}r/$$

$$i.e. [d(\overset{1}{\delta})bent\check{S}(\overset{2}{3}:)] + [M^3 P^2 W^2] / [M^3/W^1 P^2 W^2/M^1]$$

$$166- /W^1 M^1 P^1/ + /rpointIi/ (appointee) = /rpointIi/$$

$$167- /W^1 M^2 P^1/ + /rbandnIi/ (abandonee) = /rbandnIi/$$

$$168- /W^1 M^3 P^1/ + /rlotIi/ (allottee) = /rlotIi/$$

$$i.e. [d(\overset{3}{\delta})ti:] + [W^1 M^3 P^1] / [W^1 M^3/W^1 P^1]$$

$$169- /W^1 P^1 M^1/ + /srguarrOu/ (saguaro) = /srguarrOu/$$

$$170- /W^1 P^1 M^2/ + /srbIirnz/ (Sabaeans) = /srbIirnz/$$

$$171- /W^1 P^1 M^3/ + /rforsed/ (aforesaid) = /rforsed/$$

$$i.e. [dfo:s(\overset{3}{\delta})d] + [W^1 P^1 M^3] / [W^1 P^1 M^3/W^1]$$

$$172- /W^1 P^1 W^1/ + /sргеi\check{S}rs/ (sagacious) = /sргеi\check{S}rs/$$

$$173- /W^1 P^1 W^2/ + /srlAinr/ (salina) = /srlAinr/$$

$$i.e. [sdlaajn(\overset{2}{3}:)] + [W^1 P^1 W^2] / [W^1 P^1 W^2/M^1]$$

$$174- /W^1 M^2 P^2/ + /frrrzmrt\check{S}/ (foreasmuch) = /frrrzmrt\check{S}/$$

$$175- /W^1 P^2 M^1/ + /prsentAil/ (percentile) = /prsentAil/$$

$$176- /W^1 P^2 M^2/ + /brlistikS/ (ballistics) = /brlistikS/$$

177- /W¹ P² M³/ + /srdistik/ (sadistic) = /srdistik/ ^{W¹P²M³}

i.e. [sðdist(ⁱ/_ð)k] + [W¹ P² M³] / [W¹ P² M³/W¹]

178- /W¹ P² W¹/ + /krdastrz/ (cadasters) = /krdastrz/ ^{W¹P²W¹}

179- /W¹ P² W²/ + /krkekSi/ (cachexy) = /krkekSi/ ^{W¹P²W²}

i.e. [kðkεks(ⁱ/_{i:})] + [W¹ P² W²] / [W¹ P² W²/M¹]

180- /W¹ M¹ P³/ + /drmuarzel/ (demoiselle) = /drmuarzel/ ^{W¹M¹P³}

181- /W¹ P³ M¹/ + /rtasei/ (attache) = /rtasei/ ^{W¹P³M¹}

182- /W¹ P³ M²/ + /srbatikl/ (sabbatical) = /srbatikl/ ^{W¹P³M²}

183- /W¹ P³ M³/ + /brzilik/ (basilic) = /brzilik/ ^{W¹P³M³}

i.e. [bðzil(ⁱ/_ð)k] + [W¹ P³ M³] / [W¹ P³ M³/W¹]

184- /W¹ P³ W¹/ + /rfilrs/ (aphyllous) = /rfilrs/ ^{W¹P³W¹}

185- /W¹ P³ W²/ + /rnrʃr/ (another) = /rnrʃr/ ^{W¹P³W²}

i.e. [ðnʌʃ(^ð/_{z:})] + [W¹ P³ W²] / [W¹ P³ W²/M¹]

186- /W² M³ P¹/ + /iriteiʃn/ (irritation) = /iriteiʃn/ ^{W²M³P¹}

i.e. [iʷ(ⁱ/_ð)tejʃðn] + [W² M³ P¹] / [W² M³/W¹ P¹]

187- /W² W¹ P¹/ + /ʃirrlIi/ (shiralee) = /ʃirrlIi/ ^{W²W¹P¹}

188- /W² P¹ M¹/ + /eiorbOu/ (theorbo) = /eiorbOu/ ^{W²P¹M¹}

189- /W² P¹ M²/ + /bihAindhand/ (behindhand) = /bihAindhand/ ^{W²P¹M²}

190- /W² P¹ M³/ + /bihOuldinʒ/ (beholding) = /bihOuldinʒ/ ^{W²P¹M³}

i.e. [bihowld(ⁱ/_ð)ʒ] + [W² P¹ M³] / [W² P¹ M³/W¹]

191- /W² P¹ W¹/ + /tiarrrd/ (tiaraed) = /tiarrrd/

192- /W² P¹ W²/ + /biheivir/ (behaviour) = /biheivir/

i.e. [biheivj(^δ₃)] + [W² P¹ W²] / [W² P¹ W²/M¹]

193- /W² M³ P²/ + /irilid^{sn}/ (irreligion) = /irilid^{sn}/

i.e. [i⁽¹⁾irilid^{sn}] + [W² M³ P²] / [W² M³/W¹ P²]

194- /W² W¹ P²/ + /pluriprezns/ (pluripresence) = /pluriprezns/

195- /W² P² M¹/ + /prihensail/ (prehensile) = /prihensail/

196- /W² P² M²/ + /riak^{sn}izm/ (reactionism) = /riak^{sn}izm/

197- /W² P² M³/ + /riaktiv/ (reactive) = /riaktiv/

i.e. [wiaekt(¹_δ)v] + [W² P² M³] / [W² P² M³/W¹]

198- /W² P² W¹/ + /riakt^{rz}/ (reactors) = /riakt^{rz}/

199- /W² P² W²/ + /rris^{tr}/ (arista) = /rris^{tr}/

i.e. [δ ist(^δ₃)] + [W² P² W²] / [W² P² W²/M¹]

200- /W² W¹ P³/ + /stiurdes/ (stewardess) = /stiurdes/

201- /W² W² P³/ + /piruet/ (pirouette) = /piruet/

202- /W² P³ M¹/ + /pianou/ (piano) = /pianou/

203- /W² P³ M²/ + /eiatrik^l/ (theatrical) = /eiatrik^l/

204- /W² P³ M³/ + /bihedid/ (beheaded) = /bihedid/

i.e. [bihed(¹_δ)d] + [W² P³ M³] / [W² P³ M³/W¹]

$$205- /W^2 P^3 W^1/ + /nielrs/ \text{ (niellos)} = /nielrs/$$

$$206- /W^2 P^3 W^2/ + /bihedr/ \text{ (beheader)} = /bihedr/$$

$$\text{i.e. } [bihedr(\frac{\partial}{\partial})] + [W^2 P^3 W^2] / [W^2 P^3 W^2/M^1]$$

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