

THE
COMPARATIVE PHONOLOGY
OF
NGUNI

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CERTIFICATE

I hereby certify that the thesis entitled
The Comparative Phonology of Nguni is my own work
and the work forming the basis of the thesis has
not been incorporated in a thesis submitted for a
Master's or Doctor's Degree in another university.

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PREFACE

It is the task of the phonologist to identify every speech-sound feature that counts "linguistically" and to place it into one or more of the numerous and varied sets of relations that exist within a phonologic system. Of the relatively small number of complete descriptions of phonologic systems that are available to linguists, most have passed through the stage of a piecing together of partial analyses that cover various parts of the overall structure (i.e. "subsystems" such as those of segmental phonemes, pitch phonemes or intonations). The latter are usually contributions made at different times by different analysts. If comprehensiveness is aimed at in a comparative description of four closely-related phonologic systems in a field where partial analyses contributed by other analysts are almost non-existent, it will be realized that the task is one of some magnitude. It is perhaps inevitable, therefore, that the analysis we present here should fall short of the ultimate objective. Its greatest short-coming is undoubtedly that of a partial and strictly tentative analysis of the intonation system. Because a phonologic system is an integrated whole, a deficiency such as this means that adjacent areas in the overall phonologic structure cannot be brought clearly into focus. In such adjacent areas are the junctures - particularly what we have termed "pre-pause bar juncture". As a further consequence of an incomplete analysis of intonation, the ability to isolate "expressive" features from those that are "linguistically" organized is sometimes impaired.

When the devious paths by which we have come to our present view of the phonologic structure of English are remembered, it seems quite possible that our present analysis will eventually contribute not much more than a frame of reference. Further investigations and contributions from other analysts are still necessary and the next important step towards a comprehensive, generally-accepted description of Nguni phonology is a full analysis of the intonation system. Apart from this, more extensive data and wider linguistic horizons than our own, will probably necessitate a partial or complete revision in connection with some of the difficult problems of analysis that are encountered in a phonologic analysis of an Nguni language.

ACKNOWLEDGEMENTS

Space does not permit the naming of all informants who, over the past five years, have supplied the data contained in this thesis, but their help is gratefully acknowledged. Acknowledgement by name must be made to Messrs. C.L.S. Nyembezi, M.A., and R.M.Sobukwe, B.A.Hons., however, because their insight into matters linguistic, quite apart from their command of their mother tongue, has saved many hours of searching for appropriate examples, and pointed to avenues of investigation that may well have been overlooked. Acknowledgement must also be made to Mr J.M.A.Sikakana who has assisted in various ways.

Isolated as we are in this country from the main stream of thought and progress in structural linguistic theory and practice, I have placed considerable reliance upon and benefited greatly as a result of discussions with Professor D.T.Cole and Mrs P-D Cole-Beuchat, B.A.Hons. I am also grateful for having had Dr William A.Smalley and Mr A.T.Cope, M.A., as correspondents. None of the afore-named is, of course, responsible for errors of omission and commission that will be found in this thesis.

My thanks are also due to the National Council of Social Research, Pretoria, who assisted me through the medium of an ad hoc grant to carry out the necessary research.

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May 1960.

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CHAPTER 1

INTRODUCTION

1. Nguni

1.1.1. Classification and geographical location. Nguni languages and dialects constitute a subgroup in the Central Branch of the Niger-Congo Family (the Bantu languages). Included in this subgroup are those Bantu languages most heavily influenced by Khoisan and they are of interest to linguists mainly because of an extensive development of clicks and their abnormally large consonant systems. The bulk of some $4\frac{1}{2}$ million speakers of these languages and dialects is located in the eastern regions of the Union of South Africa extending from the eastern part of the Cape Province (from approximately 25° E) through Natal and Zululand (encroaching to a limited extent on the Orange Free State and Transvaal) and into the Swaziland Protectorate. Geographically isolated from this continuous block of Nguni speakers are relatively small groups of "Transvaal Ndebele" speakers and the considerably more numerous and linguistically influential amaNdebele ("Matabele") of the Bulawayo, Nyamandlovu, Shangani and Sebungwe districts of Southern Rhodesia speaking "Sindebele". The areas referred to comprise the long established habitat of Nguni speakers, but many thousands are found today in the large cities of South Africa outside of these areas.

Three main "languages" are popularly recognized in Nguni (although on strict linguistic criteria classification at a level higher than that of dialect is probably unjustified), viz. Xhosa in the south covering the area up to the southern boundary of Natal, Zulu of Natal and Zululand and adjacent areas of the Orange Free State and Transvaal, Swazi of Swaziland. According to a number of easily

identified linguistic criteria, Nguni dialects are immediately divisible into two groups, viz. those of Zulu-Xhosa type and those of Swazi type, this cleavage undoubtedly reflecting a separation that occurred at a very early date among the originally homogeneous Nguni migrants. Rhodesian Ndebele still bears a very close relationship to Zulu, although presenting some notable linguistic features of its own. In its present political and linguistic isolation it is destined to deviate more and more from the Zulu spoken in the Union of South Africa. Some forms of Transvaal Ndebele are of Zulu-Xhosa type, others have features of the Swazi type. 2 groups

1.1.2. Coverage. Our investigations have covered the majority of the commonly-recognized dialects of the southern part of the Xhosa area, and Gcaleka of the Transkei (a widely-spoken dialect of the central portion of the area). The Xhosa dialects of the north, notably Mpondo, which is reported as deviant in certain aspects of its phonology, are excluded. Only Zulu as spoken in Natal (except the extreme south which abuts upon the Xhosa area) and southern Zululand is included, and our study of Swazi is confined largely to the speech of the inhabitants of the central area around the capital Mbabane. Bhaca, a Swazi-type form of Nguni, was examined in the Umzimkulu district. Our investigations of Ndebele were confined to the Bulawayo and Nyamandlovu districts, but included a number of the idiolects strongly influenced by Shona referred to below. No study of Transvaal Ndebele has been made.

In the description which follows we have sought to maintain coherence in describing whole systems, rather than present the full range of variation in Nguni with regard to individual items of the phonologic structure. For this reason, four forms of Nguni which are adequately representative, both geographically and typologically, have been chosen for description and comparison. These are : Xhosa (Xh)

spoken in the Albany district (Nqika dialect), Zulu (Z) as spoken in the area of Eshowe (the ukukhuluma type), Swazi (Sw) as spoken near Mbabane, Ndebele (Nd) as spoken in the vicinity of the Hope Fountain Mission near Bulawayo. For ease of reference these are referred to below as "languages", although this status is linguistically unwarranted at least in the case of Ndebele. Our main description is of the common core pertaining to a set of idiolects presented by a group of speakers of each language drawn from a fairly restricted area. These are referred to hereafter specifically as "our informants". (This particular reference is avoided in the case of other sources of information from outside these groups.) The common core of the Xhosa idiolects coincides quite extensively with the common core of all Xhosa dialects, and this is also true in the case of Zulu, Ndebele and Swazi. To cater adequately for the comparative aspect, description is extended to include items of particular interest presented by informants from outside these groups.

1.1.3. In the case of Ndebele it must be observed that "pure Ndebele" of largely monolingual amaNdebele is described here. Our investigations reveal numerous idiolects reflecting varying degrees of encroachment on the typical Nguni character of Ndebele by features from the quite foreign linguistic environment of Rhodesia. Among the causes of this widespread borrowing are weak tribal affinities in Rhodesia with resulting inter-marriage, and also migrant labour. For many thousands, Ndebele is a second language used considerably more frequently than the mother tongue. The following are symptomatic of strong foreign influence : (a) The representation of /g/ (see 4.3.5) by bilabial voiced spirant [β] or sonorant [v]; /t/ in the sequence /nt/ (see 4.3.2) represented by the aspirate [th]; (c) A tendency to represent /n/ with voiced aspiration; (d) Extensive differences in tonomorphology.

2. Phonology

1.2.1. Aims and methods in analysis. From the raw material of many utterances made in all four languages under different conditions of style, speaker and situation, our first aim has been to extract from the stream of speech regularly recurring sound units of a size convenient for an eventual treatment as allophones. With every evidence before us of the presence of contrastive pitch, apart from intonation-ally-organized prosody, first attempts at segmentation have been made in the horizontal as well as the vertical plane, in the expectation of finding patterns of sound contrasts which are isolable within the wider pattern of phonologic contrasts, comprising individually various phonologic subsystems. A willingness to resegment and reclassify segments has been maintained throughout and one of the last revisions of this analysis took the form of separating phonemically the nasal sonorants in multi-segments margins (see 3.2.5 ff.). Allophones were then grouped into phonemes, although in description the process is reversed and the phonemes identified before their representation in speech is described.

As the next stage of the analysis the segmental phonemes were examined as "bundles" of distinctive sound features and an effort was made to identify the strictly limited number of distinctive features upon which the patterns of phonologic contrasts depend. In practice, most distinctive features are best viewed as present in sets of contrasts comprising a simple opposition between two opposing members, one presenting and the other lacking the particular distinctive feature. In a minority of cases the opposition is between two or more distinct qualities, e.g. "front": "back" in connection with vowels. The various combinations of opposing members of contrasting sets (here termed "phonologic components"¹) constitute the phonemes and each phoneme is acous-

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"Determining sound feature" and "phonologic component" are not synonymous in our terminology. A sound feature present in every representation of a phoneme is not necessarily part of

tically different from any other with regard to at least one distinctive feature. By grouping and aligning all phonemes which share the same phonologic component and allowing such groups to intersect in various "series" and "orders", the network of contrast that underlies a phonologic system can be presented in a diagram constructed in terms of the phonologic components. (This is done for Nguni at 5.3.2 ff.)

While the actual number of contrasts between phonemes is very large, the burden of contrastive function is borne by a relatively small number of speech-sound features and further attestation can be found in this to the power of analogical extension in the workings of linguistic systems. It follows that the pattern of sound contrasts is symmetrical in some degree, and pattern and symmetry are inherent in all phonologic systems to the extent that the search for these phenomena is an accepted procedure in phonologic analysis.

While the arrangement of phonologic components in phonemes is covered by the diagrams referred to above, it remains, as the last stage of the description, to state the code governing the arrangement of phonemes in utterances, and this is done comprehensively in Chapter 12.

1.2.2. In phonemic analysis conventional methodology is followed to the best of our ability and knowledge, although the attempt to implement one particular methodologic principle (with which some controversy is still associated) leads us into the analytic impasse described at 1.2.7 below. In componential analysis we are unaware of an equally well-formulated methodology, but have followed procedures apparent in other current analyses of the same type. While the identification of almost any phonologic entity involves some

its contrastive quality. Glottalization present in all the voiceless stops in Z (series 2 in the diagram at 5.3.3) does not seem to be distinctive as far as these, or any other phonemes, are concerned (see 5.1.1). Glottalization is labelled as a "determining feature", but is not a "phonologic component". "Component" hereafter carries a specific subphonemic connotation. "Constituent" is used where it is necessary to avoid this connotation and does not necessarily connote even phonologic relevance.

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problem of analysis, only certain problems whose solutions are controversial are treated as such. Some attempt is made in such cases to indicate alternative solutions.

1.2.3. Although the quick speech of everyday conversation with its slurrings, elisions and degradation of contrastive sound features pursued to the limits set by redundancy, is included in the span of our investigation, little of our data is drawn from this type of speech. Such speech is essentially a derivative of that in which all contrasts are drawn to the full and all sound features contributing to the distinctiveness of the utterance found in their rightful places. Attempts at basing a first analysis on slurred quick speech produce nothing but chaotic complexity.

Abnormally slow deliberate speech which linguistic informants are prone to offer, can also produce distortions, however. It is our experience that when prompted responses connected with the differentiation of minimal and nearly-minimal pairs are made, normally redundant features may be included with those on which a contrast really depends, as a means of emphasizing the difference. Slow precise speech also produces its own stylistic differences and although these may not be structurally relevant in themselves, they should be recognized for what they are in any full analysis.

It requires the observation of the "same" utterance (i.e. in meaning), made under various conditions and ^{in differing} manners of speech, in order to separate sound features associated with differences in style, "expressive features",¹ etc. from those on which the operation of the grammatic system depends, and to be sure that all of the latter are present in the configuration of sound features. Although in normal speech a perfect linguistic signal may only occasionally be a reality, it is revealed in a comparative examination. It is the phonemes, components, etc. of the "perfect signal" that we seek to describe in this thesis.

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As defined by Jakobson, Fant and Halle in : Preliminaries to Speech Analysis, Massachusetts Institute of Technology, 1955, p. 15.

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1.2.4. The results of our analysis. A bird's-eye view of the four phonologic systems is presented at 1.2.5 below in the form of an outline description of the subsystems (i.e. phoneme classes) that constitute the overall phonologic pattern. In view of our expressed intention of adhering to conventional methodology, it must be stated at the outset that at two points in our analysis we are placed in a dilemma as to whether to follow our intention and produce a phonologic analysis that does not seem to fit the workings of the grammatic system, or temporarily to abandon orthodox procedures and provide an analysis which does. In each case the problem is connected with a length feature associated with peak-vocoids. Evidence at the grammatic level clearly points to different roles in the structure for different occurrences of a length feature, or even a possible absence of contrastive quality in some cases as opposed to others in which it is clearly distinctive. Our dilemma derives from an inability to separate length in different structural roles (or length ^{which is} ~~as~~ distinctive from that which is non-distinctive) except by reference to grammatic units or certain grammatic boundaries.

There is one particular encounter with significant differences in peak-vocoid duration that convinces us that, although the methodologic principle that forbids level-mixing may be applicable to the fullest extent in analysing some linguistic systems, it is not fully applicable in others. In analysing Nguni phonologic systems we are faced with the fact that over certain portions of utterances precisely definable in grammatic terms (i.e. as the form-class "ideophone"), but not in any other way, contrasts based upon a length feature best interpreted at the phonemic (and not the subphonemic) level, are organized in a totally different way from those in the remaining portions of utterances. It is on this basis, and not on grounds of theory, that the principle that forbids level-mixing is held to be only partially valid. We abandon it only at clearly indicated points in our

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analysis where it leads to a complete analytic impasse, or where the grammatic evidence refutes the only interpretation that seems possible. With this limited divergence from conventional methodology, we produce an analysis of Nguni phonologic systems whose internal organization is outlined briefly below.

1.2.5. The division of phonemes into classes is not only a matter of descriptive convenience. It is also recognition of the fact that contrastive sound units extracted from the stream of speech do not all stand in the same line of contrasts. Sound features interpreted as a juncture, for example, may contrast in their presence or absence, but not with consonants and vowels. Similarly the constituents of intonations form their own separate pattern of contrasts. Phoneme classes are distinct also on the basis of different media of contrast - pitch phonemes, for example, do not contrast with consonants. From the aspect of description, however, differences in distribution provide the most cogent reason for dividing phonemes into classes and in Chapter 12 dealing with phonemic distribution, there is a rigid separation of phonemes on this basis. The broad subdivision of phonemes given below is made according to the other criteria mentioned. Each subsystem or phoneme class comprises a discrete number of phonemes or sound units of similar status,¹ which may be viewed subphonemically as an interlocking set of sound differences which function contrastively within the particular subsystem.

No clear separation of vowels and consonants is possible in Nguni and together they constitute the largest phonologic subsystem totalling 62 phonemes in Xh, 55 in Z, 52 in Nd, 43 in Sw. In some languages consonants and vowels are separable on the basis of an absence of contrast due to complete mutual exclusiveness as to the positions they occupy in the syllable. In Nguni, however, at least a partial develop-

¹ This reflects a certain indecision regarding the treatment of intonation constituents identified later in this thesis.

ment of / contrasts between certain consonants and vowels must be accepted for the following reasons : (a) /m/ as a nasal sonorant occurs at both the peaks and margins of syllables and in the former position must contrast with vowels. (b) Glides /y/ and /w/ which pattern as consonants are phonetically very similar to the vowels /i/ and /u/ in everything except syllabicity. If no contrasts between vowels and consonants exist, then the glides can be identified phonemically with /i/ and /u/. Unless syllable boundaries are phonologically demarcated (which is not the case in Nguni) a form which would then be represented by /luiua/, if interpreted according to the phonemes recognized in this thesis, could be either /lwiwa/ or /luywa/.¹

Suprasegmental phonology includes a subsystem of pitch phonemes and three uncorrelated junctures, one of which is probably best classified as an intonation constituent. Some of the more conspicuous constituents of intonations are identified, but no attempt at a complete description of intonation has been made in this thesis.

Among a residue of sound features which are part of culturally-organized communication, but do not fit into the "regular phonologic structure" (for a definition see 1.2.12), are expressive features and those included in the "abnormal phonology" of ideophones. A description of these features together with an indication of their place in relation to "language" is contained in Chapter 11.

1.2.6. The relevance of grammatic environment in phonologic analysis in Nguni. A difference between short peak-vocoids and peak-vocoids of longer duration, which we designate as a "length occurrence" or simply "length", is found at various points within utterances. Length of the greatest prominence is that located in the penultimate syllables of utterances which are mainly factual statements - as opposed to certain types of question. The same length

¹ /lwiwa/ actually exists as a stem signifying "be fought".
/*luywa/ is hypothetical, but distributionally possible.

feature is also found utterance-medially, however, although it is usually of shorter duration. (In our analysis the difference in duration is equated with an intonation constituent found mainly at the end of utterances with the intonation meaning referred to.) It requires cognizance of words and word boundaries to recognize as identical these length occurrences that occur utterance-finally and medially,¹ and to differentiate them from another type of peak-vocoid length to be found elsewhere in utterances. The identity of the former is established by its occurrence only in word-penultimate syllables and its isolability. This is observed from the manner in which "penultimate length" (of popular parlance) is "lifted off" from the word with changes in syntactic environment, styles of speech, etc. Close observation reveals "penultimate length" as a demarcator of syntactic phrases and as having undeniable contrastive quality in this role. This is shown by the fact that a shift in the point of demarcation or its omission in the same grammatic chain, can produce a change in meaning (see, for example, the utterances contrasted at 8.2.6).

The second type of length occurrence² which is sufficiently common to be encountered frequently in the same utterance as the first type, differs in having no (grammatically) predictable point of occurrence, in being a permanent constituent of certain particular morphs, with, in the majority of cases, a predictable association with a high-falling

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It should not be inferred from this statement that grammatic criteria were employed in our analysis from the start. It is impossible for the analyst with a speaking knowledge of the language whose phonologic system he is analysing, to make no identification of the grammatic background in which the sound units he is handling stand. It is this awareness of the implications in the grammatic system, of the phonologic analysis we are forced to make, that creates the dilemma mentioned above.

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There is some simplification of the data in discussion in these paragraphs because a length feature which is isolable also represents "pre-pause juncture". The intention, however, is only to demonstrate that there are fundamentally different types of length occurrence as far as the structure is concerned and only resort to grammatic criteria can separate them in analysis.

gliding tone (interpreted as a close-knit cluster of tonemes in our analysis). A decision on the distinctiveness or non-distinctiveness of the length feature occurring under the latter circumstances can be postponed for the moment. It is only necessary here to draw attention to the differences in occurrence with, we believe, corresponding differences in structural relevance.

"Penultimate length" has a functional role at a level at which large-sized grammatic units provide the pattern of contrasts, but it never differentiates morphs. The second type of length occurrence is either to be placed among the redundant features, or has contrastive function in the same way as segmental phonemes, or, possibly, their components. There is a fundamental difference in function here normally indicated by placing the sound features concerned in different subsystems. It is only to be expected that grammatic data alone can show the particular structural relevance of the first length occurrence and differentiate it from the second. Length occurrences in the array of sound features constituting an utterance are only separable into two types if the analyst consistently takes cognizance of word-boundaries present in the grammatic structure, or extracts the morphs concerned and compares them with occurrences of the same morph in other utterances, thereby isolating the length feature which is readily isolable from that which is inherent to particular morphs. This is one aspect of the level-mixing we feel compelled to indulge in, and in analysis we separate length which is "imposed" from that which is "inherent". In interpreting, the former structurally, a feature of placement in relation to a fixed grammatic boundary must be associated with the length feature. If the analyst is denied this privilege, then all utterance-medial length occurrences must be lumped together and given one interpretation. (Many word-boundaries are unmarked phonetically or phonologically medially in utterances.) Later discussion will reveal the extent of the analyst's embarrassment when it comes to applying

this sort of analysis in description of the grammatic system.

1.2.7. Some sort of phonologic analysis of length occurrences described in the preceding paragraph may be possible without resort to grammatic criteria, but when the data is expanded to include a length feature found in ideophones, analysis becomes virtually impossible, because this sound feature follows a different pattern of contrasts which is organized structurally in a totally different way. Reliance on grammatic criteria is a matter of degree, but it is here, at a point where we reach a real analytic impasse, that we are forced to place the greatest reliance on these criteria in actually identifying a form-class.

Over portions of utterances coinciding with members of the form-class "ideophone", the function of length as a demarcator - and also as an intonation constituent - is completely suspended. (Prominent utterance-final "penultimate length" is quite missing in utterances that end in ideophones.) Instead, length differentiates members of the form-class in the same way as their constituent vowels and consonants. A "length" of the approximate duration of utterance-medial penultimate length (i.e. of about twice the duration of the normal short vocoid) contrasts with "extra-length" which is often of the duration of utterance-final penultimate length (with its intonational overlay), or may be longer.¹ Ideophones of more syllables than one also include normal short vocoids in predictable positions in relation to longer vocoids. There are ^{therefore} three, or possibly two,² members of the correlation based on length.

It is the evidence presented in utterances embodying ideophones that raises the gravest doubts regarding the full

¹ Ideophones are ~~basically onomatopoeic~~. They ^{are} more closely integrated grammatically than their nearest equivalents in English and devoid of any connotation of slang. "Ideophone" represents a definite slot in Nguni sentence frames. Many verbs in regular use are ideophonic derivatives. Expressive features are probably more frequently associated with onomatopoeia than other forms, but an overlay of such features does not alter in any way the basic contrasts which rely upon differences in duration described above.

² Abnormal contrasts in sound feature on which some ideophones depend are only partially analysed in this thesis.

validity of the principle forbidding level-mixing in phonologic analysis. Implicit in this principle is apparently an acceptance of one standard pattern of sound contrasts embodying all the subsystems, which covers all utterances from beginning to end. The evidence presented above clearly refutes this standpoint. Certain junctures, intonations, etc., may provide phonologic criteria for the internal subdivision of utterances, but small or large divisions of this kind are mere recurrences with the same internal structure. We fail to see how particular portions of utterances in which sound contrasts are organized in a completely different way from those in other portions, can be isolated except by reference to higher levels of structure. If an analysis of all utterances, including those that incorporate ideophones, is aimed at, there appears to be no alternative to the isolation of ideophones according to their grammatic identity in order to account for the differences in the organization of length contrasts, together with other abnormalities in distinctive sound feature mentioned at 1.2.12. This is the extent of our level-mixing in connection with the abnormal phonology of the ideophone.

1.2.8. Peripheral contrasts. In these paragraphs we face the problem of sound features which, in the great majority of their appearances, can easily be disposed of as redundant and yet in a small number of forms appear apart from their normally predictable environment with an apparent contrastive function. It is not the aspect of the very low functional load alone that leads us to suspect that present methodology forces us to consistently separate sound units which native speakers do not normally differentiate, but also the fact that these "peripheral contrasts" do not easily fit into (or are even in conflict with) the established network of contrast dependent upon distinctive features with high functional load. Phonologists have come to accept the fact that sound features that are normally redundant can occasionally assume contrastive function in situations unconnected

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with any particular phonetic or phonologic environment.¹ The evidence in Nguni leads us to think that we are faced with this sort of situation in regard to "peripheral contrasts". Accepting the principle of such marginal contrasts undoubtedly involves some sacrifice in strict objectivity in our analytic procedures, but an attempt is made to minimize this by stating clearly the conditions under which peripheral contrasts are accepted and by providing alternative analyses at points where it is applied. If our contention regarding peripheral contrasts is rejected, the phonologic system becomes so wasteful that the whole question of economy in the operation of linguistic systems requires reconsideration.

1.2.9. The diagrams of the segmental systems at 5.3.2 ff. present the distinctive features identified from among the permanent sound constituents of phonemes as a set of differentials providing a network of contrasts. It emerges in analysis, however, that although a particular set of distinctive features bears by far the greater part of the burden of contrast, there are certain other contrasts with a very low functional load associated mainly with low-frequency phonemes which are "peripheral" to the central network. They are peripheral in the sense that the sound features involved are only distinctive in connection with these phonemes, and in the majority of their occurrences elsewhere, are obviously redundant. Moreover, any attempt to incorporate them in one diagram with distinctive features of really high functional load complicates and distorts that diagram to an extent that the true symmetry of the system is obscured.

A case in point is a very rare nasalized /ĩ/ of Z as found in the stem /-h̄h̄h̄h̄ĩza/ 'speak haltingly'. Normally

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Archibald A. Hill : Introduction to Linguistic Structures, New York, 1958, p. 46; discusses the temporary distinctiveness in his speech of a length feature in connection with the medial stops in the English contrast latter : ladder. There is surely tacit reliance here on units of higher structural levels when evaluating the distinctiveness or otherwise of the particular sound feature involved. Our "peripheral contrasts" are an attempt to provide a uniform interpretation of sound features occurring under similar circumstances.

weakly-nasalized peak-vocoids occur allophonically before nasal sonorants, but although there is no general evidence that nasalized vowels are phonemically distinctive in any one of the four languages, there can be no doubt as to the distinctiveness of nasalization in /-h̄h̄īh̄h̄īza/ and a few other such stems. These stems are seemingly all derived from ideophones, and the nasalization feature (as part of the abnormal phonology of the ideophone) has obviously been brought over with ideophones. /ĩ/, however, stands in line with other regular phonemes of the inventory in fully-naturalized members of the form-class "verb". We can find no justification for distorting the neat symmetry of the pattern of high-frequency contrasts relating to vowels, shared by all forms of Nguni, in order to accommodate the nasalized vowels.¹ (/ĩ/ in Z and Nd. /ĩ ẽ/ in Sw.)

This is the sort of data that leads to the formulation of the concept of "peripheral contrasts". The phonemes concerned are labelled as "leftovers" and separated from the other phonemes of the inventory. Sound features involved in peripheral contrasts are recognized as such on the basis of a low functional load and an inability to fit into the existing pattern of contrasts without creating gross asymmetry; or, in some cases, being in conflict with the established pattern on which the system really relies for its operation. These two criteria have to^{be} applied in conjunction and not all low-frequency phonemes are leftovers.

1.2.10. The problem discussed here is essentially one of methodology in handling a situation in which accepted procedures appear too unyielding and unadaptable. This

¹ We have presumed a treatment of nasalization as component and not as phoneme. The latter treatment may obviate asymmetry in the vowel system, but, whereas an occasional and temporary distinctiveness of a sound unit may be acceptable if its status is that of component, this is far less acceptable if that unit has the status of phoneme. Determining sound features may change from being distinctive to non-distinctive between one series of phonemes and another, but phonemes are always contrastive.

problem is not unconnected with that discussed at 1.2.6. ff. above because belief in one rigid, standard pattern of phonologic contrasts for all parts of all utterances is weakened further if peripheral contrasts are accepted. Facts associated with peripheral contrasts and leftover phonemes at least indicate that the line between the distinctive and non-distinctive is not so easily or readily drawn as is sometimes implied, and they lead us to doubt seriously whether the very occasional distinctiveness of a phone in phonologically unpredictable situations is evidence of its distinctiveness everywhere else - a decision which is forced upon us by the premises of current methodology. It is a point of conjecture whether the failure to discriminate between phonemes on grounds of functional load does not in itself produce a distorted picture of the structure. We would prefer to believe that distinctiveness is a relative matter, and while the native-speaker is highly sensitive to frequently-implemented contrasts, there are others placed at the other end of the scale on which the system only relies occasionally and these are usually irrelevant as far as linguistic signalling is concerned.

1.2.11. Componential analysis. Identifying the phonologic components of phonemes confronts the analyst from the outset with the problem as to how he is to identify the distinctive features. The way in which he eventually identifies them depends upon the particular stage or level of the speech act from which he draws his data. Most current analyses are set firmly at the level of articulation and in such analyses the data for analysis are supplied entirely in terms of articulatory movements.¹ As a signalling system, however, language is based upon the sense of hearing and the nearer the analyst can be brought to the facts of perception at the psychological level, the more accurate are his data and consequent interpretations.

¹ Except for prosodic features which are usually evaluated at the perceptual level.

The theory and methodology devised by Jakobson, Halle and Fant have made data at levels higher than that of articulation available to phonologists. Most current analyses seem to retain, however, the traditional basis of articulatory phonetics, probably for the reason that some aspects of the theory are still contentious and that for many phonologists the route to the percepts starts, in any event, from the level of articulation. The ultimate refinement of analytical techniques seems to lie in the direction of the thorough correlation of units at various levels of the speech act developing towards a surer contact with phonologic reality.

Componential analysis based upon articulatory data is assured of a close correlation with phonologic reality while confined to groups of phonetically homogeneous phonemes. Within such groups, (for example stops, or even obstruents as a whole in small systems) it is often easy and unarbitrary to identify distinctive features because the range of differences in sound feature is considerably reduced by the phonetic homogeneity of the group. Not infrequently a single sound feature is clearly seen to be responsible for contrasts between a number of series or orders of phonemes. All attempts at complete componential analysis of a phonologic system, however, seem to reach a point where they leave the firm ground upon which rest partial analyses within the groups referred to, and become progressively more speculative, developing into what has been termed "phonologic game-playing". Conclusions reached in the final stages of a complete analysis should be placed at a different level of validity because of handling phonemes which differ over a wide range of sound feature. As the phonetic gap widens the danger of misinterpretation due to the inadequacy of articulatory data increases. It is in the later stages of a complete componential analysis that the reliance on theory is greatest.

At the point where contrasts such as those between vowels and consonants, sonorants and obstruents, etc., must

be accounted for, it is common practice to attempt to find a plausible method of adapting to the task the distinctive features already identified within phonetically homogeneous groups. This is done in pursuit of the principle of maximum economy. While an element of economy in regard to the number of distinctive units in a signalling system such as language is logically defensible, satisfactory proof has yet to be supplied that phonologic systems are economical in the most stringent manner possible. In the analysis presented in this thesis, one of the least satisfactory aspects is connected with the fact that when the three orders of click phonemes (for Xh see 5.3.2) are set up as an extension of the point-of-articulation correlation (as it is obviously necessary to do in view of the way in which they fill out the various series differing according to manner-of-articulation), it becomes unnecessary to postulate any overall contrast between clicks and non-clicks. Handling only articulatory data, we find it highly arbitrary to summarily reject a difference in sound feature which is acoustically so striking. We are not in a position to challenge current theory and methodology, however, and in pursuit of the principle of economy, it even becomes necessary to place the lateral spirants of Xh, i.e. /h̄l̄ d̄l̄/, in the same order as the laterally-released clicks /x̄ ḡx̄ x̄h̄ x̄^{n̄} x̄^{n̄}h̄/, because both share the feature "lateral point of articulation" and the former neatly fill the gaps which occur in the "lateral" order.

Another aspect of theory to which reference is seldom made is the nature of inter-level correlations. A one-to-one relationship between isolates at the articulatory level with those at any higher level seems to be tacitly assumed in many componential analyses. This dangerous assumption becomes a potent source of error when a distinctive feature is identified from a wide range of sound features. What is simple at the perceptual level, for example, may well be complex in articulatory terms.

It is clearly impossible to avoid all arbitrariness in componential analysis and yet produce a worthwhile result. There are, however, broad limits which are not difficult to fix, beyond which the bounds of probability are exceeded. We regard many of our postulations associated with componential analysis as tentative, some more so than others, the most tentative being the aligning of the glides /w y/ with /l/ in a single series of sonorants, and the placing of the Xh spirants referred to above in the same order as clicks. Our analysis cannot, with conviction, be developed beyond this point and we are left at this stage with three sets of phonemes : (a) vowels, (b) all consonants except the two laryngeals, (c) the laryngeals /h h̄h/. These are the groups of phonemes that are separated in the diagrams at 5.3.2 ff.

1.2.12. The limits of the regular phonologic structure. The total information acquired by the native speaker from an act of speech derives partly from differences in sound feature that are culturally organized and partly from those that are fortuitous and unorganized. From the latter derives the ability to identify one speaker from another. Of culturally-organized sound that is communicative, a good deal is organized in a way that is not "linguistic", e.g. structurally irrelevant features that identify dialects. A distinction between organized speech sound that constitutes "linguistic behaviour", and that which does not, becomes less easy to make, however, when the analyst approaches sound features classified as "expressive".¹ In our Nguni data certain sound features which appear to fall into this category (for example, stress and exaggerated degrees of pitch and duration) intrude upon the essential constituents of linguistic signals sufficiently frequently to necessitate some interpretation of them (see Chapter 11) in order to be able to separate with

¹ Forms such as the 3rd positional demonstratives and demonstrative copulatives incorporating the suffix /-ya/ (in full and contracted form) are very frequently overlaid with expressive features in normal speech. This is true of certain ideophones also.

certainly sound features that are part of the linguistic structure from those that are not. We are assisted in drawing the boundary around "language", i.e. in separating sound which is linguistically organized from that which is non-linguistic, by recent investigations in the field of paralinguistics and criteria such as those cited by Hockett, viz. "discreteness of contrast" and "duality of pattern".¹ Expressive features clearly fall beyond the boundary of language and their treatment in outline in this thesis is made only for the reason already given.

Bearing in mind phonologic abnormalities connected with ideophones such as distinctively nasalized vowels; exotic sound units such as a central lax [ə] in Z; unusual distribution; the exclusion of representatives of junctures and intonations from representation with ideophones; etc.; a decision as to the place of ideophones in relation to the boundary of "language" requires careful consideration. Our eventual decision is that, after a not-infrequent overlay of expressive features is removed, ideophones are in every respect part of "language". Unique patterns of contrast associated with them obviously cannot find a place in the central network of the phonologic system and require separate treatment. A tentative but fairly full analysis is made of them as a "by-system". What remains after the separation of this by-system, is the nearest we can come in practice to the "standard phonologic pattern" comprising the sum of the sub-systems. This we regard as the "regular phonologic structure" which is our prime concern in this thesis.

The regular phonologic structure is not, however, contained within a completely rigid frame through whose meshes all the structurally-relevant sound features pass. Peripheral contrasts have to catered for and we visualize extensions to the main frame in the nature of appendages through which a feature of nasal resonance, for example, occasionally passes and is thus separated from the irrelevant

¹ Charles F. Hockett : A Manual of Phonology, Baltimore, 1955, § 023.

sound material which is "sieved off". These extensions must be included as part of the frame that constitutes the regular phonologic structure.

CHAPTER 2

THE PHONOLOGY OF THE WORD IN OUTLINE

2.1.1. The word as a unit. The division of long stretches of connected discourse into "utterances" is often arbitrary, but the phonologist has the right to assume that most, if not all, of the many comparatively short stretches of normal, unprompted speech preceded and succeeded by relatively long periods of silence are utterances with the same internal structure as those that lie hidden in longer stretches. It is these shorter, clearly-defined utterances that provide the material of our investigation and, according to phonologic criteria, it is possible to break utterances down into units of different sizes located at different levels in a structural hierarchy. The "word" is a conveniently short unit in which to illustrate segmental phonemes and contrasts between phonemes, but it must be stated immediately that the "word" is not a clearly-marked level, and isolated words that we use for examples are to a large extent cited as abstractions. Phonologic criteria make some contribution to word-division, but the only certain criteria in isolating words are grammatic (both morphologic and syntactic - the fact that forms are "freely movable" is an aspect of syntactic structure).

In the stream of speech many boundaries between grammatic words pass without being marked in any way. "Penultimate length" which is often accepted as a criterion of word-division, is found utterance-medially to demarcate syntactic structures and not, in normal speech, words individually. Penultimate length never occurs at any lesser boundary than that of a grammatic word, but there are a number of grammatic words with which it is never represented, e.g. ideophones, 3rd positional demonstratives ending in /-ya/, etc.

"Penultimate length" is interpreted as a juncture demarcating "phonologic phrases" and marked /+/, and it is found that, while only a limited number of these junctures fits the syntactic pattern of any particular utterance, a certain style of speech introduces additional junctures up to a point that all words, except those referred to above, are marked off by /+/.

In this potentiality for coinciding with phonologic phrases, a postulation that many words are isolable phonologically can be made, but it must be borne in mind that it is a syntactic unit comprising one word or several words that is demarcated. For certain reasons we eschew this particular criterion of word-division. Two other criteria of limited application to the task of isolating words phonologically are : (a) The utterance-medial non-permitted phonemic sequence VV occurring across word-boundaries. (This criterion is arbitrary in application and limited in occurrence, see 10.2.3.) (b) "Open juncture" (marked /'/) which falls mainly at word-boundaries, but may occur at a very limited number of word-medial morphologic boundaries also.

Isolated words which are used for purposes of illustration are complete abstractions because intonation constituents are ignored. Many of the utterances we have recorded are isolated words, but they, like any utterance, are always overlaid with intonational features. Words uttered in isolation, except those mentioned above that never occur with /+/, and monosyllabic words with which /+/, cannot be represented, all incorporate penultimate length. As a matter of descriptive convenience, constituents of intonations and /+/, are usually¹ lifted off and treated as part of the "phonology of the utterance". (Chapters 8 - 11 bridge the gap

¹ /+/, is not usually marked with isolated words anywhere in this thesis, except (a) with one-word utterances used with the specific purpose of illustrating features connected with the "phonology of the utterance", and (b) where it is essential to do so because /+/, constitutes part of a conditioning environment, e.g. where a tonal allomorph is associated with the presence of /+/. Intonations and intonation constituents are never marked except for a few examples in Chapter 11.

between "word" and "utterance" - particularly Chapter 9, "The Phonology of the Utterance".) This leaves only segmental phonemes, pitch phonemes and /·/ as a leftover of infrequent occurrence which between them are responsible for the differentiation of morphs in the "normal" morphology (i.e. excluding the intonation system).¹

2.1.2. Phonemes and their components. The horizontal and vertical segmentation within the "word" as defined above, provides a stock of phones which, when grouped into phonemes, make up the following phonemic inventories :

Segmental phonemes : 7 vowels in Xh and Z and 5 in Nd and Sw. 54 consonants in Xh, 47 in Z, 37 in Sw, 46 in Nd. The semivowel /m/.

Suprasegmental phonemes : 2 tonemes in each language in a subsystem of pitch phonemes. One "length" phoneme (viz. /·/) as a leftover of low frequency. (It may not be necessary to recognize the latter in Nd.) These are the total stocks of phonemes on which contrasts in the morphologic systems depend.

The segmental phonemes which constitute part of the central network of the phonologic structure are (in Chapter 5) broken down into a discrete number of phonologic components. Contrasts between vowels rely upon a front : back contrast and the following differences in tongue-height : high : mid : low (Nd and Sw), or high : mid-high : mid-low : low (Xh and Z). Contrasts between consonants depend upon 7 or 8 of the following distinctive features (according to the language) : point-of-articulation, nasality, lenisness or injection, voicing, aspiration, occlusion, sonority, click quality, affrication. Individual consonants are "bundles" of between 3 to 7 phonologic components. Maximum economy is observed in identifying phonologic components and their selection is governed by : (a) their appearance in every

¹ It is found useful to distinguish between phonemes with "distinguishing" function (e.g. vowels and consonants) and those with "demarcating" function. Although /·/ sometimes patterns as a consonant in distribution, its essential function is to demarcate and not to distinguish.

allophone, (b) their essentiality when the separateness of a complete series or order of phonemes (or particular part thereof) is considered. The arrangement of phonologic components in phonemes is presented in the diagrams at 5.3.2 ff. Phonologic components do not, of course, provide the total sound matter involved in the representation of phonemes and most of the important determining and determined sound features, as part of the full description of individual allophones, are mentioned in the description of segmental phonemes in Chapter 4.

2.1.3. * Syllables and their constituents. Syllable peaks are defined by a distinctive tone. The vocoid which, of necessity, coincides with the distinctive tone cannot be included in this definition because the nasal resonant [m] occurs both as peak and margin in syllables. Syllables are defined by the presence of one or more tonemes¹ and a vowel (always represented by a single pure vocoid); or a toneme and the semivowel /m/. These combinations constitute the nuclei of syllables. On rare occasions /•/ may be included in the nucleus. Within the word, such syllable nuclei are always separated by an intervening margin comprising from one to three consonants (but see the reference to open juncture below). Syllabic /m/, however, may not have a consonant interpolated between it and a preceding or succeeding peak. Words never end in consonants (they may end in /m/ as a syllable peak), so that "open syllables" prevail in Nguni and every syllable margin is an onset to the vowel-toneme nucleus that follows; together they comprise a syllable. Many words commence in vowels or syllabic /m/, however, and in this position, therefore, there can be syllables without onsets. Word-medially only syllabic /m/ is found as a syllable without an onset. Open juncture (/•/) may on occasions provide the margin of a syllable, as in the Xh loan-word /úm'ápile/ 'apple

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Tonemes may cluster on single syllables up to a maximum of 2 in Xh and 3 in the other languages.

tree'. The function of /'/ in the overall structure is demarcative and an apparent function as a consonant in examples such as this is coincidental.

2.1.4. Within the syllable there are very few restrictions on the combination of various types of onset with different vowels as peak. Within the margins themselves, however, consonants occur in clusters in somewhat stereotyped arrangements (all such aspects of distribution are discussed under "Phonotactics" in Chapter 12).

2.1.5. Words. Words are comprised of from 1 to a maximum of 8 or 9 syllables of the V, CV, CCV or CCCV-type described above (syllabic /m/ is temporarily equated to a vowel).

- Gives brief explanation of word as a unit of speech and how 1 word is uttered and 1 unpermitted utterances such as VV occurring across word-boundaries.
- Also breaks down the phonemes into their components & will also be a great importance to my topic.
- Contrast between high, low, back/front vowels & their places of art.
- Also gives brief analysis of syllable talks about /m/ as peak of syllable ^{in Xhosa} & [^] is not in Zulu. And Zulu Nguni long have open

CHAPTER 3

PROBLEMS OF ANALYSIS

1. Introduction

3.1.1. This chapter deals with major problems of analysis connected with segmental phonemes, that are present in the data themselves and do not arise directly from seemingly inadequate techniques and procedures in analysis. Problems associated with suprasegmental phonology are not treated separately, but are presented in the general context of interpretation and description in later chapters.

2. One Phoneme or Two

3.2.1. Phones at syllable margins. The great majority of syllable margins between successive peaks are marked consonantly or by the phoneme of open juncture and vowels do not occur in sequence except for the occasional VV sequence across a word boundary. More than one phonetic segment may coincide with the margin between two peaks and the problem of interpreting such multi-segment margins as unit phonemes or clusters arises in such cases. Multi-segment margins are of the following types :

- (a) Voiced and voiceless affricates (the latter are often glottalized), e.g. [dʒ tʃ tsʔ], etc.
- (b) Aspirated voiceless stops and affricates, and, less commonly, aspirated nasal resonants, e.g. [ph tʃh mʰ].
- (c) Homorganic nasal preceding the majority of voiced and voiceless stops and affricates, e.g. [nt mb ŋkʔ nts ɲdʒ], etc. In Nd and Sw only, homorganic nasal plus plain spirants can occur, e.g. [ns nz ɲʃ].
- (d) The labio-velar glide-vocoid [w] as an "off-glide" to the majority of single-segment and multi-segment phones that occur as syllable margins, e.g. [nw ntʔw ŋkʔw nsɰ dʒw /w], etc.

While the combinations described above are paralleled in many other languages, multi-segment margins in Nguni also include any one of the three basic clicks accompanied by one of a fairly wide range of click releases and accompaniments. These constitute a more unique type of multi-segment margin, but, when examined, it is found that most non-click constituents of these margins readily identify themselves with segments found in other non-click multi-segment margins. For example, there are aspirated clicks (with dorso-velar aspirated voiceless stop release), clicks with preceding homorganic nasal (i.e. [ŋ]), etc. The manner in which "click compounds" follow the general phonetic pattern discernible in multi-segment margins is reflected in the way in which they are aligned in the diagrams at 5.3.2 ff. with various series corresponding to manner-of-articulation differences.

3.2.2. In various ways there is pressure on the analyst to interpret unitarily some or all of the multi-segment margins mentioned above. Firstly, between 70% and 75% of all syllable margins in all Nguni languages coincide with single-segment contoids or glide vocoids and the predominance of the CV-type syllable is a distributional feature that cannot be ignored. Secondly, there is the highly stereotyped distribution of the segments found in multi-segment margins - nasal resonants always stand first in such margins and never anywhere else and are of the same point of articulation as the following stop or spirant; [w] is always last in order; aspiration is normally bound to preceding voiceless stop elements (although occasionally to a nasal resonant also). Thirdly, certain phones occur only in multi-segment margins, e.g. fronted lamino-domal [t] in Z [tʃ]; [ŋ] in some dialects of Z in [ŋkʰ ŋg], etc. Fourthly, the great majority of these multi-segment margins constitute very typical types of polysegmental phonemes.

3.2.3. To interpret all multi-segment margins unitarily, however, produces an analysis that is difficult to

sustain as regards the principle of economy in linguistic systems, and one that creates a number of inherent problems.

Among the latter is the problem of the nature of the contrast between a click articulated simultaneously with a velar-nasal sonorant (for example nc in Xh), and the multi-segment margin in which the click follows the velar-nasal sonorant in sequential order (for example nkc of Xh). Elsewhere the fact of sequence or simultaneity in margins incorporating a feature of nasality is not a matter of contrast, but if nkc and nc are both unit phonemes, then it must be recognized as such. On the other hand if nkc together with all other nasal compounds can be interpreted as two phonemes in sequence, then^a/commitment to a specially created "sequence" : "simultaneity" contrast of low functional load is avoided because a unitary interpretation is obviously indicated for nc. A similar problem is associated with the uncommon nasal compound nl [nl] of Nd. As a sequence of the two high-frequency phonemes /n/ and /l/ no problems are encountered, but as nasality is the only differential between the two main series of sonorants (series 7 and 8 in the diagrams at 5.3.2 ff.), nl cannot find a place in either series and it is necessary to set up a third series whose distinctive quality must apparently be attributed also to a difference between sequence and concurrence.

These problems are, however, minor in comparison with that of proliferation in the phoneme inventory associated with the unitary interpretation. There are 137 contrastively different syllable margins in Xh and 114 in Z (the numbers are smaller in Nd and Sw), and as many consonant phonemes if the unitary interpretation is followed. There are, of course, certain gains in the direction of distributional simplicity (phonotactically only CV and V syllables would occur), but when comparing recent analyses of phonemic systems, there is no known consonant inventory that approaches these numbers. The pointer to the particular wastefulness of the unitary interpretation lies in the free association

of [w] with whatever goes before it in margins of the type mentioned at (d) in 3.2.1 above.

3.2.4. A high-back rounded (labio-velar) glide-vocoid

which is found in single-segment syllable margins patterns as a consonant and is identified as /w/, e.g.

Z, Xh, Nd, Sw /wèná/ 'you'; Z, Xh, Nd /yíwá/ 'Fall !'.

[w] in multi-segment margins is almost identical with the representative of /w/, being a separate articulation and not merely a labialized version of the preceding contoid. (Co-articulation is an impression sometimes gained from quick speech, but the separate articulation is always clear in relatively slow speech.) [w] always stands last in multi-segment margins and its free association with other contoids that precede it (and even the lamino-palatal glide-vocoid [j] in the sequence /yw/) is demonstrated in the diagrams at 3.2.6 below. It will be seen there that [w] does not associate with any preceding sound of the labial order (a set of morphophonemic changes obviates this association which certain morphologic combinations create potentially), but it is otherwise free to combine with even the lowest-frequency single contoids and sequences of contoids to be found at syllable margins. The isolation of [w] in multi-segment margins and its identification with the consonant /w/ (and the recognition thereby of CwV syllables) reduces Xh consonant phonemes to 75 and Z to 63. From the aspects of distribution and allophonic complexity the price to be paid is a small one, viz. the recognition of the Cw cluster at syllable margins in which C is equated to practically all consonants except those of the labial order, and the addition of a weakly-labialized allophone to the range of allophones of many of the phonemes that precede /w/.

3.2.5. Even after the separation of [w] in multi-segment margins, the consonant inventories are still abnormally large and a search for further economy can be made in the direction of the nasal elements of the "nasal compounds"

(i.e. the type of multi-segment margin mentioned at (c) in 3.2.1 above). It is possible to identify these nasals with the series /m n̥ n̥/ and thus to recognize nCV and nCwV-type syllables in which n is equated to one of the series /m n̥ n̥/. The choice between the latter is predictable according to the point-of-articulation feature of C. This reduces Xh from 75 to 55 consonants, Z from 63 to 48, Nd from 62 to 46 and Sw from 57 to 39. The economy achieved in the phoneme inventory is thus not quite proportionate to that achieved by separating [w], and the price to be paid in complex description elsewhere is higher, viz. :

- (a) Certain phones of one or more segments which only occur as "complements" to nasals in "nasal compounds" and are not found in isolation as syllable margins, have either to be identified as separate phonemes, or as allophones of existing, phonetically-similar phonemes. These include affricates arising as a result of the association of nasals in multi-segment margins only with stops and affricates in Z and Xh,¹ and not with spirants, i.e. [ɸf] in [mɸf], [ɸv] in [n̥ɸv], [t¹ɸ] in [nt¹ɸ], [d¹ɸ] in [nd¹ɸ]. Also : [dz] in [ndz] in Z and Xh, and [gh̃]² in [n̥/gh̃] in Sw.
- (b) The series containing some or all of the phonemes /b d̄z d̄ dȳ j̄ g/, acquires a new allophone for each phoneme when appearing in the nCV syllable. This allophone is voiced throughout its representation and not merely after the release of the stop, as are the representatives of /b d̄ g/, etc. in the CV syllable.
- (c) As /n̥/ is lacking in some Z idiolects (it is a free variant with [n̥g] representing /n̥g/ when it does occur) a new phoneme found only in nCV syllables must be identified.

¹

In Nd and Sw nasals combine with spirants also, and nasal plus spirant actually contrasts with nasal plus affricate in Sw, e.g. [nz] : [ndz], but not in Nd, where nasal plus affricate occurs in the domal order only and nasal plus spirant everywhere else. Thus Z-Xh [mɸf] = Sw-Nd [mf], etc.

²

This is a dental click with voiced velar stop release following the click, plus accompanying voiced aspiration.

(d) [m] found only in the margins [m_jɔf] and [m_jbv] is probably best accounted for as an allophone of /m/.

3.2.6. The charts given below present diagrammatically¹ the distribution of the nasal sonorants and [w] in the multi-segment margins under discussion, showing the potentiality of each for associating with phones which we regard as undisputed single phonemes. These diagrams are evidence in support of the cluster interpretations which are offered below. A plus sign placed above a phoneme symbol indicates an association with a preceding nasal sonorant; the minus sign indicates [w] as a potential "off-glide". Thus +dz is indicative of the occurrence of [dz dzw ndz ndzw].

Xh: 6

<u>+p</u>	<u>+t</u>	<u>+ts</u>	<u>+ty</u>	<u>+tʃ</u>	<u>+k'</u>	<u>kr</u>	<u>+c</u>	<u>+q</u>	<u>+x</u>
<u>+b</u>	<u>+d</u>	<u>+dz</u>	<u>+dy</u>	<u>+j</u>	<u>+g</u>		<u>gc</u>	<u>gq</u>	<u>gx</u>
ph	<u>th</u>	<u>tsh</u>	<u>tyh</u>	<u>tʃh</u>	<u>kh</u>		<u>ch</u>	<u>qh</u>	<u>xh</u>
<u>+f</u>	<u>s</u>		<u>ʃ</u>		<u>r</u>				<u>+hl</u>
<u>+v</u>	<u>z</u>				<u>gr</u>				<u>+dl</u>
w	<u>l</u>		<u>y</u>						
m	<u>n</u>		<u>ɲ</u>		<u>ŋ</u>		<u>cⁿ</u>	<u>qⁿ</u>	<u>xⁿ</u>
mh			<u>nh</u>				<u>cⁿh</u>	<u>qⁿh</u>	<u>xⁿh</u>
h									
hh									

Z : 6

			<u>k</u>				
<u>+p</u>	<u>+t</u>	<u>+tʃ</u>	<u>+k'</u>	<u>c</u>	<u>q</u>	<u>x</u>	<u>+kl</u>
<u>+b</u>	<u>+d</u>	<u>+j</u>	<u>+g</u>	<u>gc</u>	<u>gq</u>	<u>gx</u>	
ph	<u>th</u>		<u>kh</u>	<u>ch</u>	<u>qh</u>	<u>xh</u>	

¹ These charts are simplified versions of the diagrams illustrating phonemes and their components given at 5.3.2 ff.

<u>f</u>	<u>s</u>	<u>ʃ</u>	r		<u>hl</u>
<u>v</u>	<u>z</u>				<u>dl</u>

w l y

m	<u>n</u>	<u>ɲ</u>	<u>ŋ</u>	<u>cⁿ</u>	<u>qⁿ</u>	<u>xⁿ</u>
				<u>cⁿ_h</u>	<u>qⁿ_h</u>	<u>xⁿ_h</u>

<u>h</u>		Leftover	<u>t⁺s</u>
<u>hh</u>			

Nd: 6 k

<u>p</u>	<u>t</u>	<u>tʃ</u>	<u>k'</u>	<u>c</u>	<u>q</u>	<u>x</u>	<u>kl</u>
<u>b</u>	<u>d</u>	<u>j</u>	<u>g</u>	<u>gc</u>	<u>gq</u>	<u>gx</u>	

ph th tʃh kh ch qh xh

<u>f</u>	<u>s</u>		<u>r</u>		<u>hl</u>
----------	----------	--	----------	--	-----------

<u>v</u>	<u>z</u>				<u>dl</u>
----------	----------	--	--	--	-----------

w l y

m	<u>n</u>	<u>ɲ</u>	<u>ŋ</u>	<u>cⁿ</u>	<u>qⁿ</u>	<u>xⁿ</u>
				<u>cⁿ_h</u>	<u>qⁿ_h</u>	<u>xⁿ_h</u>

<u>hh</u>		Leftover	<u>ts</u>
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Sw: 6 k

<u>p</u>	<u>t</u>	<u>kl</u>	<u>tʃ</u>	<u>k'</u>	<u>c</u>
<u>b</u>	<u>dz</u>		<u>j</u>	<u>g</u>	<u>gc</u>

ph tsh kh ch

<u>f</u>	<u>s</u>	<u>hl</u>	<u>ʃ</u>
----------	----------	-----------	----------

<u>v</u>	<u>z</u>	<u>dl</u>
----------	----------	-----------

w l y

m n p q cⁿ

h

Leftover ⁺d

hh

3.2.7. In addition to accepting the presence of /w/ in consonant clusters, our decision is to interpret the nasal sonorants in multi-segment margins as single phonemes in clusters also. A glance at the diagrams above show that the case for the isolation of /w/ is a strong one and a necessary procedure in order to avoid abnormal proliferation. While prepared to accept the alternative analysis which interprets nasal compounds (excluding the segment [w]) unitarily, we prefer the cluster interpretation for reasons which include : The obviation of excessive complexity at the sub-phonemic level resulting from the need to identify a distinctive feature responsible for the contrast between Xh nc and nkc (in our analysis /cⁿ : nc^l/; and Nd n, l and nl (in our analysis /n : l : nl^l/). [nl] of Nd is a particularly significant item of evidence conditioning our preference for the cluster interpretation. In Nguni generally this nasal compound is unique and is probably confined to certain dialects of Nd only. The very fact of its occurrence, however, is indicative of the independence of the nasal sonorants, at least in Nd. To this item we add also [nʃ] occurring together with [ptʃ], [nz] with [ndz] in Sw. These all point in the direction of clusters of phonemes rather than one polysegmental phoneme. While it is mainly Sw and Nd that supply such strong evidence in favour of the cluster interpretation, there is no good reason for not applying the same interpretation in Z and Xh also.

The pursuit of economy could, of course, lead to affording phonemic status to all single segments in multi-segment margins - this would involve the dissolution of the aspirates and affricates that now remain. This interpretation is rejected on the grounds of the restricted association of

¹
I.e. a sequence of two phonemes.

aspiration with other segments. As regards the affricates, they so clearly help to fill out the domal order which is established in all four languages by two or all of the phonemes /ɕ p y/, that the separation of stop from spirant in analysis would constitute a distortion of the phonologic pattern. The domal stops do not occur apart from affricates in Z, Nd, Sw.

Problems of analysis mentioned at 3.2.5 associated with the separation phonemically of nasal elements in nasal compounds are resolved in the following way : Affricates that remain in Xh and Z after the isolation of the nasal, which are not identical with, or closely similar to, the normal representation of some other unit phoneme, we classify as allophones thus : [ɸf] as an allophone of /f/ in the nCV and nCwV syllables, [ɸv] as an allophone of /v/, [t¹ɬ] as an allophone of /hɬ/, [d¹ɬ] as an allophone of /dɬ/, [dz] as an allophone of /z/ (in Z only - see discussion on Xh below). This creates the anomaly of [ts] as phoneme, i.e. /t̄s/, and [dz] as an allophone of /z/ in Z,¹ but this is preferable to the alternative solution that requires the setting up of a new order of phonemes, viz /*ɸ *ɸ/, etc. Sw [ɸgḥ] appearing only in the margin [ɸgḥ] can be identified as an allophone of the aspirated click /cḥ/ [ḥ] because the other phonemes of the series in which /cḥ/ stands, viz. /pḥ tsḥ kḥ/ all have voiced allophones in nC clusters (i.e. /mpḥ/ as [mbḥ], etc. - see 4.3.3 and 4.3.8). If any other interpretation of [ɸgḥ] is made, /cḥ/ would stand alone as the only member of the series not represented in nC clusters. [dz] is afforded phonemic status in Xh because : (a) it fills an existing gap in the pattern (see 5.3.2), and (b) it is reported as occurring in a proper name, although this name is not known to our informants. [ṃ] of the sequences /mf̣ mṿ/ in Z and Xh is accepted as an allophone of /m/. /ɸ/ is established as a phoneme in all Z dialects. The series

1

Compromise is inevitable in solving the problem of [tṣ] and [dẓ] in Z. [tṣ] is classified as a leftover because it falls outside the central network of contrasts, which would have to incorporate distinctive affrication to accommodate this one phone. Outside of nasal compounds [tṣ] is rare and gives evidence of instability in free variation with /ṭ/, e.g. /ṭṣaká ~ ṭṣáká/ 'Spit through the teeth'. Only in nC margins has /tṣ/ real status.

/b d g/, etc. acquires the allophones [b d g], etc.

3. The Interpretation of Mid Vocoids as Syllable Peaks

3.3.1. Occurrence. In all Nguni languages the orthographic symbols e and o are representative of front and back mid vocoids of various tongue-heights. Variation according to tongue-height is between mid low (approximately I.P.A. "cardinal" [ɛ] and [ɔ]) to mid high (approximately "cardinal" [e] and [o]). Current interpretations of these front and back mid vocoids are as /e/ and /o/. While this interpretation cannot be challenged in Sw and Nd where mid vocoids of different tongue-height exist in free fluctuation, in Xh and Z mid-low vocoids are mostly located in one type of phonologic environment and higher mid vocoids mostly in a different type of environment. Our problem is concerned with the fact that this complementation is not complete but partial.

In Xh and Z the majority of the data indicate that mid-low [ɛ] and [ɔ] are the normal representations of /e/ and /o/ in non-influencing environments. Higher mid vocoids ranging between [ɛ⁺]¹ - [e], [ɔ⁺]¹ - [o] are conditioned mainly by the presence of a high vowel /i/ or /u/ in an immediately following syllable, or by syllabic /m/² which derives historically from a syllable /mi/ or /mu/, or alternates synchronically with one of the latter. The actual tongue-heights of higher mid vocoids found in this type of environment vary quite considerably. When such vocoids are long³ they may be as high as [e] or [o], when short they may in fact be only slightly raised [ɛ⁺] or [ɔ⁺], barely separable

¹ Although the difference in tongue-height is often slight, [ɛ⁺] and [ɛ], [ɔ⁺] and [ɔ] complement each other and must be distinguished.

² In the speech of our Xh informants syllabic /m/ no longer exercises assimilatory influence, but the vowel succeeding /m/ does, e.g. /ómǝ/ [ómǝ] 'tall', cf. /ómǝi/ [ómǝi] 'bad'. Other Xh dialects also reveal the same tendency.

³ Long peak vocoids arise under a number of different circumstances, the most comprehensive description of which will be found in Chapter 9.

from the phonemic norms. Attempts at statements of allophonic distribution are, however, rendered more complex by the need to include the following conditioning environments which usually, but not consistently, exercise their influence and produce the variants indicated. (a) Mid-high [e] and [o] usually exercise regressive assimilation producing assimilated [ɛ+] and [ɔ+], e.g. Xh /óze/ [ɔze] ~ [ɔ+ze] 'naked', /í'fólògù/ [i'fɔ+logu] ~ [i'fɔlogu] 'ghost'; Z /éndlèlèni/ [ɛnd¹ɛ+lɛni] ~ [ɛnd¹ɛlɛni] 'on the road'. (b) A sequence /yey/ similarly may produce raised [ɛ+], as in Xh /yéyéndòdà/ 'It is the man's one'.

3.3.2. Complementary distribution is everywhere incomplete, however, because every Xh and Z idiolect examined represents some or all of the morphemes in a very short list (probably not exceeding 30) with a higher mid vocoid in a phonologically unpredictable environment. The commonest of these morphemes are : The monosyllabic demonstratives /ló lé/ or /ló· lé·/ 'this one'; /lé/ or /lé·/ 'far away'; /njé/ or /njé·/ as qualificative stem, clitic or word (i.e. signifying 'like this' or 'merely, only'); /k'é/ or /ké/, /k'é·/ or /ké·/ as a free form ('now, but, well') or clitic ('and so, very well, etc.');

class 2a noun prefix /ò-/; /ó- é-/ as pronominal possessive prefixes (e.g. in Xh /ć'wám̃ é'yám̃/ 'mine');

allomorphs /no-cone-/¹ of the conjunctive prefix /na-/ occurring before class 5 and 11 stems;² allomorphs /wo-co-we-/, /lo-co-le-/, etc., of possessive concords occurring before class 5 and 11 stems;² locative adverbial prefix /e-co-o-/ occurring before class 5 and 11 stems;² the clitic or stem /zé/ or /zé·/ 'naked'. The quite wide phonetic variation in the representation of /e/ and /o/ in these forms

¹ Where a segmental morph is not frequently associated with a particular toneme pattern the latter is not marked.

² The raised mid vocoids in the allomorphs referred to can be accounted for on a comparative basis by observing that these allomorphs stand immediately before points where syllables /lu/ or /li/ have been elided.

through the dialects of Xh and Z is only partly revealed in this description. [lɛ] and [lɔ] predominate as the representatives of the demonstrative pronouns in Z although [lɛ+] and [lɔ+] have been heard, apparently as free variants with some indication of a difference in the style of speech.¹ [lɛ+] ~ [lɛ+·] 'far away' is not uncommon in the speech of our informants. In these cases there is a frequent association between the higher mid vocoids and a length feature. This is also true of Z /ɲjé/ 'only, merely' recorded as [ɲdʒɛ·], [ɲdʒɛ+] or [ɲdʒɛ].² In Xh, [lɛ·], [lɔ·], [ɲdʒɛ·] predominate in the speech of our informants, but [lɛ+], [lɔ+], [ɲdʒɛ+] have been heard as variants. In other Xh dialects the latter are the regular forms. [kɛ] - [kɛ+] - [kɛ]³ is a variation found through the dialects of Xh, although [kɛ] predominates in Z. Class 2a prefix is usually [ɔ+] in Z, but often [ɔ] in Xh. There is more evidence than that given here of free variation, usually between [ɛ] and [ɛ+], [ɔ] and [ɔ+]. For example, one of our Xh informants presented [ɔɔ+laɬɛkɔ] ~ [ɔlaɬɛkɔ] for /yólàhlékò < ya-úlàhlékò/ 'prodigal'. A sophisticated informant when presented with these variants stated that the latter "sounded like elegant speech". In our data, however, every idiolect has a greater or smaller number of these morphemes which have been recorded only with higher mid vocoids.

3.3.3. Analysis. Free variation mentioned above is evident in some but certainly not all cases and, therefore, present methodology precludes any other interpretation than that of two front and two back mid vowels which we transcribe as /ɛ/ [ɛ+] - [ɛ], /ɔ/ [ɔ+] - [ɔ], /e/ [ɛ], /o/ [ɔ]. Thus /ɔzɛ·/ 'naked', /lɛ·/ 'this one', /ɲjɛ·/ 'like this', etc.

1

We subscribe to the view held by some linguists that all free variation is stylistically conditioned, even where there is no direct evidence of a difference in style. Differences in style are often subtle and likely to elude the analyst who is not a native speaker. (A swung dash links free variants.)

2

Some Z dialects contrast this morpheme with /ɲjè/ 'like this' which in our data is only represented by [ɲdʒɛ].

3A length feature may also be involved but is not marked here.

We differentiate these mid vowels only because of our pledged adherence to current methodological principles as far as it is possible. This overrides a firm conviction that phonologic reality as observed in the reaction of informants, takes the form of only a "front" : "back" contrast between mid vocoids. Our observations of informant reaction include the following : (a) In no case to our knowledge does the substitution of a mid low for a higher mid vocoid produce loss of meaning, or any response other than a correction of pronunciation. The fact that an exhaustive search¹ does not reveal one case in which the difference between a mid low and a higher mid vocoid is a minimal difference between two words, is some indication of an absence of contrast. (b) The phonemic unity of the mid vocoids is also indicated by the fact that the English phoneme /e/ as in "seven", in the English of our Xh informants is nearly always represented by [e] (slightly lower than I.P.A. [e]) whereas the speakers' contacts are with an English dialect which usually represents /e/ with [ɛ], or even lower.

3.3.4. While there is no method of handling informant reaction as a criterion in phonologic analysis, we believe that the evidence it gives of an absence of contrast between phones which our analytic procedures force us to separate, cannot be ignored. The general conditions prevailing are what may be expected if the allophones concerned existed partly in a relationship of complementary distribution and partly as free variants. There remains, however, the small number of cases in which our extensive data give no evidence of free variation connected with higher mid vocoids. In the practical application of a 7-vowel interpretation to the development of a suitable orthography, a vast amount of variation between such forms as Xh /oʒə·~oʒə·/ will have

¹ In view of the small number of morphemes with phonologically unpredictable higher mid vocoids, such a search involves only a relatively small corpus.

to be accepted. (In examples given later in this thesis we avoid frequent and tedious repetition by ignoring one or other of the variants.) It can confidently be predicted also, that the normal easy handling by emerging literates of an orthography which faithfully reflects phonemic differences, will vanish when it comes to distinguishing between ę and e, o and o.

In the difficulties we have experienced in applying present methodology to certain items of our data, there are suggestions that the analysis of language as a pattern of human behaviour requires more flexibility and less mechanical rigidity in methodology. The problem presented here supports a plea for the re-examination of certain premises and principles incorporated in present methodology. "Peripheral contrasts" is a methodologic adaptation of our own, implemented in the case of data that orthodox procedures would interpret so wastefully as to threaten the tenability of the concept of economy in linguistic systems. The problem of the interpretation of mid vocoids is not, however, analogous to those we have interpreted as peripheral contrasts. There is, for example, no distortion of the pattern in recognizing 4 mid vowels or 2. The vowels remain a symmetrical, V-type set whether there be 5 or 7 of them.

4. The Problem of "k"

4.4.1. Dorso-velar stops and their interpretation. In Z

the symbol k is associated with two distinctly different types of stop, viz. glottalized [$k^?$] and lenis, fully-voiced [g]. A limited degree of fluctuation that occurs between these phones has stylistic connotations. [g], which has a much higher frequency than [$k^?$], may be replaced by [$k^?$] in a pedantic style of speech, e.g. Uya6aleka 'He runs away' as [uja6alek[?]a] or [uja6alega]. In ideophonic derivatives and words of recent foreign origin, however, k can only be represented by [$k^?$], never [g]. The two representations of k can therefore contrast in the same or

similar environments, e.g. ka6i [ga6i] 'badly' and kati [kʔatʔi] 'O cat'. Orthographic k thus represents two phonemes, viz. /kʔ/ ¹[kʔ] and /k/ [g], the former filling out the series in which /p/ [pʔ] and /t/ [tʔ] appear, being linked with them also on etymological grounds, viz. /p t kʔ/ all occur in ideophonic derivatives and foreign loans which have no Proto-Bantu counterparts.

Determining the precise contrastive quality of /k/ in relation to the other stops presents a problem, as the following diagram of plain stops in Z illustrates.² (The salient phonetic features of the allophones are indicated in the framework of the diagram. /k/ is omitted.)

Lenis, voiced, injected (often weakly so)	6	-	-
Voiceless glottalized	p	t	kʔ
Voiceless occlusion with fortis release and strong voicing thereafter	b	d	g
Voiceless aspirated	p̄h	t̄h	k̄h

Unless a place can be found for /k/ in the same series as /6/, a contrast in sound feature which exists nowhere else in the system must be set up in order to account for the distinctiveness of /k/. At first sight the alignment of /k/ with /6/ appears unlikely, because audible injection is never heard in any representation of /k/ and current phonetic studies make much of the injection associated with /6/. In fact, however, many representations of /6/ have little audible injection. Kymograms of /k/ and /6/ reveal very strong similarities in representation in that both are voiced throughout and the occlusion is broken with very little flow of air either in or out of the mouth. The injection feature of /6/ is not easily discarded as phonologically irrelevant, however, because informants generally restore this feature in slow precise speech. On the other hand, the absence of injection with /k/

¹
We deem it advisable to mark the less frequent "k" when separating "k's" in phonemic notation.

²
The relevant portion of the complete diagram given at 5.3.3 is extracted and simplified.

42

can be associated with a much smaller cavity in which the air is rarefied. The case for aligning /k/ with /6/ is therefore stronger than at first appears and is supported by a feature of distribution, viz. apart from the aspirates, /6 k/ are the only stops that do not occur in sequence with a preceding homorganic nasal. It is, moreover, possible to ignore the injection feature and to ascribe the contrasts between /6 k/ as a series and all the other stops to a lenis : fortis correlation.¹ The former are clearly lenis and the other stops in Z clearly fortis. It is of interest that in Xh where the injection feature must be regarded as distinctive, members of the /b d g/ series often have a less fortis release (at least in the speech of our informants) than in Z, and many representations of /p t k'/ lack glottalization - a fortis feature.

3.4.2. The comparative aspect. The situation in Z is exactly paralleled in Nd and Sw, but in Xh /6/ stands as an isolated injective² with a strong tendency to maintain the injection feature even at the expense of voicing. (The cognate of both /k/ and /k'/ in Z is found in /k'/ in Xh, e.g. Xh /àk'ák'áfìk'ì/, Z /àkákáfìkì/ 'He has not yet arrived'³) Xh /6/ is usually clearly injected and in slow precise speech may be voiceless injected [ḡ] with a clear glottal catch interpolated between it and the following vocoid. Thus Xh seeks to maintain the injection feature whereas Z tends to lose it, apparently to ensure voicing, which operates against achieving a high degree of rarefaction. We therefore postulate that Xh /6/ has the distinctive feature "injection" with redundant "voicing", whereas Z, Nd, Sw /6/ has lenisness and voicing as distinctive features.

¹ In the final analysis we prefer to select "voicing" as responsible for the contrasts /6/ : /p/, /k/ : /k'/.

² Xh /6/ has a very high frequency and this, coupled with the complete symmetry of the other plain stops, has contributed towards maintaining it in a position of isolation in the pattern.

³ It seems that Xh /k'/ has absorbed the Proto-Nguni *k which Z, Sw, Nd still maintain as separate phonemes.

CHAPTER 4

THE SEGMENTAL PHONEMES

1. Introduction

4.1.1. The vowels and consonants are identified in this chapter and their representation in speech described. The large consonant inventories of Nguni languages place the usual practice of employing single symbols for unit phonemes beyond the resources of available typewriters. As digraphs and trigraphs cannot be avoided in symbolizing consonants, many of the existing symbols of current orthographies can be used with a number of obvious advantages. To distinguish clusters from unit phonemes, digraphs and trigraphs representing the latter are placed under a bar thus : /ts/. New symbols are required where current orthographies obscure phonemic differences and in such cases either the symbols of earlier orthographies are resorted to, or new symbols adopted. To facilitate comparison, the practice is followed of using the same symbol in all four languages to represent phonemes of closely similar or identical phonetic content. Thus /k'/ represents a dorso-velar stop similar in its representation in all four languages, even though there is no need to distinguish between /k/ and /k'/ in Xh. Correlations with current orthographies are facilitated by placing the underlined symbol of these orthographies¹ in round brackets thus : "...series /p t k'/ (p t k)".

The semivowel /m/ which may fill the place of a vowel or consonant in initial position, and either that of a consonant or a consonant - vowel sequence medially, is treated among the consonants. /m/ as a margin is differentiated from /m/ as a peak by the tone mark of the latter.

¹ In Sw, where there is a great deal of orthographic variation, the symbols are mainly those of recent government publications.

2. Vowels

4.2.1. Representation of vowels. Sw and Nd have 5 vowels

/a e i o u/ and Z and Xh 7 vowels /a e ɛ i ɔ o u/ within the central network of the phonologic system, one of which (or syllabic /m/) supplies the essential segmental constituent of the peak of every syllable in each language. All vowel allophones have a fairly tense articulation (tenser than any in English) and vary little in this respect.

4.2.2. /i u a/ are represented almost identically in all four languages. /i/ is high front unrounded; /u/ is high back close-rounded. Minor variations in lip-rounding and tongue-height are non-distinctive. /a/ is low central unrounded, generally more fronted than backed, i.e. closer to I.P.A. [a].

4.2.3. In Nd and Sw representatives of /e/ and /o/ fluctuate freely through the range [ɛ] - [e], [ɔ] - [o] and, apart from some idiolectal fluctuation, in Nd the majority of allophones occur in the higher part of the range and in Sw in the lower.

Xh and Z /e/ and /o/ are represented by [ɛ] and [ɔ]. /ɛ/ and /ɔ/ have allophones ranging between [ɛ⁺] - [e], [ɔ⁺] - [o] with a strong tendency for long vocoids to condition the highest tongue positions. Most occurrences of /ɛ ɔ/ are predictable in terms of an assimilation to a high tongue position of the vocoid, or the presence of syllabic /m/, in the following syllable (see the description at 3.3.1 ff.).

4.2.4. Other vowel allophones. Differences in peak-vocoid duration provide a number of problems of analysis, and different types of length occurrence associated with peak-vocoids are interpreted differently (a comprehensive description and analysis of peak-vocoid duration phenomena is given in Chapter 9). One type of length occurrence is a permanent concomitant of the close-knit cluster of tonemes HL in all languages. Length which is predictable in this way

we regard as non-distinctive and dispose of it in "long" allophones of vowels, viz [a· u· i·], etc., existing for the purpose of accommodating the cluster. (Most other length occurrences are as the representation of terminal juncture, with or without an overlay of intonational length.)

Nasalized allophones of all vowel phonemes occur before the nasal sonorants /m n ɲ ŋ/ and are most noticeable in Sw.¹

4.2.5. Contrasts between vowels. Contrasts between vowels are illustrated by the following :

Xh:	/súlà/	'Wipe, clean !'	/sílá/	'Grind !'	/sálà/	'Remain !'
Z :	/súlà/	" "	/sílá/	" "	/sálà/	" "
Nd:	/súlà/	" "	/sílá/	" "	/sálà/	" "
Sw:	/súlà/	" "	/sílá/	" "	/sálà/	" "

Xh:	/sélà/	'Drink!'	/sòlá/	'Suspect!'
Z :	/sélà/	'Dawn upon !'	/sòlá/	" "
Nd:	/sélà/	" "	/sòlá/	" "
Sw:	/sélà/	" "	/sòlá/	" "

For reasons already given, the /ɛ/ : /e/, /ɔ/ : /o/ contrasts of Z and Xh cannot be exemplified in similar fashion.

4.2.6. Nasal vowels. Sw /ĩ ē/ and Z, Nd /ĩ/ of very low frequency appearing only in ideophonic derivatives, partake of peripheral contrasts based upon nasality as indicated at 1.2.9, e.g. Sw /kúhñēñhētèlà/ 'to speak under one's breath', /kúhñĩñhītèlà/ 'to mumble'; Nd /ùkùhñĩñhĩzà/ 'to speak as with a heavy cold'; Z /ùkùhñĩñhĩzà/ 'to speak haltingly'.

1

There is evidence in our Bhaca data of the allophones referred to here acquiring the full status of nasal vowels subsequent to the permanent loss of the nasal sonorant in the sequence. From the evidence of forms such as [ɛnzãsi] 'below' (cf. Z /énzántsi/) it appears necessary to treat of a correlation according to nasality within the central network of the vowel subsystem in Bhaca.

rule - Vn - 72

3. Consonants

4.3.1. Description. Consonants are mostly conveniently described in the phonetically similar groups : stops, spirants, laryngeals, affricates, sonorants, clicks, trills. The three basically different environments that account for most allophonic variation are : (1) Utterance-initial in a CV syllable, or utterance-medially in a VCV sequence. In these environments there is usually anticipatory assimilation to a following /c/ or /u/ in a labialized allophone, otherwise the phonemic norms generally prevail. (2) Utterance-initial in a CwV syllable, or medially in a VCwV sequence. Labialized allophones are found here also. (3) In a nCV or nCwV sequence connected with allophonic variation described below.

Apart from labialized allophones mentioned in connection with (1) and (2) above which are not referred to again, every effort is made to cover the full range of allophones for each phoneme in the description below. Examples are numbered according to environments 1, 2 or 3 and are chosen to illustrate distribution rather than minimal differences. Consonant inventories are so large that minimal pairs are often difficult to find and, if provided to illustrate every contrast, would result in this thesis far exceeding the desired length. Examples of nCwV sequences are sometimes included under 2. Exhaustive exemplification of the sequence Cw is not possible from our present data, but non-permitted sequences in connection with /w/ are identified in each case.

4.3.2. Stops. Xh, Z, Sw, Nd /p t k' / (p t k) are bilabial, apico-alveolar and dorso-velar. In Z and Nd this series is fortis voiceless unaspirated, usually glottalized. In Xh and Sw the fortis feature is less prominent and glottalization not infrequently lacking in normal conversational style. Glottalized allophones in Xh and Sw are commonest initially and immediately succeeding some form of disjoined transition (see 10.2.3) utterance-medially. Non-glottalized

allophones are commonest before /w/. All languages have fronted allophones of /k'/ before /i e/. Only Xh includes a well-fronted lamino-domal (or lamino-alveopalatal) /t̄y/ (ty) in this same series. Sw /t/ is the cognate of Z-Xh /z/.

- 1 : Xh /úmpú/ 'gun', /útátá/ 'my father', /úk'út̄yèk'à/ 'to lean over'; Z /isipòl̄iyànè/ 'female hysteria', /úkútèngà/ 'to wave', /k'ák'á/ 'Surround!'; Sw /lí'pípi/ 'a pipe', /úmtimbà/ 'the body', /lí'k'úlùlù/ 'flea'; Nd /úkùpátálàlà/ 'to flatten out', /úkútèbà/ 'to be insecure', /k'ék'élà/ 'Sing in a high-pitched voice!'.
 1

/pw/ is a non-permitted sequence in Nguni.

- 2 : Xh /í'ntwànà/ 'small thing', /ít̄ywìnà/ 'gum', /k'wám/ 'my'; Z /í'twétwè/ 'anxiety', /úmk'wàk'wà/ 'Monkey-orange tree'; Nd /ítwànè/ 'lower stomach of an animal', /ínk'wílímbà/ 'pigeon'; Sw /lútwànè/ 'toe'.
 2

In Sw, /mp nk'/ do not occur except in a few recent acquisitions from Z that are current among some speakers. As recent foreign acquisitions these are ignored here.¹ Otherwise the sequences /mp nt nk'/ are common to all languages, with a distinct preference for glottalized allophones of the stops in Z and Nd. Xh has the sequence /nt̄y/.

- 3 : Z, Nd /împí/ 'army', Xh /împí/ 'large crowd'; Z, Nd /întó/ Xh /întó/ 'a thing'; Sw /úmséèntì/ 'a worker'; Xh /í'nt̄yát̄yámbò/ 'flower'; Xh, Z, Nd /ínk'òmó/ 'head of cattle'.
 3

4.3.3. Xh /p̄h t̄h t̄yh k̄h/, Z and Nd /p̄h t̄h k̄h/, Sw /p̄h k̄h/ (p̄h t̄h k̄h in all languages) are strongly aspirated voiceless stops in all languages matching the unaspirated stops described above. The closure in representations of Xh /t̄yh/ is not broken cleanly and a trace of surface friction following the release of the closure narrows considerably the acoustic distance between this phoneme and /t̄h/. /k̄h/ has a fronted allophone before /i e/. The Sw affricate /t̄sh/ (see 4.3.8) is the cognate of Z-Xh /t̄h/.

- 1 : Xh /í'khôphè/ 'eyelid', /áàthâthù/ 'three', /í't̄yhôlò/

¹ E.g. /mpòndò/ 'a pound', /ínk'óm̄j̄i/ 'a cup'.

'bush',; Z /p̄hùp̄há/ 'Dream!', /ísíthèlò/ 'fruit', /k̄hók̄hà/ 'Pay!'; Sw /k̄híp̄hà/ 'Take out!'; Nd /p̄húm̄là~p̄húm̄là/ 'Rest!', /k̄hàthésì/ 'now', /ámák̄hìwà/ 'Europeans'.

/*p̄hw/ is a non-permitted sequence in Nguni.

2 : Xh /t̄hwálà/ 'Carry!', /t̄yhwák'à/ 'Slap!', /ísíkhwè6ù/ 'head of grain'; Z /t̄hwálà/ 'Carry!', /k̄hók̄hwà/ 'Be paid!'; Nd /úm̄t̄hwèntè/ 'type of grass', /k̄hwélà/ 'Climb!'; Sw /t̄ínk̄húk̄hwànà/ 'small fowls'.

Sw is unique in permitting aspirates of this series to follow nasal sonorants in the sequences /mp̄h ŋk̄h/ (note that /nt̄sh/ described at 4.3.8 below is a sequence of phonemes of the same series). In these sequences the voiced aspirates [b̄h], [ḡh]¹ are the favoured allophones of /p̄h k̄h/ in the speech of our informants, although idiolects from a different area have been observed to prefer the normal [ph], [kh].

Voicing is clearly non-distinctive in this series, however, and in the quick speech of our informants glottal vibrations sometimes weaken to the extent that the aspiration and also the stop become like their voiceless counterparts. This is particularly common in utterance-final syllables in which there is a general tendency to devoicing. A change to slow precise speech restores the voicing feature utterance-medially.

3 : Sw /ím̄p̄hí/ 'army', /ínk̄hómó/ 'head of cattle'.

4.3.4. /b d g/ (b̄h d̄ ḡ) occur in all languages with Xh adding /d̄y/. Voiceless up to the breaking of the occlusion, these stops have a fortis release and strong voicing commencing immediately thereafter. In Xh the fortis release tends to be a less prominent feature, particularly before /w/. All languages have fronted allophones of /g/ before /i e/. Sw /d̄z/ whose stop element is very similar to these voiced stops, normally corresponds to Z-Xh /d/, but a few Sw words are consistently recorded with typical Nguni /d/, e.g. /lídàdà/ 'duck'. Elsewhere, however, /d/ fluctuates

1

Voiced aspiration is identical with "glottal murmur" mentioned in 4.3.7 and is inevitably coloured with the quality of the following peak-vocoid.

freely with non-initial /t/ (including /t/ in the sequence /nt/), e.g. /mémétà~mémédà/ 'Shout!', /tíntwànè~tíndwànè/ 'toes'.

- 1 : Xh /íbàdì/ 'butterfly', /íd̥yùngùd̥yùngù/ 'a blister', /ígògògò/ 'paraffin tin'; Z /úkúbùbà/ 'to die', /ídòlò/ 'knee', /úgù/ 'river bank'; Sw /úmbĩd̥zò/ 'spinach', /tí'gǎṇà/ 'witchdoctors'; Nd /bũbà/ (dialectally /bũbǎ/) 'Die!', /úfùdũ/ 'tortoise', /úm̥gĩgò/ 'wooden pestle'.

/bw/ is a non-permitted sequence in Nguni.

- 2 : Xh /úk'údùdwà/ 'to be danced', /íd̥ywàdì/ 'type of buck', /gwè6á/ 'Judge!'; Z /ídwàlà/ 'flat rock', /ígwàlá/ 'coward'; Sw /íngwè/ 'leopard', /lífòdwǎnà/ 'small pot'; Nd /yódwà/ 'only', /ísìgwěgwè/ 'something bent or crooked'.

After a homorganic nasal sonorant allophones of /b d d̥ g/ are fully voiced. The feature of fortisness is retained. No words in our Sw data consistently have the sequence /nd/. Usually /nd/ fluctuates freely with non-initial /nt/ in the manner in which /d/ fluctuates with /t/.

- 3 : Z, Sw /hám̥bà/ Nd /rámbà/ Xh /h̥hám̥bà/ 'Go!'; Xh, Z, Nd /índòdà/ 'a man'; Xh /índ̥yè6ò/ 'riches'; Xh /ngénà/ Z, Sw, Nd /ngěṇà/ 'Enter!'.

4.3.5. In Z, Nd, Sw, /6 k/ (b k) are lenis voiced stops.

/6/ is often injected. Xh lacks /k/ and has /6/ as a fully injected stop, usually voiced, but it may become voiceless [p̥] in slow precise speech.

- 1 : Xh /ú6ù6í/ 'evil'; Z /6íkà/ 'Report!'; Sw /6ú'bĩbì/ 'meercat', /kú'vúkà/ 'to wake up'; Nd /úkù6á/ 'to steal'.

/w6/ is a non-permitted sequence.

- 2 : Z, Nd /kwám̥ì/ 'my', Sw /kú'vúkwà/ passive of 'to wake up'.

Neither /6/ or /k/ ever occurs in the sequence nC.

4.3.6. Spirants. Voiced and voiceless : denti-labial /f v/

(f v), apico-alveolar /s z/ (s z), apico-alveolar laterally released /h̥l d̥l/ (hl dl) occur in all languages.

Xh, Z, Sw have also a voiceless surface spirant /ʃ/ (sh) more fronted and more fortis than English /š/. /ʃ/ is rare in Nd

having been heard in one idiolect in the single loan-word /íʃélèni/ 'a shilling'. Of dorso-velar spirants, Xh has both /r/ [x] (r) and /gr/ [ɣ] (gr) while Sw has none. In Nd a weak dorso-velar spirant in some idiolects corresponds to "voiceless h" [h] in others. Probably due to borrowing, other idiolects again have [x] and [h] as free variants. This thesis reflects those idiolects which consistently use [x], and Nd /r/ (h) therefore corresponds to Z /h/. In Z also, [x] (with more audible friction than in Nd) found in a small number of words in certain dialects corresponds to [h] in others. In all Z idiolects examined it appeared that these phones contrast, notably in the minimal pair /hòlá/ 'Drag!' : /ròlá/ 'Draw wages!' in the speech of our informants. Thus /r/ [x] is identified as a low-frequency phoneme in Z also.¹

1 : Xh, Z, Nd /ísìfó/ Sw /sîfó/ 'illness'; Xh /vèzá/ Z, Nd /vèzǎ/ 'Show !', Sw /lîví/ 'voice'; Xh, Z, Nd /úǵùsó/ Sw /ǵùsó/ 'face'; Xh, Z, Nd, Sw /h̄lòh̄lá/ 'Ram in!'; Xh /d̄lálà/ Z, Nd, Sw /d̄lǎlá/ 'Play!'; Xh, Z, Sw /ʃíyà/ 'Leave!'; Xh /rìwúlà/ 'Snatch!', /úk'úgrèpà/ 'to gnaw'; Nd /rámbà/ 'Walk!'

/fw vw/ never occur in our data and are non-permitted sequences in all idiolects examined.

2 : Xh /úmswànè/ 'stomach contents of a beast', /ílízwè/ 'country', /ih̄lwèmpú/ 'poor person', /d̄lwèngúlà/ 'Rape!', /ílíʃwà/ 'misfortune', /rwèǵá/ 'Barter!', /grwàmbúzà/ 'Squelch through mud!'; Z /ísìswéǵù/ 'whip', /ámàzwǐ/ 'words', /úkúh̄lwà/ 'darkness', /úd̄lwèd̄lwè/ 'long stick', /íʃwà/ 'misfortune', /úkúrwèǵà/ 'to barter'; Sw /lú'swànè/ 'baby', /kúh̄lòh̄lwà/ 'to be rammed in', /índ̄lwànà/ 'small hut', /síʃwàlá/ 'porridge'; Nd /ín'swèmpè/ 'type of bird', /ílízwè/ 'country', /úkúh̄lòh̄lwà/ 'to be rammed in', /ísíd̄lwàyíd̄lwàyí/ 'rough person', /úm̄rwàǵà/ 'dried meat'.

¹ Bhaca [um̄pa/a] 'walking stick', [ǵuǵa] 'Jump over !' are the only instances recorded by us of a voiced spirant [ʒ] in Nguni which matches [ʃ].

In the sequence nC the following allophones of the spirant phonemes occur : /f/ [ɸf], /v/ [ɸv], /h̄/ [t¹ɰ], /d̄/ [d¹ɰ] in Xh and Z, and /z/ [dz] in Z.¹ As a result of the decision to separate phonemically the nasal sonorants, the following are non-permitted sequences : /ns ɸ/ in Xh and Z; /nz/ in Xh. /nr/ (comprising nasal plus spirant or affricate) never occurs in our data in any language and similarly also /ŋr/ in Xh.

3 : Xh, Z /ímfè/ 'sweet reed', Nd, Sw /ímfènè/ 'baboon',
Xh /ímvú/ Z, Sw, Nd /ímvũ/ 'sheep'; Nd, Sw /însó/ 'kidney';
Z, Sw, Nd /yènzǎ/ 'Do!', Sw /ínzìlò/ 'mourning clothes';
Xh /í'nh̄lók'ò/² Z, Sw, Nd /í'nh̄lókò/ 'head'; Xh, Z, Sw,
Nd /índ̄lèlà/ 'route, way'; Sw /ín̄jì/ 'ostrich'.

4.3.7. Laryngeals. "Voiced h" /h̄/ and "voiceless h" /h/ occur in all languages, the one with much higher frequency than the other, depending on the language. /h/ (h̄) predominates in Z and Sw (and also in Nd dialects that favour /h/ in place of /r/), and /h̄/ (h̄) in Xh, which apparently has only one word /úh̄lì/ 'witch's familiar' with /h/. Xh /h̄/ is the cognate of /h/ in the other languages. Allophones of /h/ and /h̄/ are coloured by the quality of the vocoid which follows and there are as many allophones of each as there are vowel allophones. /h/ may be regarded as a "voiceless vowel" and /h̄/ as a "vowel with glottal murmur" (i.e. the vocal folds vibrate but do not completely close), which is phonetically identical with voiced aspiration.

1 : Z, Sw /hámbà/ Xh /h̄hámbà/ 'Go !'; Z, Nd /úh̄h̄òlò/ 'a hole',
Sw /sí'h̄h̄ùkù/ 'a sheep'.

Before /w/ the allophones of /h/ and /h̄/ are those that occur before /u/. No sequences /hw/, /h̄hw/ occur in our

¹ Only affricates occur after nasal sonorants in multi-segment margins in Xh and Z. In Nd and Sw both plain spirants and affricates may be found. Plain spirants occur in the following "nasal compounds" : Sw [ɸv ɸf nz ns n̄ n̄ɰ ɸ], Nd [ɸv ɸf ns nz n̄ n̄ɰ]. Stops or affricates occur in all other nasal compounds. Sw contrasts [nz] : [ndz], [nɰ] : [ntɰ]. No such contrasts occur in Nd.

² Xh /nh̄l/ = orthographic ntl.

Xh data, nor /h̄hw/ in Nd.

2 : Z /i'hwáq̄hà/ 'bearded man', /úh̄hwàyî6à/ 'type of bird';
Sw /lúhwà6à/ 'watermelon', /kú'h̄hwé6à/ 'to scratch'.

[nh̄], [mh̄], etc. are treated as unit phonemes in the manner of all aspirates and /h/ and /h̄h/ therefore never occur in the sequence nC.

4.3.8. Affricates. Affricates are diverse in type and frequency and are presented in four groups according to point of articulation.

Apico-alveolar voiceless /t̄s/ (t̄s) is of low frequency in all languages. It is nearly always glottalized in Z and Nd, but less frequently so in Xh and Sw, particularly before /w/. In Sw, only /lú't̄swàyî/ 'salt', which may be a loan-word, has been recorded with /t̄s/. Xh has also the corresponding aspirate /t̄sh/ with very low frequency. In Sw, however, this latter aspirate is of very high frequency and is the cognate of Z-Xh /t̄h/. Two somewhat different allophones represent Sw /t̄sh/, viz. [t̄sh] and [t̄h̄] (in the latter the spirant element is bilabial), which the current orthography distinguishes in t̄sh or t̄hs and t̄fh or t̄hf. [t̄sh] occurs before front vowels and /a/, [t̄h̄] before back vowels and /w/. In speech, however, /w/ in the sequence /t̄shw/ has no representation. As the sequences /*t̄shwo/ and /*t̄shwu/ do not exist in Sw, or anywhere else in Nguni (i.e. as the Z-Xh /*t̄hwo/ and /*t̄hwu/), [t̄h̄e], [t̄h̄i], [t̄h̄a] can therefore be interpreted as /t̄shwe t̄shwi t̄shwa/, which interpretation is fully substantiated by the morphologic evidence¹ and cognate forms in other languages. Xh and Sw have also the voiced apico-alveolar /d̄z/. In our Xh data this consonant only occurs in the nC sequence. In Sw, however, high-frequency /d̄z/ is the cognate of /d/ in Xh, Z, Nd and the stop element shares the same features as the typical Nguni /d/. Sw /d̄z/ parallels /t̄sh/ in having the two allophones [dz] and [d̄ʒ] (orthographi-

¹ [t̄shat̄h̄a] transcribed phonemically as /t̄shát̄shwà/ 'Be taken!' is morphologically /t̄shat̄sh-w-a/ [t̄shat̄sh-w-a], cf. /t̄shát̄shà/ 'Take!'.

cally represented by dz and dv) with the same distribution as [tsh] and [tʰh]. [dʒe], [dʒi], [dʒa] are interpreted as /d̥zwe d̥zwi d̥zwa/.

- 1 : Xh /îtsólò/ 'sharp point'; Z, Nd /tsàká/¹ 'Spit through the teeth'; Xh /ísítshà6à/ 'a garland'; Sw /émàfûtshà/ 'fat', /ñitshì/ 'I say', /lá6átshàtshù/ 'three', /úmbidzò/ 'spinach', /lóm̄dzālà/ 'old'.

Our Nd data lacks an example of the sequence /tsw/ and our Xh data an example of /tshw/.

- 2 : Xh /îtswêle/ 'onion', /í'ndzwánà/ 'good-looking person'; Z /tswínínízà/ 'Squeak!'; Sw /tshwásà/ 'Become possessed by a spirit!', /sítshwètshwè/ 'thorn tree', /sí'dzwă6à/ 'skirt'.

/nts/ does not occur in Nd and Sw (cf. /ns/) and /ndz/ in Z and Nd.² In Xh /ntsh/ is a non-permitted sequence, but in Sw this sequence is of frequent occurrence and corresponds to /nt/ in the rest of Nguni. As in the case of /p̄h k̄h/, /tsh/ has voiced allophones [dzʰ], [dʒʰ] after the homorganic nasal, more frequent in some dialects than in others. The devoicing of this allophone may occur under conditions mentioned in connection with /p̄h k̄h/ at 4.3.3. Sw /d̄z/ retains its two main allophones [dz], [dʒ] after the homorganic nasal.

- 3 : Xh /întsó/ Z /întsó/ 'kidney'; Xh /yèndzá/ 'Do!'; Sw /întshó/ 'thing', /întshà6à/ 'mountain', /întshwàlà/ 'louse', /índzòd̄zà/ 'a man', /índzà6à/ 'an affair'.

4.3.9. Well-fronted, usually glottalized, lamino-domal voiceless /t̥ʃ/ (tsh) (with [ʃ] as a surface spirant) is of fairly high frequency in all languages except in Xh where it is rare except in the sequence /pt̥ʃ/. Xh and Nd have high-frequency aspirated /t̥ʃh/ (tsh). All languages have the corresponding voiced affricate /j/ (j) with a stop element similar to that of the /b d g/ series and the same point of articulation

¹/t̥ʃàká/ is a free alternant in most dialects of Z and Nd.

²/ndz/ is not found in Z because [ndz] is interpreted as /nz/, there being no phone [dz] in Z. [ndz] never occurs in Nd.

as /t̥̃/.

- 1 : Xh /ísìt̥̃îxò/ 'a lock', Sw /lít̥̃è/ Z /ít̥̃è/ Nd /ílít̥̃è/ 'a stone'; Nd /t̥̃híyà/ 'Leave behind!', Xh /ísìt̥̃hèt̥̃hè/ 'a knife'; Xh /úk'újìjà/ 'to twist', Z /úkújìjà/ 'to lengthen', Sw /kújòjòtèlà/ 'to sprinkle medicine', Nd /úlújù/ 'honey'.

Our data contain no example of the sequence /jw/ in Nd and Sw, but this sequence is permitted in both languages.

- 2 : Z, Nd /út̥̃wàlá/ Sw /t̥̃wàlá/ 'beer'; Nd /úkúçìt̥̃hwà/ 'to be extinguished', Xh /t̥̃hwèlá/ 'Scrape off'; Xh /úk'újwàqà/ 'to snap at', Z /jwáyélà/ 'Become accustomed to !'.

In Xh, Nd and Z /pt̥̃h/ is a non-permitted sequence because aspirates do not occur in the nC sequence. While this particular sequence would be permitted in Sw, there is no evidence of its actual occurrence.

- 3 : Xh, Z /ínt̥̃èè/ Sw /ínt̥̃wèè/ 'beard', Nd /ámànt̥̃ónt̥̃wà/ 'small pieces of meat'; Xh /ínjá/ Z, Sw, Nd /înjà/ 'dog'.

4.3.10. Xh alone has a strongly-glottalized dorso-velar

voiceless /k̥̃/ [kx²] (kr) which is never found in a nC sequence. The point of articulation is considerably further back on the soft palate than /k'/.
1

- 1 : /úúkràkrá/ 'bitterness', /krìkrízà/ 'Complain!'.
2 : /úk'úkrwèmpà/ 'to scratch'.

4.3.11. Z, Nd, Sw have a low-frequency laterally-released¹ voiceless glottalized affricate /k̥̃/ (kl) with a point of closure somewhere between dorso-velar and lamino-domal.

- 1 : Z /úm̥̃lómèlò/ 'reward', Sw /kúk̥̃làyà/ 'to strip off', Nd /k̥̃lìntà/ 'Choke!'.
2 : Z /îk̥̃l̥wá/ 'assegai', Sw /kú'k̥̃l̥wébà/ 'to scratch', Nd /úkùk̥̃l̥wáúzá/ 'to crack a whip'.

The sequence /ŋkl/ is not found in our Nd data.

- 3 : Z /úkùŋk̥̃l̥ŋk̥̃l̥zà/ 'to breath with difficulty', Sw /ŋk̥̃l̥ná/ 'Strangle!'

¹Apparently as a dialectal difference, Z and Sw /k̥̃/ may be represented by centrally-released [kx²].

4.3.12. Sonorants. Nasal sonorants of four positions (bilabial, apico-alveolar, fronted lamino-domal, dorso-velar), i.e. /m n ɲ ŋ/ (m n ny ng) occur in Nguni. There is little allophonic variation in their representation, except that /m/ has the allophone [ɱ] before /v f/.

In Nd and Sw, /ɲ/ is of high frequency and occurs freely in medial VɲV and initial ɲV sequences, as well as in nC-type margins. In these languages the contrast /ɲ/ : /ŋg/ bears a high functional load, although the distribution of each is morphologically predictable to a high degree, /ŋg/ occurring as the first consonant in radicals and /ɲ/ generally occurring elsewhere. In Xh and Z, however, /ɲ/ is largely confined to nC-type margins and the sequence VɲV or ɲV is found only in a very few uncommon words in Xh. In some Z idiolects examined /ɲ/ is entirely confined to the nC-type margins, while in others /ɲ/ is an occasional free variant of /ŋg/ occurring between vowels or initially before a vowel, e.g. /ɲi-~ŋgi-/ as the 1st person subjectival concord. The dialectal associations of this difference in the distribution of /ɲ/ are not clear and our Z informants presented both types.

/m/ alone amongst the nasals may be syllabic, i.e. serve as a syllable peak having the minimum duration of a syllable and a distinctive tone. Either historically or in a synchronic process of alternation, syllabic /m/ has an origin in the syllables /mu/ or /mi/, more frequently the former than the latter. In Z /mi > m/ is very rare, but not in Nd where /m~mi/ are often in free variation. The tendency to reduce /mu/ and /mi/ to syllabic /m/ is strongest in Xh. In distribution, therefore, syllabic /m/ patterns word-initially as V, or medially as the sequence CV before consonants and CVC before a vowel, while non-syllabic /m/ patterns only as C.

1 : Xh, Z, Sw /mémà/ Nd /mèmə/ 'Invite!'; Z /úmélì/¹ Nd /úmélì/

1

The morphologic evidence supports the orthographic form ummeli in indicating the stem as -meli. Phonologically, however, there is no justification for writing a double symbol and there are, in fact, good reasons for avoiding it. (See 12.1.7.)

'lawyer', Xh /úmi/ 'inhabitant', Sw /ànjímémeti/ 'I do not shout at him', Nd /ìmp̄hèfúmùlò~ìmp̄hèfúmùlò/ 'breaths'; Xh, Z, Nd /níná/ Sw /níné/ 'ye'; Xh, Z, Sw, Nd /ínàmà/ 'meat'; Xh /úk'ùṅóṅózèlà/ 'to make a face at someone'; Sw /épanénì/ 'on the moon', /tíḡòṅò/ 'praises'; Nd, Sw /ṅìṅgǎṅawè/ 'I am as big as you'.

/mw/ is a non-permitted sequence in Nguni.¹ Examples of the sequence /nw/ are lacking in our Z and Xh data.

2 : Z, Sw, Nd /úmúnwè/ Xh /úmnwè/ 'finger'; Xh /úk'ùṭhúp̄wà/ Z, Nd /úkùṭhúp̄wà/ Sw /kú'tshúp̄wà/ 'to be sent'; Nd /índwǎṅwǎnà/ 'small monkey', Sw/tí'ḡóṅwǎnà/ 'a few praises'.

4.3.13. "Clear l" (usually apico-alveolar, although almost dental with some Nd speakers) occurs with high frequency in all languages.

1 : Xh /úk'ùlilà/ Z, Nd /úkúlilà/ Sw /kúlilà/ 'to weep'.

2 : Xh /úk'ùlilwà/ Z, Nd /úkúlilwà/ Sw /kúlilwà/ 'to be wept'

Nd alone has the sequence /nl/.

3 : Nd /ínlîmì/ 'tongues'.

4.3.14. Sonorants marked with the additional feature of voiced aspiration (i.e. glottal murmur whose greatest acoustic prominence is achieved in its complete or partial coincidence with the articulation of the following peak-vocoid) occur in Xh and have been reported in Z, but are not found in the speech of our informants. In Xh there is a clear /p/ : /p̄h/ contrast, e.g. /íp̄èlé/ 'edge; border' : /íp̄hèk'é/ 'hare lip'. /m/ and /m̄h/ are mostly free variants, but there is some evidence of contrast, e.g. /m̄hém̄hà/ 'Carry of the back !' : /mémà/ 'Invite!'. /n̄h/ and /l̄h/ may be heard, but are lacking in many idiolects and, when found, always appear to be free variants with /n/ and /l/ and never to contrast with them, e.g. /lé~l̄hé/ 'this one'. /*m̄hw/ is a non-permitted sequence. /íp̄hwǎgí/ 'genet' contains an example of a /p̄hw/ sequence.

¹

C.M.Doke (Text Book of Zulu Grammar, 4th edition, 1947, § 583) records esimweni which is certainly not found in the speech of our informants.

4.3.15. High-frequency glide vocoids with the tongue-height and tenseness of /u/ and /i/, but lacking the sonority and syllabicity of the latter, pattern as consonants, i.e. /w y/. Allophones of /w/ before /u/ and /y/ before /i/ are usually tenser and have a higher tongue-position and closer lip-rounding (in the case of /w/) than the representatives of the vowels. Representatives of /y/ may acquire friction in this position. The representation of /w/ before /u/, and /y/ before /i/ is, however, often much reduced in acoustic prominence, but the undisputed evidence of vowel and consonant distribution elsewhere shows clearly that the interpretation reflected in orthographic aivali in Sw and ngizauhamba in Z, for example, is incorrect. Correctly transcribed these words are /àyivǎli/ 'He does not close' and /ngizàwùhámà/ 'I will walk'.

1 : Xh /úk'úyiwà/ Z, Nd /úkúyiwà/ Sw /kú'yiwà/ passive of 'to go'.

2 : Xh /úk'ùŋiywà/ Z /úkùŋiywà/ Nd /úkùtŋhiywà/ 'to be left behind', Sw /kú'lóywà/ 'to be bewitched'.

/y/ never occurs in sequence with any nasal sonorant in a nC-type margin. /w/ in sequence with preceding /n p ŋ/ has been illustrated at 4.3.12 above.

4.3.16. Clicks. Three click types provide the basic constituents of the phonemes in three "click orders" in Xh, Z and Nd. (Our analysis recognizes only one order of clicks in Sw.) /c q x/ (c q x) are the phonetically simplest members of these orders and they differ mainly according to : (a) the point of front closure (all have a dorso-velar closure), (b) the direction of release (central or lateral), (c) a release which is relatively slow and accompanied by friction (/c x/), or one which is immediate and without friction (/q/). The upper rim of the tongue is involved in the closure for all clicks. For /c/, front closure is against the alveolus with the tip of the tongue closing also against the back of the teeth. For /q/ there is a domal closure which may be more or less fronted. Tenseness and the extent of bowing of the tongue which alters

the depth of the cavity (correlated to some extent with the point of closure), contribute to non-distinctive differences in quality which are heard in this basically retroflex sound. /c/ and /q/ are centrally released. Laterally released /x/ may have the front closure of /q/, but is often truly alveolar, i.e. the tip of the tongue is not in contact with the back of the front teeth. Slight differences in quality correlate mainly with tenseness, the point of front closure and the duration of the release.

In each language the remaining phonemes of the click orders are marked by additional features such as aspiration, nasality, etc., giving a range of five phonemes in each language (except Sw which has four) with the same primary components. In addition to /c q x/ (which may have a weak glottal-catch accompaniment) Xh, Z, Nd (Sw is treated separately below) have the following : Aspirated / $\bar{c}h$ $\bar{q}h$ $\bar{x}h$ / (ch qh xh) with strongly aspirated release of the velar closure. Voiced / $\bar{g}c$ $\bar{g}q$ $\bar{g}x$ / (gc gq gx) with fortis voiced release of the velar closure. These two releases follow immediately upon the release of the click. Nasalized / $\bar{c}^n$ $\bar{q}^n$ $\bar{x}^n$ / (nc nq nx) in which the front closure is released during the articulation of the accompanying velar nasal. Nasalized aspirated / $\bar{c}^{nh}$ $\bar{q}^{nh}$ $\bar{x}^{nh}$ / (ngc ngq ngx) comprising elements identical with the nasalized clicks, but having in addition voiced aspiration (acoustically most prominent where it coincides with the articulation of the following peak-vocoid). A fluctuation between $\bar{c}^{nh}$ $\bar{q}^{nh}$ $\bar{x}^{nh}$ and a sequence which is phonetically "prenasalized" / $\bar{g}c$ $\bar{g}q$ $\bar{g}x$ /, i.e. / $\bar{ng}c$ $\bar{ng}q$ $\bar{ng}x$ /, is indicated in some Z and Xh idiolects, but it is unlikely that there is ever any contrast between / $\bar{c}^{nh}$ / and / $\bar{ng}c$ /, etc. It is the former series which is found in the speech of our Z, Xh, Nd informants, but one Z idiolect examined revealed an occasional overlapping of the two in a prenasalized voiced aspirate, i.e. "ngqh".

1 : Xh / $\hat{i}c\acute{i}c\acute{i}$ / Z / $\acute{i}'c\acute{i}c\acute{i}$ / 'ear-ring', Nd / $\acute{i}s\acute{i}c\hat{o}c\hat{o}$ / 'type of medicine'; Z, Nd / $\acute{i}q\grave{a}q\acute{a}$ / Xh / $\acute{i}q\acute{a}q\acute{a}$ / 'polecat';

Z, Nd /úkúxòxà/ 'to discuss', Xh /ùyàxók'à/ 'You are telling lies'; Xh, Z, Nd /chìthá/ 'Spill!'; Xh, Z, Nd /ùqthóqthòqthò/ 'wind-pipe'; Xh /úk'úxhòlà/ 'to carve', Z, Nd /íxhègù/ 'old man'; Xh, Z, Nd /g̃cíná/ 'Keep, preserve!'; Z, Nd /ísíq̃òkò/ 'hat' (Z) 'item of apparel' (Nd), Xh /úq̃ìrà/ 'doctor'; Xh /ámágxà/ 'the shoulders', Z /úgxà/ 'digging stick', Nd /g̃xòóá/ 'Crush!'; Xh, Z /úc̃nèdò/ 'assistance', Nd /c̃nèq̃á/ 'Beg!'; Z, Nd /q̃nóóà/ 'Defeat!', Xh /ámáq̃nè/ 'loins'; Z /í'x̃nèlè/ 'left-handed person', Nd /x̃nà/ 'when', Z /ng̃èx̃nà/ Xh /ng̃éx̃nà/ 'by reason of'; Xh /íc̃nà/ 'grass', Z, Nd /úóùc̃nhòno/ 'improvement'; Z /íq̃nhòzà/ 'rooster', Nd /íq̃nhàmú/ 'knife', Xh /í'q̃nháyì/ 'basin'; Xh /íx̃nhòwà/ 'bag', Z, Nd /íx̃nhèpè/ 'a part'.

/w/ in sequence with a click phoneme is, in the case of certain particular sequences, either very rare or non-existent (existence or non-existence is sometimes a matter of idiolect) and the Cw sequence is not exhaustively exemplified below.

2 : Xh /ícwìlì/ 'small piece', Z /cwècwá/ 'Peel!', Nd /cwèq̃á/ 'Strain fat!'; Xh /úmch̃wèlì/ 'carpenter', Z /í'c̃hwánè/ 'young of bird or animal'; Z /kúg̃cwèlè/ 'It is full'; Xh /íc̃nwàdí/ Z /íc̃nwàdí/ 'a book', Nd /úkúq̃nwèóà/ 'to pinch'; Xh /í'c̃nhwàngù/ 'cruel person', Z /í'c̃nhwèlè/ 'holy thing'; Xh /q̃wàlàsélà/ 'Observe intently!', Z /úq̃wèmbè/ 'meat tray', Nd /úkùq̃wáq̃wàzà/ 'to hit with sticks'; Z /q̃hwèóá/ 'Beckon!', Nd /ùq̃thóq̃thóq̃hwànà/ 'small wind-pipe'; Xh /íg̃q̃wírà/ 'wizard', Z /úkúq̃wàlà/ 'to rust'; Xh /úm̃q̃nwènò/ 'strong desire', Z /íq̃nwàóà/ 'a pile', Nd /úkúq̃nwèthà/ 'to bully'; Z, Nd /íq̃nhwèlè/ 'a bully', Xh /íq̃nhwìníóà/ 'elbow'; Z, Nd /úkùxwáyà/ 'to be beware of', Xh /ísíxwèxwé/ 'slab'; Xh /x̃hwithá/ 'Pluck out feathers', Nd /úm̃x̃hwèlè/ 'loose skin'; Xh /íg̃x̃wémù/ 'a squinter', Z /í'x̃nwémù/ 'a squinter', Nd /ùyìx̃nwàlà/ 'You are squint-eyed'; Nd /íx̃nhwèmbè/ 'large spoon', Xh /íx̃nhwèlérà/ 'wounded person'.

The sequences /ŋc ŋq ŋx/ (nkc nkq nkx) occur in the speech of our Xh informants, but these sequences are completely

lacking in our Z and Nd data.¹ Phonetically this type of sequence comprises velar nasal which terminates before the release of the click. No other click series is found in margins of the nC type.

3 : Xh /í'ŋcéncè/ 'corrugated iron', /í'ŋqáyì/ 'bald head',
/í'ŋxásò/ 'support'.

4.3.17. Sw has a single click order in which the c-type click provides the basic constituents. Numerous idiolects, however, have a varying number of words in which the typical Nguni q-type click occurs, replacing the c-type of other idiolects. There is no evidence at all of a contrast between the two types of click and the substitution of /c/ for /q/, for example, produces the same response from informants who use the latter and is readily acceptable to them. Our chief informants used only the c-type in our data. Sw /c $\bar{c}$ h $\bar{g}$ c $\bar{c}^n$ / ² are closely similar to the corresponding phonemes already described in Xh, Z, Nd, except that Sw /c/ may on occasions have a glottalized dorso-velar stop release.

1 : /émàcémbè/ 'leaves', /sí'chôlò/ 'type of girl's head-dress',
/lécⁿánè/ 'small', /íngcùgčě/ 'girl of marriageable age'.

2 : /lúcwèphé/ 'spoon', /kúgcwě6è/ 'It is full', /ícⁿwādzi/ 'book'.

/gč/ occurs in sequence with /ŋ/. [$\bar{g}h$] found only in the margin [$\bar{g}h$] is interpreted as an allophone of / $\bar{c}h$ / for the reasons : (a) the complete series /p $\bar{h}$ t $\bar{sh}$ k $\bar{h}$ $\bar{c}h$ / then has voiced allophones in nC margins, (b) [$\bar{g}h$] would otherwise stand in a series quite by itself, i.e. as / $\bar{g}ch$ /.

3 : /úngcùnú/ 'He is naked', /íngcwàlà/ 'first-fruits ceremony',
/yèŋchă/ 'Pass!'

¹ Earlier investigators reported the occurrence of nkc, nkq, nkx in Z. See C.M.Doke : Phonetics of the Zulu Language, Johannesburg, 1926, p. 137.

² Inconsistency prevails in the representation of click phonemes in Sw orthography. c and q are differentiated and c, ch, gc, nc correspond to /c $\bar{c}$ h $\bar{g}$ c $\bar{c}^n$ /. /ngč/ may be written nkc, or more recently as ngc, although the latter has also been used for /ŋch/.

4.3.18. Trills. An apical voiced trill [r] (written r in all orthographies, but here symbolized by /ɾ/) appears in acquisitions from English and Afrikaans in the speech of those who have fairly close contact with these languages, e.g. Z /íráyìsì/ 'rice', Xh /ílòɾí/ 'lorry', Nd /í^hbáɾà/ 'barrow'. In areas where there is least contact with Europeans, however, /l/ is usually substituted for /ɾ/, e.g. Xh /ílòlí/ 'lorry'. The trill is not treated here as an integral part of Nguni phonology.

CHAPTER 5

THE BASIS OF CONTRAST IN THE SEGMENTAL SYSTEM

1. Introduction

5.1.1. The distinctive features responsible for the differentiation of the segmental phonemes in each language are identified in the discussion in section 2 below. The diagrams in section 3 are aimed at presenting the pattern of contrasts in each phonologic system in terms of the distinctive features. The latter are selected and the diagrams so constructed that contrast between any pair of phonemes (within the three sets separated in our partial analysis) is accounted for by at least one distinctive feature.

The choice of distinctive features and the design of the diagrams is governed by the principle of maximum economy. Identifying distinctive features from among the sound features which recur in every representation of a phoneme or group of phonemes is, therefore, a matter of balancing the selection of features which can account for the largest number of contrasts, with the endeavour to keep the total number of distinctive features as small as possible. Symmetry within the system is the product of such efforts towards achieving balance. It is on the basis of economy that the feature of glottalization (a permanent and prominent feature in the representation of a number of Z and Nd phonemes) is ultimately rejected in favour of occlusion, which can account for the distinctiveness of a greater number of phonemes in being applicable to voiced as well as voiceless stops, including all those for which glottalization acts potentially as a differential. Some element of arbitrariness in selecting distinctive features is, however, unavoidable, and we cannot be sure, for example, that the /6/ : /p̥h/ contrast in Z does not depend on "voicing" rather than "lenisness" which we have postulated.

The diagrams at 5.3.2. ff. below present the phonemes as clusters of ultimate phonologic components, each phoneme constituting a unique selection of these components.

2. Distinctive Features

5.2.1. Contrast at syllable peaks. The vowel phonemes which supply the majority of syllable peaks, contrast according to tongue-height and a front : back contrast. With the lowest tongue position, i.e. that of /a/, the latter contrast is non-distinctive, as is the lip-rounding of /o u/, which is conditioned by the presence of the "back" position. Nasality, normally a non-distinctive feature within the vowel system, acts as the differential in the peripheral contrasts /i/ : /ĩ/ (Z, Sw, Nd) and /e/ : /ẽ/ (Sw only). The phonemicization of prosodic features associated with syllable peaks is wholly confined to the suprasegmental level in our analysis.

Syllabic /m/ also occurs at syllable peaks and is involved in contrasts with vowels in this position. Our analysis is not developed to the extent that contrast between /m/ and the vowels is accounted for.

5.2.2. Contrast at syllable margins. It requires 7 (Xh, Z, Nd) or 6 (Sw) sets of simple contrasts involving two opposing members, plus a set of points-of-articulation differences (7 points in Xh, Z, Nd and 6 in Sw), to construct the frame containing the network of contrasts which underlie the consonant system. The integration of the two laryngeals may or may not require the recognition of another distinctive feature.

5.2.3. All consonants (except /h h̥/ in the present analysis) partake of a correlation according to point of articulation. The latter includes the usual points along the line of the front-to-back scale, viz. labial (L), alveolar (A), domal (D), velar (V), to which are added also dental-velar (DV), domal- (or palatal-) velar (PV) which account for two orders of clicks. The point-of-articulation correlation is, however, two-dimensional, in that a point at the side of the palate

contrasts with one along the centre line, thus "lateral" (LT) accounts for the order of which high-frequency /h̥l d̥l/ are members. The latter must, of necessity, incorporate the lateral clicks /x g̥x/, etc. also. The glides /w y/ are ranked according to their labial and palatal colouring respectively. The velar quality of /w/ allows for a dual classification of this phoneme which would bring additional symmetry to the sonorants in view of the series /m n ŋ/ of nasals.

A treatment of "suborders" is necessary in connection with two sets of phonemes which share the same point of articulation and fill out the various manner-of-articulation differences in a manner typical of other orders. Such suborders correlate according to affrication in Xh and to click quality in Z and Nd. (No suborders exist in Sw if /d/ is treated as a leftover, see 5.3.8.) Vestiges of distinctive affrication exist in Z, Nd and Sw, notably in /t̥s/ of Z and Nd which is of low frequency apart from its appearance in nC-type margins. /t̥s/ must contrast with /t/ and /s/ in these languages. It is only in Xh, where the set /t̥s t̥sh t̥j j t̥h̥ kr/ must be incorporated in the central network, that any substantial functional load can be attributed to this feature. Affricates in Z and Nd clearly fill the domal order in the way in which plain stops fill out other orders and contrastive quality is attributed only to their stop elements. The same assumption is tenable also in Sw. In Z and Nd where the laterally^{released} /k̥l/ co-exists with the lateral click /x/,¹ two suborders must be differentiated at the "lateral" point of articulation and a click : non-click contrast is postulated. In Xh, which lacks /k̥l/ but has lateral spirants, the latter fit neatly into the same order as the lateral clicks.

5.2.4. A correlation according to nasality has a high functional load and nasal resonance marks the nasal sonorants /m n ŋ/ differentiating them in such contrasts as

¹

It is interesting to note that earlier investigators identified both these sounds as "clicks" and had some difficulty in differentiating them.

/n/ : /l/. Nasalized clicks including /c^{nh} q^{nh} x^{nh}/ stand among nasal sonorants, and the click components and nasality are concurrent. This distinguishes them from the sequences /ŋc ŋq ŋx/ in which they are in sequential arrangement.

5.2.5. In Z, Sw, Nd a correlation according to lenisness sets /6 k/ off from /b g/ and /p^h k^h/, although it is equally possible to make aspiration responsible for the contrasts involving the latter. (The contrasts /6/ : /p/, /k/ : /k'/ are attributed to the voicing feature rather than to the lenis : fortis contrast, because voicelessness is relevant to the whole of series 2 whereas fortisness is not.) In Xh the corresponding correlation is that according to injection which, when present, implies that voicing is redundant (in view of the allophone [p̥] of /6/) and injection thus differentiates /6/ from /p/ and /b/, this feature also being selected for the contrast /6/ : /p^h/, although aspiration can equally well be responsible. *uncertainty*

5.2.6. A correlation according to aspiration contrasts the plain stops such as /p/ : /p^h/, etc., /b/ : /b^h/, etc., in all languages. There is evidence that voicing is redundant in association with aspirates. Voiced and voiceless aspirates are never distinguished and in Sw, [ph] and [bh], etc., are either free variants or contextually conditioned. *88 mphi phib*

5.2.7. A correlation according to voicing is highly functional and is represented in all series except those marked by aspiration and that of Xh /6/. Sonorants do not partake of this contrast because sonority implies voicing.

5.2.8. A correlation according to occlusion subsumes the phonetic differences between stops and spirants.

Click phonemes in Z, Nd and Sw and all sonorants do not partake of this contrast.

5.2.9. A correlation according to sonority is postulated as responsible for the contrasts between obstruents and non-nasal sonorants. Click phonemes do not partake of this contrast.

3. The Phonologic Patterns

5.3.1. Diagrammatic presentation. The method of presenting the phonologic patterns which is adopted here is highly economical as regards space, but has the disadvantage that a phonologic component has to be assigned to a complete order or series, whereas it may actually pertain to certain members of the order or series only. This disadvantage is obviated to some extent by the use of brackets to enclose the plus and minus signs in the framework of the diagrams. This is done wherever the particular distinctive feature is relevant with regard to certain phonemes only. The following notes refer to the bracketing of signs.

- (a) The absence of nasality in series 4 is non-significant in all non-click phonemes in Z and Nd and some in Xh. Distinctive nasality must be postulated in contrasts such as / $\overline{ch}$ / : / $c^{\overline{h}}$ /, etc.
- (b) The feature of injection has no relevance outside of the labial order in Xh and similarly lenisness is irrelevant outside of the labial and velar orders in Z, Nd and Sw, hence the minus signs of series 2, 3 and 4 are bracketed.
- (c) The absence of aspiration in series 8 is distinctive only where there are aspirates in the same order in series 9.
- (d) The occlusion feature in series 2 to 4 is redundant with regard to the click orders in which stops and spirants do not contrast, except that in Xh the presence of / $\overline{hl}$ $\overline{dl}$ / in the same order as the lateral-click phonemes restores the distinctiveness of the feature for this particular order.
- (e) The absence of sonority is non-significant with regard to the click phonemes of series 2 to 4 because there is no contrast between obstruents and non-nasal sonorants in these orders.

5.3.2. Xhosa :

Front Back

High
High
Mid
Low

i	u
ɨ	ʉ
e	o
a	

Nasality
Injection
Aspiration
Voicing
Occlusion

Sonority

P.o.a. L
Affri-
cation

A

D

V

DV

PV

LT

- + - + - +

- + + - 1
- (-) - - (+) (-) 2
- (-) - + (+) (-) 3
(-) (-) + (+) (-) 4
- - - (-) 5
- + - (-) 6
- + 7
+ (-) 8
+ + 9

6															
p	t	ts	ty	tʃ	k'	kr	c	q	x						
b	d	dz	dy	j	g		gc	gq	gx						
ph	th	tsh	tyh	tʃh	kh		ch	qh	xh						
f	s		ʃ		r				hl						
v	z				gr				dl						
w	l		y												
m	n		ɲ		ɲ		c ⁿ	q ⁿ	x ⁿ						
mh			ɲh				c ⁿ h	q ⁿ h	x ⁿ h						

-

h

+

hh

Leftovers : Nil

5.3.3. Zulu :

		Front		Back	
High		i		u	
High		e		o	
Mid		e		o	
Low		a			

Nasality	Lenisness	Aspiration	Voicing	Occlusion	Sonority	P.o.a.	L	A	D	V	DV	PV	LT	
-	+	+	+	-	1	Click	6			k			-	
-	-	-	(+)(-)	2			p	t	<u>tʃ</u>	k'	c	q	x	kl
-	(-)	-	+(+)(-)	3			b	d	<u>j</u>	g	gc	gq	gx	
(-X-)+			(+)(-)	4			ph	th		kh	ch	qh	xh	
-	-	-	(-)	5			f	s	<u>ʃ</u>	r				hl
-		+	-	(-)	6		v	z						dl
-				+	7		w	l	y					
+	(-)				8		m	n	<u>ɲ</u>	ŋ	c ⁿ	q ⁿ	x ⁿ	
+	+				9						c ^{nh}	q ^{nh}	x ^{nh}	

-
+

h
hh

Leftovers : /t̄s ī/

5.3.4. Ndebele :

Front Back

High
Mid
Low

i	u
e	o
	a

Nasality	Lenisness	Aspiration	Voicing	Occlusion	Sonority	P.o.a.	L	A	D	V	DV	PV	LT	
-	+	+	+	-	-	Click							+	-
-	+	+	+	-	-	1	6			k				
-	-	-	(+)	(-)	-	2	p	t	tʃ	k'	c	q	x	kl
-	(-)	-	+	(+)	(-)	3	b	d	j	g	gc	gq	gx	
(-X-)	+		(+)	(-)	-	4	ph	th	tʃh	kh	ch	qh	xh	
-		-	-	(-)	-	5	f	s		r				hl
-		+	-	(-)	-	6	v	z						dl
-				+	-	7	w	l	y					
+	(-)				-	8	m	n	ɲ	ŋ	c ⁿ	q ⁿ	x ⁿ	
+	+				-	9					c ^{nh}	q ^{nh}	x ^{nh}	

+

hh

Leftovers : /t̄s ī/

5.3.5. Swazi :

						Front		Back	
						High		i u	
						Mid		e o	
						Low		a	

Nasality	Leniency	Aspiration	Voicing	Occlusion	Sonority	P.o.a.	L	A	LT	D	V	DV
-	+		+	+	-	1		6			k	
-		-	-(+)	(-)	2		p	t	kl	tʃ	k'	c
-	(-)	-	+(+)	(-)	3		b	dz		j	g	gc
-	(-)	+	(+)	(-)	4		ph	tsh			kh	ch
-		-	-	(-)	5		f	s	hl	ʃ		
-		+	-	(-)	6		v	z	dl			
-					7		w	l		y		
+					8		m	n		ɲ	ŋ	c ⁿ

-	h
+	hh

Leftovers : /d t̄s ī ē/

Leftovers : /d t̄s ĩ ē/

5.3.6. The consonant systems compared. The basic similarities

of the patterns of segmental contrasts are well illustrated by the diagrams above. It is interesting to note that the main differences between the four systems are differences in the size of the consonant inventories and these depend on the extent to which the individual languages have drawn upon the wealth of Khoisan phonology. Xh, for example, has the most extensive consonant system largely due to the wide development of contrasts between affricates and plain stops. In the domal order, where the contrast is most widely exploited (in terms of frequency), the complete set /t̄y d̄y t̄yh/, which the other languages lack, has a probable origin in original Khoisan loans. Aspirated sonorants, of which Xh has more than any other language, give every evidence of being products of Khoisan influence because the click orders with an undisputed Khoisan origin, exploit this sound-type most fully (i.e. in /c̄^h q̄^h x̄^h/). Furthermore, the aspirated plain nasal sonorant

/ṽh/ of Xh, with the highest frequency by far in this series, occupies a position in the domal order with strong Khoisan associations. Sw stands apart as the smallest system, largely due to lacking two orders of clicks. In this connection it is noteworthy that Sw has to some extent made its own selection of click releases and accompaniments from the wide range presented by Khoisan languages.

Sw is separated even further from the other languages by the unique changes in the phonologic system that have produced present-day cognates such as Z-Xh /z/ = Sw /t/, Z-Xh /mp/ = Sw /mṽh/, etc. Sw has nevertheless retained a typically Nguni set of distinctive features, despite profound changes within the system which have produced these correspondences.

5.3.7. The leftovers. Peripheral contrasts based upon

nasality referred to at 4.2.6, are responsible for the distinctiveness of the very low-frequency phonemes /ĩ ē/. /ṽs/ of Z and Nd requires the inclusion of distinctive affrication in the central network of the system if it is to be incorporated with the other consonants. The absence of any real dependence on affrication in these languages is clear from the diagrams. /ṽs/, apart from nC-type margins, is of very low frequency in Z and Nd and gives every evidence of instability in its frequent alternation with high-frequency /t̃/. /ṽs/ only appears to acquire effective contrastive quality in the sequence /nṽs/ in which it occurs fairly frequently. We regard the asymmetrical pattern that the inclusion of /ṽs/ entails as unwarranted in view of the very low frequency of /ṽs/ as a contrastive margin.

5.3.8. The leftovers /d ṽs/ of Sw. As in Z and Nd these two

phonemes depend upon distinctive affrication in order to be included in the central network of the system. In this connection there are certain pointers in the data to the redundancy of voicing and the distinctiveness of affrication in its place. Firstly, /d/ mostly occurs as a free variant with /t/ in non-initial positions, e.g. /m̃âit̃e ~ m̃âid̃e/ 'Call

him!', /tíntwàné~tíndwàné/ 'toes'. /d/ is the distinctly less-frequent member of the variation, particularly in careful speech. There are, however, a very few words such as /líbòdó/ 'pot' that consistently retain /d/. Variation between [t] and [d] cannot therefore be subphonemic, but there are suggestions here that voicing may be redundant. Secondly, in that part of the alveolar order which is atypical in Nguni because of the presence of affricates, viz. /t̄ dz̄ t̄sh̄/, affrication and aspiration can account for all contrasts. (Affrication thus replaces voicing identified in the diagram above.) Thirdly, Sw voiceless /t/ is the cognate of Z-Xh voiced /z/, both being reflexes of Proto-Bantu *1. Fourthly, the series /p̄h̄ t̄sh̄ kh̄/ has both voiced and voiceless allophones.

A glance at the environs of /t̄ dz̄ t̄sh̄/, however, reveals the high probability of the distinctiveness of voicing in contrasts such as /s/ : /z/, /p/ : /b/, etc. Pointers to the redundancy of voicing and the distinctiveness of affrication in its place, we believe to be relics of an earlier stage in Sw phonology when voicing as a feature may well have been non-distinctive in a large part, if not all of the system, and affrication bore a high functional load. This we believe to be the origin of /t̄sh̄/ and /dz̄/. Today, however, the response of native speakers is to voicing rather than affrication. This is indicated by the fact that in the variation between /t/ and /d/ a movement towards the former is discernible. /t/ is far more common than /d/, particularly in precise speech, and informants not infrequently correct a /d/ deliberately selected by the investigator, to /t/. Moreover, variation only occurs in non-initial positions, only /t/ being found in initial positions. /t/:/dz/ thus depends on voicing.

It is this evidence, combined with the very low frequency of /t̄s/ (it has only been recorded in one word), that lead us to believe that affrication has a very small functional load. The only occasions on which contrastive function clearly devolves upon it concern the few words that consistently

retain /d/.¹ Taken in conjunction with the fact that the inclusion of /ɛs/ and /d/ would introduce considerable asymmetry of pattern, these phonemes are regarded as fulfilling the requirements of "leftovers".

¹ It is possible that the close contacts of the present day with Z, with its high-frequency /d/, have prevented the final disappearance of /d/ in Sw.

CHAPTER 6

THE TONEMES OF XHOSA

1. Introduction

6.1.1. A set of pitch phonemes (tonemes) provides the structural interpretation of significant differences in the height and contour of pitches associated with syllable peaks in all Nguni languages. A detailed analysis and description of pitch phenomena in Xh is provided here and comparison with similar systems in the other languages is made in Chapter 7.

6.1.2. Analysis and description of pitch phonemes. Phonemes of pitch which contrast in the one medium only - such as the pitch phonemes of Xh - present certain unique problems of analysis and description. For the most part, these stem from the fact that representatives of pitch phonemes are not distinguishable per se to the same extent as those of segmental phonemes which have an absolute quality to a degree that usually ensures their identification in isolation. More than any segmental system ever can be, the pitch phonemes of Xh come close to being a set of mathematical relations in which the content of the units counts for little or nothing and the relations between the units for almost everything. On the question of phonemic interpretation (to cite one example of a unique problem of analysis and description), certain fundamentally different basic premises are necessary in handling pitch phonemes in Xh, from those applicable to segmental phonemes. It will be seen later that the pitch phonemes intersect in a manner which no analyst would accept in the segmental system. As a consequence of the "unfixed" nature of distinctive quality in the tonemic system, the accurate identification of a Xh tone as an allotone nearly

always¹ requires a certain minimum background of contrasting tones, in addition to a knowledge of the allotonic variations and the environments that produce them.

In describing the allophones of segmental phonemes considerable attention is focussed upon their phonetic shape (correlated naturally with their distribution), but with pitch phonemes of a register system, where it is often gradation alone which distinguishes one allotone from another, such description has little practical value. A wide range of allotonic variation occurs in Xh and the allotones of the pitch phonemes are best accounted for by describing the nature and effects of conditioning factors present in various environments that produce this variation.² Due to the absence of an element of absolute quality, a distinction between a "tonemic norm" and other allotones is often distinctly arbitrary. The keen ear in recognizing more gradations of tone than one less keen may seek to recognize more allotones. Furthermore, it is possible, and even common in normal speech, for an allotone of one toneme to be phonetically identical with an allotone of another toneme within a single utterance.³ In this thesis, therefore, we are more concerned with explaining allotonic diversity than describing it.

In the speech of a single individual, a toneme can be realized at levels widely separated within the speaker's

1

A rising glide can always be identified as an allotone of H (see 6.3.2.), but such immediate identification of an isolated tone is the exception rather than the rule.

2

While it is not always possible to define the precise nature of environmental influences which produce allophones of segmental phonemes, it would seem that the allophones of pitch phonemes can usually be accounted for in terms of such obvious processes as tonal assimilation, consonantal influence, etc.

3

Contrasts between tonemes, as well as segmental phonemes, are often obscured in quick speech due to redundancy present in the speech signal. What we are referring to here, however, is not a temporary loss of contrast in this way, but to the fact that pitch contrasts in Xh are only maintained within each "tonal step" (see 6.3.4) and the end of each step requires a recalibration of the scale of contrasting pitches.

pitch-range, depending on such factors as his physical and emotional state, intonational overlaps, etc. In all such cases, however, it is not single tonemes but whole sequences of tonemes coinciding with a complete utterance, or a substantial portion thereof, which are affected by factors of this nature, and the normal contrasts between tonemes are maintained within the sequence. Within the tonemic system changes in "key" have no significance. It is also true, however, that even within a short utterance a "high" toneme near the end may be realized at the same pitch level as that of a "low" toneme near the beginning. It is clear, therefore, that there is some smaller unit within which significant pitch contrasts are maintained. This unit is the "tonal step" which, apart from a few accountable exceptions, always contains at least one high and one low toneme.

Apart from factors mentioned above which produce changes in "key", it is possible to identify within a stretch of speech allotonic variations associated with specific points in the segmental and suprasegmental environment. At such points conditioning influences are found which operate regularly and uniformly, forcing tones higher or lower or producing glides in place of level tones. It is these influences which determine the range of allotonic variation and to describe them fully is to provide an adequate account of the representation of tonemes.

6.1.3. In any piece of spoken Xh of sufficient length, it is possible to identify tones which can be described by the conventional terms "high tone, mid tone, low tone", etc., and also "rising" and "falling glides". These terms have no structural connotation, however. Tonemic equivalents will be found in terms such as "the raised allotone of the high toneme", etc. Tonetic data are generally presented by marking pitch levels and contours by short lines within square brackets. Five relative levels are distinguished within these brackets, but there is no indication as to where these levels

occur in the pitch-range of the speaker. The upper and lower limits of the brackets are adjusted to accommodate differences in pitch with regard to a particular utterance heard from a particular informant at a particular time. Where immediate comparisons are made between minimal or nearly-minimal pairs, however, we intend that the limits indicated by each set of brackets should be regarded as located at approximately the same pitch.

2. The Tonemes

6.2.1. Pitch contrasts. In the shape of the tonemic norms, the majority of pitch contrasts in Xh are between a high level tone, a low level tone and a high-falling gliding tone. The latter is always bound to concomitant vocoid length¹ and for reasons given later the glide is best interpreted tonemically in terms of its end-points, i.e. as the close-knit cluster "high-low" which falls upon a single syllable whose peak-vocoid incorporates the length feature in order to accommodate the cluster. Xh thus has two register tonemes and every syllable of every utterance bears one or the other of these tonemes, or the close-knit cluster of two.

6.2.2. The high toneme. When uninfluenced by any of the conditioning factors described below, this toneme is realized at a pitch level discernibly higher than that of the allotone of the low toneme to be found in a similar non-influencing environment. The pitch is maintained without any marked rise or fall. H symbolizes the high toneme in isolation; in association with the vowels and syllabic /m/, it is represented thus : /á é ǿ í ǫ ó ú ǻ/. There are no restrictions on the distribution of H within an utterance.

¹

"Length" is to be equated to "additional peak-vocoid quantity". Relative differences in lengths associated with "long" peak-vocoids are temporarily ignored in this chapter.

Within any particular tonal step¹ the following principal allotones of H appear as a result of environmental influence : (a) A rising glide as a result of consonantal influence, see 6.3.2; (b) A raised high level tone as a result of a tendency of high tones in sequence to rise in crescendo, see 6.3.8.

6.2.3. The low toneme. When uninfluenced by its environment, this toneme is realized at a relatively low pitch level by a tone which does not rise or fall. The symbolization of this toneme is by L and /à è è ì ò ò ù ò/.

Within any particular tonal step the following principal allotones of L appear as a result of environmental influence : (a) A falling glide resulting from assimilation to a high toneme in the immediately preceding syllable, which commences at a fairly low level and glides gradually to a lower level; (b) A raised low or mid level tone resulting from assimilation to Hs in the immediately preceding and succeeding syllables. Allotone (a), when coinciding with the average short peak-vocoid, may not always have an easily discernible glide. A certain minimum duration is necessary to recognize the glide, which is, however, always heard in slow precise speech, or where junctural or intonational length prolongs vocoid duration. In partially-devoiced final syllables and very short syllables a raised level tone may be heard instead of a glide.

6.2.4. The close-knit cluster of two tonemes HL. Examples given at 6.2.9 illustrate the contrastive quality of the high-falling glide which differs from occurrences of the glide allotone of L mentioned above, by (a) a higher starting point and a more rapid descent, and (b) by always coinciding with a long vocoid. The pitch interval through which

¹ The same set of tonemes in one tonal step may be represented by markedly higher or lower pitches in another step. The tonal-downstep phenomenon thus produces its own allotonic variations which are, however, purely gradational and thus defy exact description. A full description of the phenomenon of tonal stepping is sufficient to account for these allotones.

the glide moves varies considerably according to vocoid duration, but the fact that it always coincides with a length feature ensures that the glide is never obscured (cf. the glide allotone of L). The high-falling glide has a variant in the form of a rising-falling glide found under the same conditions of consonantal influence that produce the rising-glide allotone of H.

6.2.5. In an earlier analysis¹ the high-falling glide was interpreted as a third toneme and the associated length feature tentatively identified as a non-distinctive, conditioned concomitant. It now seems preferable to re-interpret this tone-length complex and to identify the tone constituent as representing a cluster of two tonemes - the only example of such clustering in the tonemic system of Xh. The main reason for preferring this interpretation is that in the tonal morphology of Z, Nd and Sw there are clear examples of toneme clustering on single syllables (see 7.2.3), although such clustering is not a feature of the tonal morphology of Xh and HL never results directly from a combination of tonal morphemes. The cluster interpretation in Xh, however, makes for a desirable uniformity in interpreting an identical phenomenon in the basically similar tonemic systems of Nguni and greatly facilitates comparison. Descriptive simplicity in the broader sphere, thus tips the scales in favour of the cluster, rather than the single-toneme interpretation.

6.2.6. As regards the length feature, it is of interest to observe that the tone-length complex under discussion is bound to certain items of segmental morphology to an unusual extent. (Normally, there are few instances of a permanent bond between tonemes and the segmental constituents of morphemes, see "The Function of Tonemes" at 6.4.1.) On examining such items it is found that either the glide or the length

¹ L.W.Lanham, "The Tonemes of Xhosa", African Studies, 17, 2, 1958.

feature, appears as a uniform type of modification to the peaks of syllables immediately preceding a point where systematically-ordered syllable elision has occurred, either historically or synchronically (see 6.2.7 below). It is the length feature in particular that serves to indicate the former presence of an elided syllable, because neither H or L of the HL cluster can consistently be identified with the toneme of the lost syllable. Further confirmation of this is obtained from the appearance of length in a small number of contracted forms mentioned below, in which it coincides with a sustained high tone. The structural consequences of such token preservation must, of course, be assessed on a strictly synchronic basis.

A coherent interpretation of length occurrences associated with peak-vocoids is provided in Chapter 9, but a brief evaluation of the length concomitant of HL is deemed necessary under the present heading in view of our disposal of it in an earlier analysis as non-distinctive and conditioned by this cluster of tonemes. The length concomitant of HL accounts for most occurrences of "inherent" length, i.e. a length feature which is not isolable and is associated with particular morphs. There is, however, a small residue of inherent-length occurrences that coincide with a sustained high tone.¹ These are partly contracted forms in which length marks the elision of a syllable, e.g. [6a.kuthɛ:ŋga] 'They will buy' < /6ázàkùthêngà+/, [la:] 'that' or 'those yonder' < /lèyá làwá/, etc. Inherent length with high tone also occurs in more or less the same group of monosyllabic morphemes that provide a problem of analysis in connection with the interpretation of mid vocoids (see 3.3.1 ff.), e.g. /lɛ̌·~lɛ̌/, /lɔ̌·~lɔ̌/, /ɲjɛ̌·~ɲjɛ̌/, etc. With the latter, however, there

¹ Our earlier analysis was made without adequate consideration of these forms. No other tone has been found to coincide with a feature of inherent length apart from a high-falling glide (or a rising-falling glide as a conditioned variant) and a high tone (or a rising glide as a conditioned variant).

is a good deal of variation¹ connected with the length feature, which is partly dialectal and partly stylistic (i.e. existing in free variants). In the speech of our informants /lɛ̃. lɔ̃. ɲjɛ̃./ predominate, but variants lacking length have been heard in this dialect. In some other Xh dialects (and in Z) the latter are the regular forms. There is, however, no free variation connected with the contracted forms mentioned above, and it is even possible to find a rare example of length as a minimal difference, e.g. [lamaɔ̃:ɔ̃a][--__]² 'these men' : [la:maɔ̃.ɔ̃a][--__]² 'those yonder men'.

Because our data now includes examples in which inherent length is found apart from the high-falling glide, the earlier interpretation of it as non-distinctive and conditioned by HL is no longer tenable. Length as a demarcator of syntactic structures is a firmly-established structural role for this sound feature. Serious implications connected with phonemic intersection are therefore involved in a general recognition of inherent length as the phoneme /•/, although there is, of course, no option in the small number of cases where inherent length coincides with a sustained high tone (thus /lá•mádòdà+/ 'those yonder men', /6á•kùthêngà+/ 'They will buy', etc.). Phonemic intersection, as part of the bigger problem of the comprehensive analysis of peak-vocoid duration phenomena, is discussed in Chapter 9

1

In some dialects of Z, the variants [i•] (/i•-/) and [u•] (/ú•-/) of the class 5 and 11 noun prefixes provide the commonest of inherent-length occurrences that coincide with a high tone. Among our Xh informants, a length feature in these prefixes only coincides with a high-falling glide (i.e. /i- û-/), but the situation in Z may be paralleled in other Xh dialects.

2

"Penultimate length" (an "imposed"-length occurrence) indicated in the first example is representative of terminal juncture plus an intonation constituent. In the second example, we account for the shorter duration of the peak-vocoid of the penultimate syllable by postulating the disappearance of the intonation constituent - the absence of intonational length is apparently regular in 3rd positional demonstratives and the compounds in which they occur. The slightly higher pitch of the representatives of the two initial high tonemes in the second example is accounted for in an overlay of pitch as an expressive feature incorporated by our informant in the signal. (3rd positional demonstratives seldom lack an overlay of expressive features.)

and it suffices here to state that inherent length with contrastive quality is accepted only in a peripheral contrast. It is marked as /·/ only where it occurs apart from the toneme cluster HL.

6.2.7. The following exemplification of HL includes an indication of the extent to which these clusters are morphologically bound and how closely they are associated with points at which historical or synchronic¹ syllable elision has occurred.

(a) HL with the short perfect tense suffix /-ê/, cf. /-ile/ as the long form of the suffix.

/ndìthê/ 'I said'

/6á6éthê/ 'They have hit'

(b) HL with indicative remote past tense subjectival concords, e.g. /ndâ- < ndi-a-/, /wâ- < u-a-/, etc.

/wâphâ/ 'You gave'

/ndâlîmâ/ 'I ploughed'

(c) HL with locative demonstrative copulatives. 1st position form : /nâsí/ 'Here it is' (a dish). 3rd position form : /nâsíyâ/ 'There it is yonder' (a dish).

(d) HL with class 2a noun prefix /ô-/, cf. the alternant /awo-/ found in Z.

/ô6âwô/ 'our fathers'

(e) HL with the short 2nd positional demonstrative /lô/, cf. the long forms /léyò/, /lówò/.

/lôntó/ 'that thing'

/lômntù/ 'that person'

(f) HL with the prefix /î-~îm-~îp-~îq-/ of certain class 10 nouns,² cf. the disyllabic prefix /izin-~izim-~izip-

¹revealed in allomorphs such as the synchronic alternants /î-~îlî-/ as the prefix of class 5 of nouns.

²

Class 10 nouns fall into two groups, viz. (a) those identical in singular and plural, e.g. /înták'à/ 'bird' or 'birds', /îcⁿwàdí/ 'book' or 'books'; (b) those which differentiate singular and plural by the toneme of the prefix, e.g. /î^lqⁿwélò/ 'wagon', /î^lnk'à6î/ 'oxen' (cf. the plural forms above). A strong, but incomplete, correlation exists between (a) and tonomorphologic classes of nouns with an initial L on the stem, and (b) with tonomorphologic classes with initial H.

~iziŋ-/ found with monosyllabic stems.

/i^{q̄}nwélò/ 'wagons'

/i^ŋk'â6i/ 'oxen'

- (g) HL with the allomorphs /i-/ and /û-/ of the prefixes of noun classes 5 and 11, cf. /íli-/ and /úlù-/ occurring with monosyllabic stems.¹

/ithémbà/ 'hope'

/ûnwélè/ 'a hair'

- (h) HL in tense forms of the copulative conjugation marking a point where a defunct copulative auxiliary verb *-li previously occurred.

/êkhóná/ < *elikhona 'while he is present'

/êmhlé/ < *elimhle 'she being beautiful' (participial tense)

- (i) Examples in which HL is not morphologically bound, but takes its place with H and L in the toneme patterns associated with particular tonomorphologic classes of nouns, verbs, etc., are provided at 6.4.3 and 6.4.4.

6.2.8. The conditioning of allotones. Environmental

features on both the segmental and suprasegmental planes influence the representation of tonemes very profoundly. Of the five main conditioning factors given below, it will be seen that the first is associated with the segmental environment and the remainder with the suprasegmental environment. The latter arise out of the mutual influence of tonemes in sequence. Only an outline of the effects of these conditioning factors is given below, a full description being postponed until 6.3.1 ff.

- (1) A consonant frequently produces a distortion of the representation of the toneme borne by the immediately-succeeding peak-vocoid. Approximately one-third of the

¹ Nouns with a stem-initial H have the variants /i-/ and /í-/ and /û-/ and /ú-/ in the speech of our informants, with /û-/ and /í-/ usually associated with careful speech, e.g. /i^hháǰè/ 'horse', /û^hthàngò~ú^hthàngò/ 'fence'. Nouns with stem-initial L have only /i-/ and /ú-/ as prefixes, cf. /i^l.-/ and /ú^l.-/ as variants in Z and possibly other dialects of Xh.

total number of consonants act as "depressors" and produce lowered allotones of H. Non-phonemic rising glides are the result of the influence of depressor consonants. Depressors are consonants incorporating the sound features: voicing accompanied by explosion or constriction which produces friction. (See 6.3.2 for a full list of these consonants.) Consonants which lack these features in combination are "non-depressors" and exercise no influence on tones. A depressor separated from the peak vocoid by /w/ still exercises its influence.

- (2) In sequences including high and low tonemes the representation of a high toneme immediately succeeding a low toneme is nearly always lower in pitch than that of any preceding high toneme (e.g. in sequences of the type HLH, $\widehat{H}LH$, $\widehat{H}LHL$, $\widehat{H}L\widehat{H}L$ and also HLLH, $\widehat{H}LLH$, etc.), and a low toneme immediately succeeding a high toneme has an allotone lower in pitch than that of any preceding low toneme, although this tonal downstep is less prominent than that involving the high tonemes. The phenomenon of the tonal downstep is a common one in Bantu and accounts for the pitch descent from the beginning to the end of an utterance or portion thereof. The boundary of the tonal step, which is the unit within which pitch contrasts are rigidly maintained, always lies between the tonemes in the sequence LH. The sequence $H\widehat{H}LLHLHL\widehat{H}LHL$, for example, can be broken up into the following tonal steps : $H\widehat{H}LL-HLL-HL-\widehat{H}L-HL$. Downsteps do not normally occur in sequences of like tonemes.
- (3) A low toneme coinciding with a non-depressor and immediately succeeding a high toneme is raised by assimilation and is usually realized as a falling glide.

- (4) In sequences of the toneme H, there is a tendency¹ for

¹ The use of the term "tendency" in statements regarding the conditioning of tonemes, indicates that the effects of the conditioning factor under discussion are nearly always, but not invariably, evident. Where "tend" or "tendency" is not used, the occurrence can be regarded as one of perfect regularity.

each H to be realized at a pitch slightly higher than the preceding H or, alternatively, a sequence of three or more Hs is realized as a sequence of relatively high pitches of about the same level, except for the final H which is of a higher pitch than any preceding H. This "crescendo of Hs in sequence" is, however, seldom evident when the sequence is broken by a syllable in which H coincides with a depressor.

- (5) A low toneme falling between two high tonemes is raised by assimilation to the latter. This process takes place even if the low toneme coincides with a depressor.

6.2.9. The tonemes exemplified. The aim of this paragraph is to illustrate the pitch contrasts that occur at syllable peaks, in substantiation of our interpretation of such contrasts. By means of minimal or nearly-minimal pairs L and H are contrasted, and each is then contrasted with the cluster HL.

- (a) The H : L contrast :

/úk'úsìndà/[⁻₋] 'to escape' : /úk'úsìndà/[⁻₋] 'to smear'

Note regarding /úk'úsìndà/ : (i) Tonal downstep between 2nd and 3rd tonemes. (ii) The 2nd toneme is raised by assimilation to the preceding and succeeding H.

Note regarding /úk'úsìndà/ : (i) The realization of the 3rd toneme by a falling glide is due to assimilation to the preceding H. (ii) 1st and 2nd tonemes rise in crescendo.

/úqálílè/[⁻₋] 'He has started' : /úqálílè/[⁻₋] 'You have started'

/ámáthàngá/[⁻₋] 'thighs' : /ámáthàngá/[⁻₋] 'pumpkins'

Note that depressor /g/ coinciding with H produces a rising glide.

/ndìyàqàǵà/[⁻₋] 'I select' : /ndìyàqàǵà/[⁻₋] 'I smear clay'

Note that the assimilation of the final L to the preceding H tends to neutralize the effect of the downstep process.

/ísízi6á/[-̄-_-] 'piece of cloth' : /ísízi6à/[-̄-_-] 'pool'
 /síkhòná/[-̄_-] 'It is present' (class 7 reference) :
 /síkhòná/[-_-] 'We are present'

(b) The H : HL contrast :

/úk'ùsîndà/[-_-_-] 'to escape' : /úk'ùsîndà/[-̄-_-] 'to weigh down'¹
 /ndiyàk'ù6ónà/[-_-_-] 'I see you' : /ndiyàk'ù6ónà/[-_- _-] 'I will see'
 /lómntù/[-̄-_-] 'this person' : /lómntù/[-̄_-] 'that person'
 /í'lókhwè/[-̄-_-] 'dress' : /í'lókhwè/[-̄_-] 'dresses'
 /lífúnílè/[-_-_-] 'It has wanted' (indicative perfect tense) : /lífúnílè/[-_- _-] 'it having wanted' (participial perfect tense)
 /síkhòná/[-̄_-] 'It is present' : /síkhòná/[-̄_-] 'it being present' (participial tense)

(c) The HL : L contrast :

/í'thàngà/²[-̄_-] 'cattle post' : /í'thàngà/[-̄_-] 'pumpkin'
 /síkhòná/[-̄_-] 'it being present' (participial tense) :
 /síkhòná/[-_-] 'We are present'
 /6álîmè/[-̄\ _-] 'they have ploughed' (indicative perfect tense) : /6álîmè/[-̄-_-] 'they should plough' (subjunctive present tense)
 /í'mbàlà/[-̄\ _-] 'a single one'³ : /ímbàlà/[-̄-_-] 'skin blemish'
 /úk'ùsik'à/[-̄-_-] 'to cut' : /úk'ùsithà/[-̄\ _-] 'to screen'

¹ The form /úk'usinda/ provides a satisfactory triplet, in which the third syllable illustrates the H : L : HL contrast, in the case of some idiolects only. In others /úk'ùsîndà/ signifies both 'to weigh down' and 'to escape'. In Z also the latter are homophones. Observe in the examples given how the toneme pattern coinciding with the noun prefixes is entirely determined by the first toneme of the stem.

² Informants also give the alternant /íthàngà/[-̄\ _-].

³ Used in negative constructions signifying "not a single one".

6.2.10. Pitch contrasts associated with unpredictable tonal downsteps. In sequences of Hs tonal downsteps do not occur, there being, in fact, a tendency towards stepping up rather than down (see 6.3.8). Allotones of H which, in an utterance, become progressively lower in pitch can only be interpreted as such if a boundary of a tonal step (lying between the tonemes in the sequence LH) falls somewhere between such allotones. Downsteps in the representation of Hs in unbroken sequence have been recorded, however, and these occur mainly at points where syllable elision has reduced disyllabic noun prefixes to single syllables, i.e. /úlù- > ú-/ , /ílì- > í-/ (see 6.2.7 (g)). In such cases syllable elision has caused L between two Hs to disappear, thus removing in the process an overt tonal-step boundary. There is, however, no subsequent readjustment in the representation of the second H, whose representative is then, by comparison with that of the first H, a lowered high tone, e.g.:

/únwélè/[⁻₋] 'a hair' < *úlùnwélè

/íthémbà/[⁻₋] 'hope' < *ílìthémbà

It is noteworthy that certain class 9 nouns¹ are similarly affected (only nouns with stems of more syllables than one in our data), and also nouns in class 1a, particularly loan-words, e.g. :

/ínhlók'ò/[⁻₋] 'head' < *inihloko²

/íntwánà/[⁻₋] 'small thing' < *inithwana²

/ínk'wénk'wézi/[⁻₋] 'star'

/ú,á/ or /ú,á·/[⁻₋] 'A'

/úkḥókḥò/[⁻₋] 'grandmother'

Contractions that produce unpredictable downsteps between Hs are confined to certain morphologic categories and

¹ It is often assumed that the reduction of the class 9 prefix to a monosyllable outdates historically the similar process that has affected class 5 and 11 prefixes. This view is supported by the presence synchronically of the allomorphs /ili-~i-/ , /ulu-~u-/ , but the total absence of *ini- as a prefix. It is of interest, therefore, that an unpredictable tonal downstep resulting from the reduction of a disyllabic prefix, can occur in class 9 in the same way as in classes 5 and 11.

² These reconstructed stems are presented in present-day phonemic shape as a matter of convenience. They are not correlated with any particular historical level.

this creates potentially a new set of contrasts (i.e. that between a high and a lowered-high tone, or a raised high tone and a high tone). A small number of minimal pairs attest to the fact that these contrasts do, in fact, exist, even though their functional load is small.

/íǵílà/[⁻/ ₋] 'fowl's crop' : /íǵílà/[⁻/ ₋] 'he knocking against' (participial present tense of /-ǵila/ 'knock against')

/6éthémbà/¹[⁻- ₋] 'of hope' (possessive qualificative) :
/6éthémbà/[⁻- ₋] 'they hoping' (participial present tense of /-thémba/ 'hope')

/íq^{n̄}húlà/[⁻/ ₋] 'larynx' : /íq^{n̄}húlà/[⁻/ ₋] 'it giving abundant milk' (participial tense of /-q^{n̄}hula/ 'give abundant milk')

6.2.11. To identify a third toneme as a solution to the problem of pitch contrasts associated with unpredictable tonal downsteps is unsatisfactory from a number of aspects. For example, the interpretation as two distinct "high" tonemes of two identical sets of tones - which under normal circumstances have a fixed allotonic relationship to one another - on either side of a transient tonal step (it is alternatively overt and covert in the alternation of noun prefixes /íli-~ í-/ , /úlù-~ ú-/ and also between singular and plural forms - see below) introduces complications which include : The recognition of tonomorphologic classes of nouns with not one, but two distinguishing toneme patterns, and the same stem appearing sometimes with one and sometimes with the other of these patterns, e.g. (the problematic "lowered-high" toneme is not marked in the following) :

/íthémbà/[⁻- ₋] 'hope', cf. /ámáthémbà/[⁻- ₋] 'hopes'

/ícíci/[⁻- ₋] 'earring', cf. /ámàcící/[⁻- ₋] 'earrings'

The recognition of a third toneme would result in a substitution of tonemes between the singular and plural forms of these

¹ Or /6éthémbà/ of which the alternant /íthémbà/ 'hope' is part.

nouns, which are members of the tonomorphologic classes with the stem patterns HL and HH respectively in every aspect of behaviour.

Descriptive complexity associated with the recognition of a third toneme must, if possible, be avoided and our solution is to phonemicize the covertly present tonal-step boundary at the point where high tones are stepped down. It requires the setting up of a "step juncture" (symbolized by /¹/) which is realized phonetically in the form of the downstep between "high" tones in sequence¹ and this juncture marks the boundary of a tonal step in the same way as the sequence LH. Examples given above are thus transcribed as follows : /ú¹nwélè/ 'a hair', /í¹n̄hlók'ó/ 'head', /í¹ntwánà/ 'small thing', /ú¹'á/ 'A', /í¹gílà/ 'fowl's crop', /6é¹thémbà/ 'of hope', /í¹q^{n̄}húlà/ 'larynx', /í¹thémbà/ 'hope', /í¹cíci/ 'earring'.²

Step juncture is entirely confined to a position between two Hs and, should either H disappear as a result of the workings of tonal morphology, /¹/ disappears also. "Between two Hs" includes H of the cluster HL̄, e.g. /ú¹k̄hùni/[^{- \ -}] 'wood', /í¹ŋk'ɔ̀si/[^{- \ -}] 'chief' (i.e. HHLL).

The occurrence of /¹/ is predictable morphologically to a high degree, i.e. in singular nouns of classes 5, 9 and 11 whose stem-initial syllable coincides with H or HL̄. (Those with L in a similar position have, of course, no tonal step to be marked, e.g. /ídàdà/ 'duck'.) It may also occur elsewhere, notably : (a) in pronominal possessives, e.g. /ó¹lwákhò < ó-lwá-khò/ 'your one'; (b) at points where the morphotonemic change HHLL > H¹HH occurs (see examples at 6.4.7 below).

¹ In pitch, the downstep is approximately the difference between one of the five levels that we recognize, and the next below it.

² Class 5 and 11 nouns may appear with the prefix alternants /i-/ and /û-/ , in which case no step juncture need be marked as the boundary of the tonal step is contained in the toneme patterns HLHL, HL̄HL, etc.

3. Environmental Influences : Their Nature and Effects

6.3.1. Allotones are conditioned by factors already referred to at 6.2.8. These conditioning factors exercise a uniform influence on the representation of all tonemes, although the full effects of their influence are not entirely predictable and require examination in detail.

6.3.2. Factor 1. The high toneme is lowered by depressors.

Depressors are voiced consonants with an inherent low tone and because of this the voice is forcibly lowered to a pitch well below that which would provide the normal realization of H. The full list of depressors is : /b d d̄y g m̄h n̄h v z ḡr hh d̄l d̄z j ḡc ḡq ḡx c^{n̄h} q^{n̄h} x^{n̄h}/. The influence of a depressor is not lost when /w/ intervenes between it and a vowel. The representatives of vowels exercise no influence whatsoever on tones and in passing from a depressor at the syllable margin to the immediately succeeding peak-vocoid, there is release from the effect of the depressor and a consequent striving to achieve the required pitch level of H. It is clear that under these circumstances a rising glide results and a glide of this kind coinciding with a depressor is a certain indication of H. H can thus be realized by an allotone of the shape [ˈ] at various pitch levels. The representation of HL is by a rising-falling glide [ˆ].

Allotone [ˈ] exemplified :

/ndizámè/[- ˈ -] 'I should strive' (subjunctive present tense)

/ùvúk'ílè/[- ˈ -] 'You have wakened'

/ízíflòndà/[- ˈ -] 'wounds'

/ézámà/[- ˈ -] 'He striving' (participial present tense)

/ndìngáhhámà/[- ˈ -] 'I can walk'

/ngásò/[ˈ -] 'by means of it' (instrumental adverb)

/éc^{n̄}wàdínì/[ˈ - ˈ -] 'in the book', cf. /énk'òménì/

[ˈ - ˈ -] with the same toneme pattern.

/ndâkhèthá/[[^] - •] 'I chose' (indicative remote past tense)
 /zâlímá/[[^] - -] 'They ploughed'
 /í'mbûzì/[⁻ ^ -] 'goat'
 /úk'ùdèlà/[⁻ - ^ -] 'to despise'
 /éñjé/[⁻ /] 'like this' (relative qualificative)

There is a tendency for /y/ occurring utterance-initially or after some form of disjoined transition to act as a depressor, this being more prominent in some idiolects than others. Utterance-medially there is little detectable influence of /y/.

/yónk'è/[['] -] 'all', cf. /6ónk'è/[⁻ -] 'all'

6.3.3. The auditory perception of all conditioned glides, including those occurring as the result of conditioning factor 3, is heavily dependent upon peak-vocoid duration. The duration of the normal short peak-vocoid in quick speech may not be sufficient to discern the glide and, instead, a very short level tone near to the starting point of the glide is heard. A keen ear may, of course, discern a glide in the majority of cases. All glides emerge clearly, however, when they coincide with a vocoid made long by the presence of /+ / or /• /, or when the rate of utterance is slowed down.

It will be seen therefore, that as a result of the conditioning factors discussed in this section, H may be heard as a "mid tone" or even a "low tone". Similarly L may be heard as a "mid tone" or even a "high tone".

6.3.4. Factor 2. A high toneme is lower in pitch than any preceding high toneme if separated from it by one or more low tonemes (or by step juncture). Similarly a low toneme tends to be lower in pitch than any preceding low toneme separated from it by one or more high tonemes.

In sequences of tonemes contained between the beginning of an utterance and the first terminal juncture (i.e. /+ /), utterance-medially between two /+ /s, or between /+ / and the end of an utterance, a tonal downstep nearly always occurs after the boundary that lies between the tonemes in the

sequence LH. Where H is involved (e.g. in the sequence HLH) the fall in pitch from the first to the second high toneme is usually more noticeable than in the case of the low toneme, as, for example, the fall between the first and second L in the sequence LHL. Not only is the downstep between low tonemes less prominent, but it is also more frequently neutralized by the operation of factors 3 and 5.

Many short utterances thus descend towards their end in a series of tonal steps¹ with results such as :
(a) L in the final step is lower than any preceding L; (b) H in the final step is lower than any preceding H, and, in fact, may be of about the same pitch as L in an immediately preceding step.

The phenomenon of tonal downsteps provides the interpretation of "mid tones" which confused earlier investigators, e.g. in /niyàfúndà/[--⁻-] 'You are learning'. A superficial examination made in ignorance of the downstep phenomenon may result in the postulation of three significant pitch levels in this form.

Examples given at 6.3.6 illustrate fully the phenomenon of the tonal downstep.

6.3.5. Conditioning factors 4 (crescendo of Hs in sequence) and 5 (tonal assimilation of a low toneme between two high tonemes) tend to neutralize the downstep phenomenon and affect in particular the toneme L. An example in connection with conditioning factor 5 will be found in /àliyíkhèthá-ngà/ at 6.3.11. The following illustrate downstep neutralization as a result of factor 4 :

/ímfè éⁿínánè+/[⁻-⁻⁻⁻-] 'small sugar cane'

(H on the 1st and 5th syllables is realized at the same pitch level. A crescendo of Hs in sequence occurs over the 3rd, 4th and 5th syllables.)

/ndìóúlélé/[⁻-⁻-] 'I killed'

¹

All utterances are not a straight descent from their beginning to their end. It is possible for tonal upsteps to occur at syntactic boundaries marked by /+/. See 6.3.12 below.

(L on the first and last syllable has the same pitch level.)

The downstep phenomenon as it affects L is also likely to be absent where L coincides with a non-depressor and a peak-vocoid which is either of very short duration, or is in utterance-final position. In both cases (as a result of devoicing in the latter case) the usual low-falling glide is often not discernible and only the initial, consonantly-influenced portion of the allotone is perceived.

6.3.6. The phenomenon of the tonal downstep is illustrated by the following examples which are grouped initially according to sequence types. Within phonologic phrases (portions of utterances delimited by /+/) tonal downstepping proceeds across word-boundaries and is unaffected by them. Examples of this are included under "miscellaneous examples".
Sequence HLH :

- /índimá/ [ˉˉˉ] 'patch of cultivated ground'
- /índlè6é/ [ˉˉˉ] 'ear'
- /úmsé6éndzi/ [ˉˉˉˉˉ] 'worker'
- /ú6ùhīé/ [ˉˉˉˉ] 'beauty'
- /â6â6ántù/ [ˉˉˉˉ] 'these people'
- /ísìngé6sì/ [ˉˉˉˉ] 'English'
- /ndíngàh̄hám̄bì/ [ˉˉˉˉˉ] 'I should not go' (present subjunctive tense)

Sequence HLHL :

- /ámâfûthà/ [ˉˉˉˉ] 'fat'
- /úmzîmbà/ [ˉˉˉˉ] 'body'
- /úm̄h̄ungà/ [ˉˉˉˉ] 'lung'
- /ém̄in̄ind̄zì/ [ˉˉˉˉ] 'many'

Sequence HLHL :

- /íyónk'è/ [ˉˉˉˉ]¹ (a near equivalent to English "after all said and done")
- /únwélè/ [ˉˉˉˉ] 'a hair'

Sequence HLLH :

- /ndâlimá/ [ˉˉˉˉ] 'I ploughed'

¹
Cf. /íyónk'è/ [ˉˉˉˉ] 'It is all there'

/wâkhèthá/[\ - -] 'You' or 'He chose'

/lõntõmbí/[\ - /] 'that girl'

Sequence LHL :

/ùsùlèlè/[- - \ -] 'You have thanked'

/àk'ùthándì/[- - -] 'You do not like'

Sequence LHLL :

/ndìyàk'ùòphà/[- - - \ -] 'I will tie'

/úk'ùvûyà/[- - ^ -] 'to be joyful'

Miscellaneous examples :

HL-L : /ááántù ááàngénántó+/[- - - - / - -] 'people who have
nothing'

/úfúndà ísìngésì k'ák'ùhlé+/[- - - - / - - -] 'He reads
English well'

H-LH : /ínk'òmóíyék'wè+/[- - - -] 'The beast should be left'

HL-HL : /úmntù wâmphà ímálí+/[- - \ - - -] 'The person gave
him money'

H̄L-LH̄L : /ááéthê k'àkhùlù+/[- - \ - \ -] 'They have hit a great
deal'

6.3.7. Factor 3. The low toneme coinciding with a non-depressor and immediately succeeding a high toneme is raised by assimilation to the latter.

Falling glides are the usual result of the influence of this conditioning factor, unless the peak-vocoid is so short that the glide is obscured. The following examples illustrate the allotone [\] of L.

/úáwó/[- \ -] 'my father'

/ááyálímà/[- - \ -] 'They are ploughing'

/úk'úsìndà/[- - \ -] 'to smear'

/éntwánèni/[- - \ -] 'in a small thing', cf. /éntánpjèni/
[- - -] 'on a rope', of the same toneme pattern.

It is the effect of the preceding high toneme alone which conditions the glide, as the following comparison shows :

/sìsìndilè/[- - - -] 'We have smeared', cf. /úk'úsìndà/
'to smear'

6.3.8. Factor 4. In a sequence of Hs each H tends to be higher in pitch than the preceding toneme, or, alternatively, final H in a sequence of Hs tends to be higher in pitch than any other.

The crescendo of Hs in sequence (tonal upsteps) is a process most evident when three or more Hs occur in sequence, none of which coincide with a depressor consonant. The process is also often discernible when the sequence consists of two Hs only. In this connection the presence of a tonal upstep in noun prefixes with the toneme pattern HH will have been observed in examples previously given. Further examples are provided by the following :

/lɪ́6ónílé/[--_] 'It has seen' (indicative perfect tense)

/ítí/[-] 'tea'

/lámádòdà/[-_] 'these men'

/6ónání/[-_] 'See!'

/ésásé6êndzà/[-- \ _] 'he still working' (participial present tense)

/únámándlā/[- - _] 'He has strength'

When a sequence includes a syllable in which H coincides with a depressor, the process is not as noticeable as in the examples given above, but it may occur, as the last two examples given below indicate. The crescendo becomes more prominent if the syllable introduced by the depressor is long enough for H to recover from the lowering effect of the consonant.

/6àngáfúndà/[_ / - _] 'They can learn'

/ávúmélànà/[- / - \ _] 'They agree'

/úh̄hámblè/[- / _ _] 'He has gone'

/ndìngázúzà/[_ / / _] 'I can earn'

/é̄zindá6èni/[- / / \ _] 'in the affairs'

H in the cluster HL̄ does not take part in this process of tonal upsteps, e.g.

/é̄f̄h̄lā/[- \ _] 'he concealing'

/6ésásfūnà/[- - \ _] 'they still wanting'

6.3.9. It has been stated that the crescendo of Hs in sequence is most noticeable when Hs are unfettered by depressors in the sequence. In this connection it will have been observed that in a sequence of Hs in which none coincide with depressors, the complete sequence is often raised in the pitch-range of the speaker above the region within which a similar sequence incorporating a syllable with depressor consonant would occur. Particular attention is drawn to this phenomenon where it occurs in the noun prefixes. For example, /ísí-/ is likely to bear allotones noticeably higher in pitch than /ízi-/, e.g.

/isityà/[⁻₋] 'a dish', cf. /izityà/[⁻, ₋] 'dishes'
/isihlàngú/[⁻_↘] 'shoe', cf. /izihlàngú/[⁻, _↘] 'shoes'

The following comparisons provide further illustrations :

/líp̄hélílè/[--_] 'It has finished', cf. /lívúyílè/
 [-, -_] 'It has been joyful'
 /lí6ík'ílè/[--_] 'He has reported', cf. /lí6ízílè/
 [--/_] 'He has called' (indicative perfect tense)
 and /lí6ízîlè/[--^_] 'he having called' (participle perfect tense)

6.3.10. As a corollary to factor 4, it may be stated that "a sequence of Ls always proceeds at approximately the same pitch level and tonal steps do not occur within the sequence", e.g.

/sibəkilè/[____] 'We have looked at'

/ésindzùlù k'àkhùlù+/[^-____] 'very deep'

6.3.11. Factor 5. The low toneme between two high tonemes
tends to be raised by assimilation.

The following comparisons illustrate this process of tonal assimilation :

/úúúìní/[⁻₋] 'two', cf. /úúúhlòóò/[⁻₋] 'friendship'

/índlèéé/[⁻₋] 'ear', cf. /índlàlà/[⁻₋] 'famine'

/ízífúndò/[⁻₋] 'lessons', cf. /úzìphò/[⁻₋] 'nail'

The process is less evident when L between two high tonemes coincides with a depressor consonant, e.g.

/ísifúngò/[--_] 'oath', cf. /ízifúngò/[--_] 'oaths'

/àliyíkhèthàngà/[--_] 'He has not chosen it', cf.

/àliyívalàngà/[--_] 'He has not shut it'

6.3.12. The influence of conditioning factors and syntactic boundaries. Environmental influences operate at

word-boundaries as well as word-medially. See, for example, the tonal downstep phenomenon as illustrated at 6.3.6, assimilation in the example /áéántù Gáníndzì/[--_] 'The/many' ^{people are} and the crescendo of Hs in sequence in the following :

/ítí íphélílè+/[---_] 'The tea is finished'

/sâkhèthá ísibúlù+/[\ - - - / _] 'We chose Afrikaans'

/íntó yákhò+/[--_] 'your thing'

However, an utterance-medial terminal plus juncture marks a point at which factors 2, 3, 4 and 5¹ often cease to exercise any influence. Portions of utterances marked off by /+/² are "phonologic phrases" (see 8.2.2) and many internal pauses, including pauses for breath, are made at a phonologic-phrase boundary. When tonal downstepping is broken, as it obviously must be in long utterances, it is after /+/ that a new starting level for the stepping process is assumed. Where phonologic phrase and macrosegment³ boundaries coincide, there is a particularly strong likelihood of the stepping process starting at a different level (usually higher) from that at which it left off. The following utterance has been recorded (on different occasions) with both a higher and a lower starting point after the utterance-medial terminal juncture. A higher starting point after /+/ is indicated in the example.

¹ The only other points at which the influence of conditioning factors is regularly suspended is immediately before and after an ideophone. (The representation of /+/² never coincides with an ideophone.)

² In normal speech /+/ usually marks off primary units of syntactic immediate constituents such as : noun-adjective, verb-adverb, noun-adjective-adverb, etc.

³ An intonation is the unique constituent of a macrosegment. The end of an intonation coincides with the end of a macrosegment.

/úthì+ ùfúndà k'ák'ùhlé+/[- - - - \ -] 'He says you
read well'

An unusually big downstep^{after /+/} was found in the following example :

/ndìsì6ónà k'ák'ùhlé+ isíhlàngú+/[-- - - - - \ ,] 'I see
the shoe well'

6.3.13. Summary of influences. It is now clear that either of the tonemes of Xh may be realized at almost any level within the pitch-range of the speaker. A number of factors, either individually or in combination, determine the level at which a toneme is actually realized and the shape of the allotone. Firstly, there is hardly any toneme which escapes the influence of the five conditioning factors described above. The influence of these five factors is tonemically important as they account for the range of allotonic variation. Secondly, there are various influences which affect complete utterances or portions of utterances.

Differences in pitch level which are significant from the aspect of intonation,¹ and the emotional background to the utterance, both represent a type of influence which results in the raising or lowering in pitch of whole stretches of speech and usually affects both high and low tonemes equally and in the same way - at least it does not destroy contrasts. Such changes, most of which may be loosely described as changes in "key", do not disturb contrasts between tonemes or the shape of individual tonemes, and are non-significant as far as the tonemic system is concerned.

Other features associated with the production of the speech signal affect the representation of tonemes in a way which cannot be disregarded from the aspect of the functioning of the tonemic system. A rapid rate of utterance, for example, tends to diminish the pitch-interval between H and L and its effect on glide allotones has been discussed above. Rapid rate of utterance, plus the factors of breath-group duration and position within the breath-group, may have the

¹
Intonational pitch-levels are referred to 10.3.2.

effect of obscuring tonemic contrasts partially or completely. (Contrasts are always most prominent in words uttered in isolation.) The pitch-interval between H and L diminishes as the breath-group is extended and there may, in fact, be no discernible interval between high and low tonemes at the end of a long, quickly-uttered breath-group. However, we regard these as factors connected with redundancy present in the speech signal and give them no consideration in our analysis.

4. The Function of Tonemes

6.4.1. A study of the function of tonemes in the grammatic structure of Xh is largely an examination of particular patterns of tonemes which are associated with morphologic categories and subcategories. Like many other tone languages of Africa, Xh places great reliance on tone to distinguish morphs in the manner of vowels and consonants. In performing this function there is no permanent association between tonemes and the segmental constituents of syllables or morphs, but rather between the tonemes themselves within patterns of different shapes (tonomorphs¹). As far as tonemes are concerned, the close-knit unit is that of a group of tonemes arranged in a particular way and associated with a particular grammatic category or subcategory. The association between tonemes and segmental morphs is of the loosest, and only in relatively few instances do our data yield examples of segmental morphemes which consistently bear the same tonemes.

The study of the configuration of the large number of tonomorphs, and their combination and substitution in the process of inflexion and derivation, reveals a most intricate system of tonal grammar which is still largely unexplored. It is necessary that tonal grammar be described

¹ The use of the term "toneme pattern" rather than "tonomorph" or "tonomorpheme" is an indication of our hesitancy in analysing and classifying certain specific sequences of tonemes. As no full analysis of tonal morphology has been attempted, the identification of tonomorphs and tonomorphemes is tentative.

as a system apart from, but not divorced from, that involving segmental morphemes. Among the reasons for this is the fact that it seems that description will be facilitated in some cases by equating a single tonomorpheme to more than one segmental morpheme. For example, in the verbal conjugation greater simplicity is achieved by associating toneme patterns with stems rather than radicals.

6.4.2. Tonal morphology. Although the immediate concern of this chapter is with the identification and description of tonemes, some explanation of the workings of tonal morphology is necessary, if only for the reason that the certain identification of some tonemes distorted by their environments, is sometimes assisted by reference to the shape of the tonomorphemes involved. The data given below are chosen to illustrate the shape of certain important tonomorphs and toneme-pattern phenomena generally.

6.4.3. The toneme patterns of disyllabic noun prefixes.

The disyllabic prefixes have the patterns HL or HH and the choice between these patterns is determined simply by the initial toneme of the stem. A stem-initial high toneme determines HL, while a stem-initial low toneme determines HH. A simple rule of dissimilation is thus seen to operate across the morpheme boundary.

/ámàsélà/[- -] 'thieves', cf. /ámádòdà/[- -] 'men'

/úk'ùséthà/[- -] 'to hit', cf. /úk'ùḡàlà/[- -] 'to count' and /úk'ùḡòḡà/[- -] 'to see'

/úk'úsà/[- -] 'to send', cf. /úk'ùsá/[- -] 'to dawn'

/úmzì/[- -] 'kraal', cf. /úmzì/[- -] 'thatching grass'

The toneme patterns of disyllabic adjectival concords are, to a large extent,¹ governed by similar considerations to those indicated above, i.e. the rule of dissimilation, e.g.

¹

Concords used with monosyllabic adjectival stems have uniformly the pattern HL, except for the stem /-ḡè/ where forms with the HL pattern contrast with those with HH.

/ísìthó é̀síkhûlù+/[- - - \ _] 'big foot', cf. /ísìthó
 é̀síndzìlà+/[- - - _] 'heavy foot'
 /ílítýè é̀líŋùŋú+/[- - - \ _] 'warm stone', cf. /ílítýè
 é̀lìlúlà+/[- - - _] 'light stone' and /ílítýè é̀líḡàndzí+/
 [- - - \ /] 'broad stone'

6.4.4. The tonal behaviour of disyllabic verb stems in the conjugation. These verb stems fall into three tonomorphologic groups, viz. (1) $\overline{\text{HLL}}$, (2) HL, (3) LL (infinitive stem-patterns), but this trichotomy is maintained in only a small percentage of the subcategories of the verbal conjugation. In most conjugational forms two of these groups share a single toneme pattern, while in a few instances one toneme pattern is shared by all three. The following indicates the allocation of some common disyllabic verb stems among the tonomorphologic groups.

1. $\overline{\text{HLL}}$

/-bâlà/ 'write'
 /-ḡnà/ 'see'
 /-ḡyà/ 'return'
 /-fûnà/ 'want'
 /-ḡlôlà/ 'investigate'
 /-vûyà/ 'be joyful'

2. HL

/-ḡéthà/ 'hit'
 /-bólà/ 'bore a hole'
 /-ḡék'à/ 'place'
 /-ḡhámà/ 'walk'
 /-lálà/ 'lie down'
 /-ḡlúthà/ 'become replete'

3. LL

/-ḡàlà/ 'count'
 /-cìḡgà/ 'think'
 /-bèk'à/ 'look at'
 /-ḡulà/ 'be ill'
 /-zàmà/ 'strive'
 /-ḡlùthà/ 'plunder'

The behaviour of these tonal groups through part of the verbal conjugation is exemplified below. In finite forms the subjectival reference is to the 1st person, plural, in each case, e.g. /sigula/, /asigulanga/, etc.

1. $\widehat{HLL}$

2. HL

3. LL

Infinitive positive :

$HL\widehat{HLL}^1$

HLHL

HHL

Indicative present positive (long form) :

LLHL

LLHL

LLLL

Indicative remote past positive :

$\widehat{HLHLL}$

$\widehat{HLHL}$

$\widehat{HLLH}$

Indicative perfect positive (long form) :

LHHL

LHLL

LLLL

Participial present positive :

$H\widehat{HLL}^1$

HHL

HHL

Participial perfect positive :

$HH\widehat{HLL}^1$

$HH\widehat{HLL}^1$

$HH\widehat{HLL}^1$

Subjunctive present positive :

HLH

HLH

LHL

Subjunctive past positive :

HHL

HHL

HLL

Potential present positive :

LHHL

LHHL

LHLL

Indicative present negative :

LLHL

LLHL

LHHL

Indicative perfect negative :

LLLHL

LLLHL

LHLHL

6.4.5. The tonomorphologic grouping of nouns with disyllabic stems. Nouns of this type fall into five groups, viz.

(1) LL, (2) LH, (3) $\widehat{HLL}$, (4) HL, (5) HH.²

1. LL

2. LH

/íthàngà/ 'pumpkin'

/íthàngá/ 'thigh'

/ísílòndà/ 'wound'

/ísíhàngú/ 'shoe'

/ígùsà/ 'sheep'

/índlèéé/ 'ear'

/úsíthùphà/ 'thumb'

/údòngá/ 'wall'

¹ These forms occur before /+/. HH substitutes for ^{final} HLL in other positions.

² Very few nouns occur in group 5. This group does not appear to exist in Z and seems to be missing in the northern dialects of Xh.

3. HLL

/íthàngà/ 'cattle post'
/ísìthùndzì/ 'shadow'
/ûfùdò/ 'tortoise'
/í'ŋk'â6ì/ 'ox'

4. HL

/ú6ùfánà/ 'manhood'
/ísìnggésì/ 'English'
/í'nhlók'ò/ 'head'
/í6éle/ 'breast'

5. HF

/íçíçí/ 'earring'
/íqáqá/ 'polecat'

When inflected to form locative adverbs, these groups behave thus :

Disyllabic prefix :

1. HHLL > HHHLL
2. HHLH > HHLHL
3. HLHLL > HLHLL
4. HLHL > HLHLL

Monosyllabic prefix :

1. HLL > HHLL or HLHL¹
2. HLH > HLHL
3. HHLL or HLHLL > HLHL
4. HHL or HLHL > HHLL
5. HHH or HLHH > HHHL

6.4.6. The following illustrate further that no inherent toneme patterns can be associated with verbal morphemes. In addition, they demonstrate the manner in which tonemes or toneme patterns are substituted. In the examples given, certain simple rules of substitution can be discerned which do not require stating here.

/àlíq̄hù6ángà/, i.e. LHLHL 'He has not driven', cf.

/àliyíq̄hù6ángà/, i.e. LLHLHL 'He has not driven it!'

/àliyíq̄hù6ángà/, cf. /àliyíthándì/, i.e. LLLHL 'He does not like it'

¹

A limited number of nouns of group 1, e.g. /índlèlà/ 'route, road' share the pattern HLHL with groups 2 and 3.

/líyà6éthà/, i.e. HLHL 'He is hitting', cf. /líyálìmà/,
i.e. HHLL 'He is ploughing'

6.4.7. Morphotonemics. It seems likely that the rule of dissimilation of tonemes across grammatic boundaries and other examples of the purely mechanical substitution of tonemes illustrated above will best be handled as morpho-tonemic changes, but this is a decision to be made in a fuller analysis of tonal grammar.¹ One other important example of this type of substitution must be illustrated here, however, for the reasons that : (a) it demonstrates that devices exist within the structure to minimize the effects of a concurrence of inherent length and imposed length, particularly where the former potentially obscures the length feature distinguishing the juncture /+/-; (b) it brings to notice a point in the structure where step juncture frequently occurs.

The sequence HLL coinciding with the last two syllables of the stems of certain nouns, verbs and qualificatives is substituted by HH when no terminal juncture follows the word. In this way the masking of the length feature representing /+/- located in the word-penultimate syllables, by length conditioned ^{by}/HL is avoided. When /+/- follows the word, HH gives place to HLL, but the former is restored when "penultimate length" is lifted off. If a high toneme immediately precedes the sequence HH resulting from HLL > HH, then the tonemes of the latter are represented at a lower pitch-level than the former, e.g.

/xá éhlôlà+/- 'when he examines' (participial tense)

/é'hlólá k'ákhûlù+/- 'he examining widely' (participial tense)

Note /éhlôlà+/- [- \ _] > /é'hlólá/- [- - -].

¹

The following illustrate further the processes referred to and also some of the problems to be encountered :

/ísílòndà sáyò+/- 'his sore', cf. /ísíhlàngú sáyò+/- 'his shoe'

Observe, however, the unchanging toneme pattern when the possessive qualificative refers to the 2nd person :

/ísílòndà sákhò+/- 'your sore', cf. /ísíhlàngú sákhò+/- 'your shoe'

/úmkhônò+/'sleeve'

/ùmkhónó ómdè+/ 'long sleeve'

Note /úm̃khônò+/[- - \ -] > /úm̃khónó/[- - -].

/ú⁷fûdò+/ 'tortoise'

/ú¹fú⁰ó ólùk̄h̄ulù+/ 'big tortoise'

/ú¹fú⁰ó olùkhúlú k'àkhùlù+/ 'very big tortoise'

Note /ú'fúòdò+/[- \ -] > /ú'fúóó/[- - '] and /ólùk̄hùlù+/[- ' \ -] > /ólùk̄hùlú/[- - -].

There are examples of the substitution $\overline{HL} > H$ where the toneme pattern $\overline{HLH}$ occurs over the last two syllables of a word, but this toneme pattern is far less common than word-final $\overline{HLL}$ and this particular substitution of tonemes has not been fully explored. $\overline{HLH} > HH$ is common in Z, Nd and Sw, particularly in nouns such as :
Z, Nd / íntó+ > í'ntó/ 'thing', Sw / sí'fó+ > sí'fó/ 'sickness'.

CHAPTER 7

COMPARISON OF NGUNI TONEMIC SYSTEMS

1. Introduction

7.1.1. In the nature of pitch contrasts and also associated peak-vocoid duration phenomena (as described in the preceding chapter) Nguni languages are fundamentally similar and their tonemic systems share a great deal of common ground. They are similar also in the way in which tonemes function within the tonal grammar, but differences are encountered in : (a) the shapes of tonomorphs associated with lexical items and particular categories of segmental morphology, (b) certain morphotonemic changes, and (c) the manner and extent of toneme clustering on single syllables. Differences connected with (b) and (c) separate Z, Nd and Sw sharply from Xh and have such far-reaching effects that they force a different structural interpretation of certain pitch and quantity phenomena from that adopted in Xh. For this reason they warrant priority in the discussion which follows (in section 2 below), although this chapter is moulded on a general pattern of treating similarities first and differences later. Differences associated with (a) are the most obvious to native speakers and extend right down to the level of dialect. Native speakers are keenly aware of tonal differences between dialects and, on examination, such differences have been found to be essentially a matter of differences in toneme patterns.

2. Toneme Clustering and Dis-
placement in Z, Nd and Sw

7.2.1. Toneme displacement. The incompatibility of depressor consonants and high tones has been demonstrated in Xh and this phenomenon is manifest throughout Nguni. In Xh, rising-glide and lowered-high allotones result from this incompatibility. In Z, Nd and Sw however, active measures in the form of a common morphotonemic change not encountered in Xh, are taken to prevent a high toneme from falling on a syllable introduced by a depressor. From one aspect, the morphotonemic change referred to performs precisely this function. From another, it works to prevent the clustering of tonemes on one syllable. In the way in which the change operates and in being confined to certain parts of the morphologic structure, no complete avoidance of a falling together of high tones and depressor consonants is possible and when this does happen - as it not infrequently does - the tonetic results are exactly the same as in Xh.

Toneme displacement takes the form of either (a) the displacement of a high toneme brought by a particular tonomorph to a syllable introduced by a depressor, to the immediately following syllable, or (b) the avoidance of toneme clustering by the displacement of an inherent word-initial high toneme to a following syllable in the face of a low-toneme prefix associated with a particular inflexion. This statement is, however, an oversimplified description of a quite complex pattern of tonemic substitution. Various other considerations must be taken into account, some of which appear at 7.2.2 below where the morphotonemic change is exemplified, but the process is described and illustrated in this chapter only so far as it is necessary to illustrate its effects upon the tonemic system, and not every aspect of its operation is mentioned.

7.2.2. The workings of toneme displacement are mainly observed in connection with the inflexion of nouns to form (a) copulatives, (b) conjunctive adverbs, (c) instrumental adverbs, (d) possessives; and verbs in (e) the formation of the potential present tense positive.

Certain conventions govern the operation of this morphotonemic process. Firstly, the process operates across certain morphologic boundaries only (those associated with the distinctive morphemes of the morphologic categories mentioned above) and not in the interior of segmental morphemes. With the prefixal morphemes (all bearing a low toneme) it will be seen to be a process which seeks to prevent the clustering of tonemes on a syllable where tonomorphs overlap. Such clustering cannot be prevented in all cases and when present, creates problems of tonemic analysis (discussed at 7.2.4 below) which do not arise in Xh.¹ Secondly, toneme displacement is suspended under certain circumstances, e.g. if (i) the displaced toneme is to fall upon a monosyllabic root, (ii) the immediately following syllable is itself introduced by a depressor (even though the toneme borne by the syllable is H).

(a) Toneme displacement associated with copulatives.

The prefixing - not the substitution, which is the normal process in tonal grammar - of the tonomorpheme L signals the formation of simple copulatives from nouns, or alternatively, the tonomorpheme L in combination with a segmental morpheme which in Z is /ŋg-~y-/, Nd /ŋ-~z-~y-~yi-/, Sw² /ŋ-~y-/. The tonomorpheme L then occupies the first syllable of the copulative and the high toneme of the first syllable of the noun is displaced to the following syllable. Where toneme displacement is impossible, the cluster LH occurs on the first syllable, manifest tonetically in the form of a rising glide. (The

¹ In Xh, tonemes never cluster as a result of a synchronic process of inflexion or derivation.

² With nouns of certain classes the segmental morphemes are never used.

important consequences of this in the tonemic system are examined at 7.2.4 below.)

Z : /y`-ímìthí > yímìthí/[_ \ -] (also /ímìthí/) 'They are trees'

Note that the displaced initial H of /ímìthí/ clusters with L of the second syllable to produce HL identical in every way with the same cluster in Xh.

/ngs`-á6ántù > ngà6ántù/[_ - -]¹ (also /à6ántù/) 'They are people'

Note that the displaced initial H falls together with H of the second syllable.

/y`-ísìfû6à > yísì'fû6a/[_ - \ -]¹ (also /ísì'fû6à/) 'It is a chest'

Note that the displaced H does not cluster with a following L, but completely supplants it. Observe the appearance of step juncture where displacement removes the overt tonal-step boundary.

Nd: /`-úlùthí > ùlùthí/[_ \ -] 'It is a stick'

/ŋ`-ámádòdà > ñámádòdà/[_ - -] (also /ámádòdà/) 'They are men'

Sw: /`-lítshànà > lítshànà/[_ \ -] 'It is a pumpkin'

/`-tìŋkhómó > tìŋkhómó/[_ \ -] 'They are cattle'

/ŋ`-émàfùtshà > ñémà'fùtshà/[_ - \ -] 'It is fat'

(b) Toneme displacement associated with conjunctive adverbs.

The process follows the same pattern that it does in copulatives formed from nouns, except that the prefix always has both segmental and suprasegmental constituents, viz. /nà-∞nè-∞nò-/ in Z and /nà-∞nè-/ in Sw. Toneme displacement does not appear to occur in Nd with the corresponding prefix /là-∞lè-∞lò-/.

Z : /nà-ísìlòndà > nèsì'lòndà/[_ - \ -] 'with a sore'

A chain action is evident in this case with the displacement of H extending over two syllables.

/nà-ú6à6á > nò6â6á/[_ \ -] 'with father'

¹ Cf. Xh /ngá6ántù/ 'They are people', /sìsìfû6à/ 'It is a chest'.

Sw:¹ /nà-ínàmà > nènâmà/[- ʌ -] 'with meat'

(c) Toneme displacement associated with instrumental adverbs.

Inflexion by the instrumental adverbial prefix /ngà-∞ ngè-∞ngò-/ (Z), /ngà-∞ ngè-∞ngò-/ (Nd) and /ngà-∞ ngè-/ (Sw) presents the same features as those associated with the conjunctive adverbial prefix.

Z : /ngà-ísìkhûndlà > ngèsí'khûndlà/[- ʌ -] 'by means of a position'

Nd: /ngà-ínàmà > nènâmà/[- ʌ -] 'by means of meat'

Sw: /ngà-í'nhlókò > nènhlókò/[- -] 'by means of the head'

(d) Toneme displacement associated with the potential present tense.

Tonal morphology associates a high toneme with the distinctive morpheme /nga-~ng-/ (Z), /na-~ng-/ (Nd, Sw) of this tense,² but toneme displacement removes that toneme to the next syllable wherever this is possible. In this case the process operates merely to prevent a high toneme falling together with a depressor. In the examples of the present potential tense given below, verbs are all of the same tonomorphologic class (viz. with infinitive stem-pattern LL) and in the absence of the morphotonemic change would have the same toneme patterns.

Z : /àngàsîndà/³ 'She can smear', cf. /àngábèkà/ 'She may look at'

Nd: /sìngàlîmà/³ 'We can plough', cf. /sìngàgùlà/ 'We may be ill'

Sw: /àngàlîmà/³ 'He can plough', cf. /àngábùbà/ 'He may die'

Note that in the second example in each case the halting of the process of toneme displacement derives from a

¹ With consonant-commencing monosyllabic noun prefixes in Sw, this inflexion occurs without tonomorphs overlapping, and there is no toneme displacement, e.g. /nèlíkhùgà/ 'with a hoe' < /nè-líkhùgà/.

² In Xh, where toneme displacement is not found, this morpheme always bears a high toneme in our data. Note that it bears this toneme in the other languages also on occasions when toneme displacement cannot operate.

³ Cf. Xh /àngàsîndà/, /sìngàlîmà/, /àngàlîmà/.

7.2.3. Toneme clustering. The consequences of both the working of toneme displacement and the inability of the process to operate due to one of the sets of circumstances described below, is to create clusters of two or even three tonemes on single syllables. The only cluster which results from the actual operation of this morphotonemic process is that of a displaced high toneme clustering with a low toneme, i.e. $\bar{H}\bar{L}$. This is demonstrated in Z /yìmîthí/, Nd /ùlûthí/, Sw /lîtshânà/ in (a) at 7.2.2 above; Z /nèsí¹lôndà/, /nò6â6á/ and Sw /nèñâmà/ in (b); Nd /nèñâmà/ in (c); Z /àngàsîndà/, Nd /sìṅàlîmà/, Sw /àṅàlîmà/ in (d). These clusters $\bar{H}\bar{L}$ have the same characteristics as $\bar{H}\bar{L}$ in Xh, in coinciding with long peak-vocoids and giving place to H in the substitution $\bar{H}\bar{L}L > HH$ associated with the presence or absence of a following /+ / in the manner described at 6.4.7. The interpretation of the high-falling glide as a cluster is substantiated by these data, and from the aspect of tonomorphologic description in Z, Nd and Sw,^{it} is the only possible interpretation.

Toneme displacement fails to operate under the following conditions : (i) with the short prefixes /i-/ and /u-/ of classes 5 and 11; (ii) when the displaced toneme would fall on a monosyllabic radical; (iii) when the immediately following syllable is itself introduced by a depressor (irrespective of the fact that it may already bear a high toneme). The checking of toneme displacement in cases (i), (ii) and (iii) results in the clustering of the low toneme of the copulative or adverbial prefix with the high toneme of the first syllable of the noun and this cluster is represented by a rising glide on a short peak-vocoid (unless, of course, terminal juncture brings extra length to the peak of

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Toneme displacement operates in Nd and Sw in the same way as it does in Z, despite the fact that the consonant of the morpheme is /ŋ/ (i.e. a plain nasal sonorant which is not a depressor), whereas in Z it is /ŋg/. This seems to point to an original *ŋga in Proto-Nguni and the correspondence Z, Xh /ŋg/ = Sw, Nd /ŋ/ as the product of a recent change in the latter languages.

the syllable). When the cluster $\bar{H}\bar{L}$ occurs initially in the noun, the product of one of the prefixal inflexions referred to is a rising-falling glide coinciding with a peak vocoid of the same duration as that associated with $\bar{H}\bar{L}$.

(a) Z : /yĩzĩfũ6à/[/ - \ -] < /y`-ĩzĩfũ6à/ 'They are chests'

(cf. /yĩsĩfũ6à/ above)

/ũ`h̄hóh̄hò/[ / - \ - ] < /`-ũ`h̄hóh̄hò/, or /ũh̄hóh̄hò/[^ / -]

< /`-ũh̄hóh̄hò/¹ 'It is a large hut'

Nd: /ĩbìzà/[/ - \ -] < /`-ĩbìzà/ 'It is a horse'

/yĩmbìzà/[/ - \ -] < /y`-ĩmbìzà/ 'It is a pot'

/ĩntó+/[^ -] < /`-ĩntó+/ or /ĩ`ntó/[/ - \ -] < /`-ĩ`ntó/²

'It is a thing'

Sw: /lĩbòdó/[/ - \ -] < /`-lĩbòdó/ 'It is a pot'

/yĩ`mbútì/[ / / - ] < /y`-ĩ`mbútì/ 'It is a goat'

/ĩpjá+/[^ /] < /`-ĩpjá+/, or /ĩ`pjá/[/ / -] < /`-ĩ`pjá/

'It is a dog'

(b) Z : /nëndà6à/[/ - \ -] < /nà-ĩndà6à/ 'with an affair'

/nẽfá+/[^ -] < /nà-ĩfá+/, or /nẽ`fá/[ / - \ - ] < /nà-ĩ`fá/

'with an inheritance'

/nẽ`6éle/[ / - \ - ] < /nà-ĩ`6éle/ 'with a breast'

Sw: /nëndzòdzà/[/ - \ -] < /nà-ĩndzòdzà/ 'with a man'

(c) Z : /ngẽzĩnwélè/[/ - \ -] < /ngà-ĩzĩnwélè/ 'by means of the hair'

Nd: /ngõgwàlò/[/ - \ -] < /ngà-úgwàlò/ 'about a book'

Sw: /ngëndzòdzà/[/ - \ -] < /ngà-ĩndzòdzà/ 'by means of a man'

7.2.4. The consequences of toneme clustering. When the working of toneme displacement is checked, rising and rising-falling glides occur in Z, Nd and Sw in word-initial syllables in a way in which they are never found in Xh. In

1

Note the alternants /ũh̄hóh̄hò~ũ`h̄hóh̄hò/ (the "long" prefix /ũ-/ reflects the original disyllabic prefix /úlù-/), which have partly dialectal and partly stylistic associations.

2

Notice the alternants with regard to nouns with monosyllabic stems of stem-pattern H : /ĩ`njá~ĩnjá/ 'dog' (Z, Nd, Sw), /ũ`thĩ~ũthĩ/ 'stick' (Z), /lĩ`ví~lĩví/ 'voice' (Sw), which correlate respectively with the absence or presence of /+/-/ immediately after the word.

Kh, all rising and rising-falling glides can be interpreted as allophones of H and HL respectively, and are always conditioned by a depressor. The rising glides illustrated above occur whether or not a depressor (or any other) consonant is found in the syllable and appear to yield to no other interpretation than the close-knit cluster LH.¹ On the other hand, rising glides also occur word-medially and even initially as the result of consonantal influence in exactly the same way as they do in Kh, e.g. Z /é'zǎkhò/[' -] 'yours', cf. /é'sákhò/[' -] 'yours'; Nd and Sw /ngénà/[' -] 'Enter !' of the tonomorphologic category with imperative pattern HL. There can be little doubt regarding the contrastive quality of these rising glides in word-initial syllables, as, for example, in the minimal pairs :

Z : /ú'thí/²[' -] 'It is a stick' : /ú'thí/²[' -] 'a stick'
 /í'wá/²[' -] 'It is a cliff' : /í'wá/²[' -] 'Fall!'

Unfortunately - from the aspect of descriptive simplicity - there appears to be no possibility of affording rising glides conditioned by depressors any different treatment from those that represent LH. Rising glides as the product of toneme clustering only occur word-initially, but conditioned rising glides may occur anywhere.

In similar fashion it becomes necessary to interpret all rising-falling glides as the cluster LHL. In Z /ú'thí+/[^ -] 'It is a stick', this interpretation fits the tonomorphologic facts, but in Z /í'zǐmù/[^ -] 'cannibal' it merely reflects the influence of the depressor /z/ and contributes nothing except to tonomorphologic complexity. /í'zǐmù/ is a noun of the tonomorphologic class with the normal stem-pattern HLL for which the allomorph LHLL has now to be

¹ The description of tonomorphologic structure must be anticipated here and from this aspect alone it is necessary to accept the cluster.

² These are alternants which occur when no terminal juncture follows. With a following terminal juncture they appear as : /ú'thí+/' 'It is a stick', /ú'thí+/' 'a stick', /í'wá+/' 'It is a cliff', /í'wá+/' 'a cliff'.

recognized. Similarly $\widehat{\text{LHL}}$ is an allomorph of HL in the tonomorphologic class with nouns with disyllabic stems distinguished by this pattern, e.g. Z, Nd /i'ngǎne/ 'infant'. A further unsatisfactory consequence of the $\widehat{\text{LH}}$ and $\widehat{\text{LHL}}$ interpretations of [✓] and [^] is that the low toneme does not count as far as tonal stepping is concerned, e.g. Z /i'ngǎnà/[✓-] 'he entering' (participial tense), cf. /i'ngǎnè/[✓-] 'infant'.

7.2.5. The full effects of having to interpret rising and rising-falling glides as $\widehat{\text{LH}}$ and $\widehat{\text{LHL}}$ in Z, Nd and Sw, are felt mainly in the tonomorphologic system in the form of highly complex description. For example, allomorphs $\widehat{\text{LHL}}$ and $\widehat{\text{LHLL}}$ referred to above are mere encumbrances when it comes to describing tonomorphology and play no part in the actual functioning of the system. But not only two tonomorphs are affected - every tonomorpheme in the structure (except the very few consisting only of Ls) must be provided with another allomorph. The interpretation we provide is offered without enthusiasm, but there appears to be no alternative if accepted analytic procedures are rigorously adhered to at the phonologic level. There is no possibility of invoking the unorthodox procedures connected with peripheral contrasts in order to solve our problem here, because :

(a) In contrastive function, the load borne by the rising glide is considerable, particularly in connection with segmentally homophonous nouns and copulatives. (b) Although our interpretation of rising glides may be wasteful, it does not conflict in any way with the existing pattern of pitch contrasts.

Tonomorphologic description with purely practical ends in view can, however, in this particular area of the structure, take cognizance of only the morphologically relevant tonemic structure, i.e. $\widehat{\text{LH}}$ and $\widehat{\text{LHL}}$ would only occur word-initially after inflexion and no individual tonomorph would incorporate these clusters, having only H and $\widehat{\text{HL}}$. This,

of course, is arrant level-mixing, but we advocate resort to it only for the purpose of simplifying tonomorphologic description.

3. Similar Features in Nguni Tonemic Systems

7.3.1. Contrast at syllable peaks. In Xh, pitch contrasts interpreted structurally are exhausted in the oppositions : H:L, H:H̄L, L:H̄L. In Z, Nd and Sw, however, discussion in section 2 above provides the reasons for having to extend the list of possible contrasts in covering the same phenomena in these languages to : H:L, H:H̄L, H:L̄H, H:L̄HL, L:H̄L, L:L̄H, L:L̄HL, H̄L:L̄H, H̄L:L̄HL, L̄H:L̄HL. An attempt is made below to illustrate these contrasts in identical or similar environments, but examples connected with L̄H and L̄HL are somewhat restricted, because only those in which these clusters are morphologically significant are selected. and this, of course, confines them to word-initial positions.

H : L

Z : /ísízi6à/[-__] 'pool' : /ísízi6á/[-__] 'rag'

Nd: /úlámándlâ/[-__] 'He is strong' : /ùlámándlâ/[-__]

'You are strong'

Sw: /síkhòná/[-_-] 'She is present' : /síkhòná/[-_-] 'We are present'

H : H̄L

Z : /kwákhò/[-_] 'at your place' : /kwâkhò/[-_] 'its'

/í6úyâ/[-_-] 'He returns' : /í6ûyâ/[-_-] 'he returning'

Nd: /lô6ànî/[-_-] 'with whom' (singular) : /lô6ànî/[-_-]

'with whom' (plural)

Sw: /lá6ò/[-_] 'those' : /lá6ò/[-_] 'of theirs'

H : L̄H

Z : /úzìphò/[-__] 'nail' : /úzìphò/ [/_ __] 'It is a nail'

Nd: /ímfè/[-_] 'sweet reed' : /ímfè/[_/_] 'It is sweet reed'

Sw: /índzòdzà/[-__] 'a man' : /índzòdzà/[_/_] 'It is a man'

H : $\widehat{\text{LHL}}$

Z : /nómà/[-] 'even if' : /nõthá+/[^ -] 'with the first-born child'

Nd: No suitable example in our data.

Sw: /í'mphí/[-] 'army' : /ĩmphí+/¹[^ -] 'It is an army'

L : $\widehat{\text{HL}}$

Z : /àthí/[-] 'and they said' (subjunctive tense) : /âthí/[\ -] 'They said' (indicative tense)

Nd: /ùyàcñwè6à/[- - -] 'You are pinching' : /ùyixñwâlà/[- - \ -] 'You are squint-eyed'

Sw: /sì6àlà/[- -] 'We count' : /sì6âyà/[- \ -] 'It is a kraal'

L : $\widehat{\text{LH}}$

Z : /yìthí/[-] 'Say!' : /yĩnì/[/ -] 'It is you'

Nd: /nìgwàlà/[- -] 'I write' : /nǒgwàlò/[/ -] 'by means of a book'

Sw: /lìpìpì/[- -] 'It is a pipe' : /lĩ'hñáǵì/[/ -] 'It is a horse'

L : $\widehat{\text{LHL}}$

Z : /yímá/[-] 'Stand!' : /yĩnì/[^ -] 'What is it?'

Nd: /yòná/[-] 'it' : /yĩntó+/[^ -]¹ 'It is a thing'

Sw: /tòná/[-] 'them' : /tĩnjá+/[^ /]¹ 'They are dogs'

$\widehat{\text{HL}}$: $\widehat{\text{LH}}$

Z : /ísàrà/[\ -]² 'a saw' : /ísàngò/[/ \ -] 'It is a gate'

Nd: No suitable example in our data.

Sw: No suitable example in our data.

$\widehat{\text{HL}}$: $\widehat{\text{LHL}}$

Z : /ízwí+/[\ /] 'a voice' : /ĩzwí+/[^ /] 'It is a voice'

Nd: No suitable example in our data.

Sw: /tĩnjá+/[\ /] 'dogs' : /tĩnjá+/[^ /] 'They are dogs'

$\widehat{\text{LH}}$: $\widehat{\text{LHL}}$

Z : /nëzwè/[/ -] 'with a country' : /nëzwí+/[^ /] 'with a voice'

1

Where terminal juncture is marked, the particular toneme pattern is determined by the presence of the juncture. Alternative patterns are found with nouns of two syllables with final H, i.e. HH~HLH.

2

Alternatively /í'sàrà/.

Nd: /yĩmfè/[/ _] 'It is sweet reed' : /yĩntó+/[^ _] 'It is a thing'

Sw: /tĩndlù/[/ _] 'They are huts' : /tĩntshó+/[^ /] 'They are things'

7.3.2. Inherent length and its interpretation. In Z, Nd and Sw a length feature is permanently bound to all occurrences of HL (including LHL) as in Xh. The cluster LH, however, has no such concomitant and coincides with short peak-vocoids. Inherent-length occurrences interpreted in Xh as the leftover /·/ are less numerous in Z than in Xh, and are most rare in our Sw and Nd data.

In Z, /·/ occurs in contractions of the future tense such as /6ó·théngà < 6áyóthéngà/ 'They will buy', but is probably commonest in the alternants /í·-/ and /ú·-/ of the class 5 and 11 noun prefixes, e.g. /í·thàngà~íthàngà/ 'pumpkin', /ú·thàngà~úthàngà/ 'pumpkin plant'. The "long" prefixes as alternants are ^{more}common in some dialects than in others, but alternation is also a matter of stylistic choice, as /í·-/ and /ú·-/ appear to be favoured in slow precise speech. A length feature may also occur in the monosyllabic words, clitics or stems of which /lé ló njé/ is representative (for comparison with Xh see 6.2.6). The absence of /·/ in these forms is the general rule in Z, but our Z informants did present the alternants /lé~lé·/, /ló~ló·/, probably with stylistic connotations. A speaker of one dialect (not that of our informants) distinguished the two morphemes nje as /njè/[ndʒɛ] 'like this' : /njě·/[ndʒɛ:] 'only, merely'. Because the latter was also given as /njě/[ndʒɛ] on a different occasion, we regard this as another instance of the reinforcement of a minimal contrast (pitch is the only sound feature that consistently contrasts these morphemes) by features that are only marginally distinctive, or are non-distinctive differences between free variants.¹

¹It is of interest that dialectally in Z the two morphemes nje are contrasted by tone, while the Xh dialect mentioned at 8.3.2 (b) achieves the same object by the use of open juncture. The Ngqika dialect of our Xh informants relies only on context to distinguish between two homophones.

In our Nd data inherent length is only associated with the high-falling glide (except in the one idiolect mentioned below). Class 5 and 11 prefixes are always short, viz. /í-/ and /ú-/, irrespective of the stem-initial toneme, and there are no examples of long peak-vocoids in contracted forms. In one idiolect (not of one of our informants) there appears to be a need to recognize a phoneme /•/ because a length feature alone differentiates classes 9 and 10 (i.e. singular from plural) in the case of certain nouns of these classes, e.g. /íq[̄]hàmú/[[̄]-] 'knife' : /í•q[̄]hàmú/[[̄]-] 'knives'. With other nouns of these classes, the usual differentiation /ín-/ : /[̂]ín-/ was found.¹

In Sw, the only instance in our data of inherent length occurring apart from the cluster HL is in 3rd positional demonstratives where it coincides with a low tone, e.g. /là•6à là•wà/ 'that' or 'those yonder'. /•/ in closely similar environments distinguishes the following : /lá6à6ántshù/ 'these people' : /là•6à6ántshù/ 'those yonder people'.

7.3.3. Allotonic variation; Environmental influences. The same environmental influences operate in Z, Nd and Sw as in Xh and to a large extent tonemes have the same range of allotones. In Z, Nd and Sw, however, the rising glide has, perforce, to be interpreted as the cluster LH and not as an allotone of H, even though in numerous instances it arises under the same conditions of consonantal influence as in Xh.²

¹ Another peculiarity of this idiolect associated with the length feature, is the indicative remote past tense subjectival concords /ḡá- 6á- sá-/, etc, instead of /ḡâ- 6â- sâ-/, etc.

² As the rising glide resulting from the influence of depressors must be regarded as phonemically distinctive, this influence is not illustrated in the paragraphs below, but can be seen in : Z /bùbísà/[[̂]- / -] 'Kill!', Sw /lómǎžǎlà/[[̂]- / -] 'old', Nd /sìyázúžà/[[̂]- / -] 'We obtain'; cf. Xh /bùbísà/, /ómǎlà/, /sìyázúžà/.

7.3.4. The most important conditioning factor, that of tonal stepping, operates in the same way in all four languages and, as in Xh, is often interrupted by /+/. The sequence LH and /ʔ/ mark the boundaries of tonal steps.

Z : /isithombè sɛntɔmbi+/[---] 'a girl's picture'

/sâk'âk'wá yizithá kânîngi+/' - - / - - \ -] 'We were

often surrounded by enemies'

/úthì+ 6àmbă+ / [- - /] 'He says, 'Catch hold''

Nd: /nâfikè nà6ónà+/[' - - - -] 'I immediately saw'

/si6ónê élinè ibizà+/-' - - - -] 'We have seen one

horse'

Sw: /úma lúkùlā lúkùlā+/[--- \-- \--] 'if weeds grow'

/nì6ónúmúntshù+ ángènéndlèlénì+ nèlìkhù6à+/¹

[- - - - -
- - - - -
= - - - - - \ -] 'I see a person starting along the
road with a hoe'

7.3.5. A low toneme is assimilated to an immediately preceding high toneme if it does not coincide with a depressor.

Z : /ímfènè/[⁻₋] 'baboon', cf. /índòdà/[⁻₋] 'a man'

Nd: /úkúlimà/[--_] 'to plough', cf. /úkúgùlà/[--__] 'to
be ill'

Sw: /lítàlà/[₋ ₋] 'ash heap', cf. /lídàdà/[₋ ₋] 'duck'

/kúmèmà/[₁ - ₂] 'to invite', cf. /kúdùmà/[₁ - ₂] 'to thunder'

7.3.6. The crescendo of high tones in sequence occurs in Z as it does in Xh, but is not always in evidence in Sw and Nd. Examples from the latter which are given below may or may not exemplify this tendency when re-uttered.

Z : /námálálà/[---] 'Disappear'

Nd: /úlámándlā/[--_] 'He is strong'

Sw: /6úhlàlú ló6ú6òvũ+/[ˈ ˌ ˈ ˌ ˈ ˌ] 'red beads'

I

Parts of this utterance are made with joined transition. With disjoined transition throughout it appears as /nì6ónà úmúntshù+ ángèná éndlélénì+ nèlíkhù6à+/.
 5

7.3.7. A low toneme between two high tonemes is assimilated to both the preceding and succeeding toneme.

(Compare the second syllables in the following examples.)

Z : /ú6à6á/[⁻ ⁻ ⁻] 'father', cf. /í6àlò/[⁻ ⁻ ⁻] 'numerical order'

Nd: /ísimó/[⁻ ⁻ ⁻] 'shape', cf. /ílimà/[⁻ ⁻ ⁻] 'He ploughs'

Sw: /émátshàná/[⁻ ⁻ ⁻] 'thighs', cf. /émátshànà/[⁻ ⁻ ⁻] 'pumpkins'

7.3.8. Step juncture. An unpredictable downstep in a succession of high tones occurs in Z, Nd and Sw under approximately the same conditions as it does in Xh. Z provides the minimal pair /í'6ékà/[⁻ ⁻ ⁻] 'mild-mannered person' : /í6ékà/[⁻ ⁻ ⁻]¹ 'he placing' (participial tense), to illustrate the contrast that we assign to the presence or absence of a juncture. The following examples from Z indicate how step juncture occurs mostly at the same points of the structure as in Xh.

/ú'nwélè/[⁻ ⁻ ⁻] 'a hair'

/nǝ'hǎǝi/[⁻ ⁻ ⁻] 'with a horse'

/í'ngǎnè/[⁻ ⁻ ⁻] 'infant', cf. /íngǎnà/[⁻ ⁻ ⁻] 'he entering'

/í'q'ólà/[⁻ ⁻ ⁻] 'wagon'

/ú'á/[⁻ ⁻ ⁻] 'A'

/á'6ámì/[⁻ ⁻ ⁻] 'mine'

Z differs from Xh in having step juncture in monosyllabic nouns of class 9 such as /í'ntó/² 'a thing' and also in adverbs formed from monosyllabic demonstratives, e.g. /kú'ló kú'lé/ 'to this one'.

Our Sw data contain the minimal pair /lí'fánà/[⁻ ⁻ ⁻] 'small inheritance' : /lífánà/[⁻ ⁻ ⁻] 'It resembles' (indicative tense) illustrating step juncture, but no equally suitable example has been found in Nd. Nevertheless, step juncture will be found to occur in Nd(and Sw) under circum-

¹ An alternative pattern reflecting crescendo of the high tonemes has been observed, viz. [⁻ ⁻ ⁻].

² Compare the toneme pattern immediately preceding /+/, viz. /íntó+/.

stances similar to those in Xh and Z. In Sw, step juncture occurs in our data between prefix and stem of all nouns with monosyllabic noun prefixes and stems with an initial high toneme. (Except for classes 1, 3, 4, 6, Sw has monosyllabic noun prefixes throughout.)

Nd: /f'ntó/[--] 'a thing'

/f'nhlókò/[--] 'head of an animal'

/ú',á/[--] 'A'

Sw: /lí'tíyà/[--] 'tea'

/kú'vúkà/[- / _] 'to wake up'

/f'nhlókò/[--] 'head'

/f'ntshwánà/[--] 'small thing'

/6ó',á/[--] 'A's'

In Z, Nd and Sw, however, the process of toneme displacement provides a new situation in which step juncture occurs. The following examples show how in the supplanting of a low toneme by a displaced high toneme, an overt tonal-step boundary is removed. As a result of displacement, high tones at different levels (as allotones of H) become immediately juxtaposed without any subsequent adjustment of levels.

Z : /ngà6á'fánà/[_ --] < /ng'-á6áfánà/ 'They are boys'

/yisí'6âyà/[_ \ _] < /y'-ísì6âyà/ 'It is a kraal'

/yisí'6áyá ɛ̀sìkhùlù+¹[_ --- \ _] 'It is a big kraal'

Nd: /yikú'6éthà/[_ --] < /yì-úkù6éthà/ 'It is to hit'

/jèsí'fúndò/[_ --] < /jà-ísìfúndò/ 'by means of a lesson'

Sw: /jèmá'fûtshà/[_ \ _] < /j'-émàfûtshà/ 'It is fat'

7.3.9. The function of tonemes. The workings of tonal grammar are basically similar in all languages, although there are a number of differences in the shapes of particular tonomorphs identified by their association with categories of the segmental morphology and certain lexical items. In the knitting together of tonomorphs to form larger patterns, Z, Nd and Sw differ from Xh in the possibility of such morphs overlapping, notably in connection with the prefixal

¹

Note the morphotonemic change HLL > HH in this example.

inflexions referred to in discussion on toneme clustering. Toneme displacement is confined to Z, Nd and Sw, but other types of tonemic substitution which apparently form part of the morphotonemic system, occur in all languages. These include toneme dissimilation in connection with disyllabic noun prefixes, examples of which have already been given. There is also the substitution HL > H associated with the presence or absence of /+/- and illustrated in Xh at 6.4.7. An example of the latter in Z is included in the examples in the preceding paragraph.

4. Salient Differences in Nguni Tonemic Systems

7.4.1. Differences in toneme patterns. Except for a low-frequency third toneme in Sw (see 7.4.8 below) differences in tonal structure between one Nguni language and another are largely confined to this type. Although a common Nguni stratum is always in evidence, differences in the shape of particular tonomorphs are fairly extensive, and, apart from strongly influenced dialects of Nd which differ greatly in all aspects of tonal structure, Sw is the most deviant in this respect. A few tonomorphs are selected at random and compared in the following paragraphs merely to illustrate the nature of these differences and not to deal with them exhaustively. There is also no specific intention of illustrating the occasional placing of cognate items of the lexicon in different tonomorphologic classes in different languages.

7.4.2. The toneme patterns associated with noun prefixes are, for monosyllabic prefixes, uniformly H throughout Nguni except for the following : Xh and Z alternants /i-/ and /û-/ in classes 5 and 11; class 2a prefix /ô-/ of Z, Nd, Xh (/ôô-/ in Sw); class 10 prefix /îñ- ~ îim- ~ îin- ~ îñ-/ in Xh and Nd. Monosyllabic-stem nouns in Z, Nd and Sw with stems marked by a high toneme, uniformly have the pattern HLH when the noun occurs before /+/- and HH elsewhere,

e.g. Z /ûthí~ú'thí/ 'stick'; Z, Nd /întó~í'ntó/ 'thing', Sw /lîví~lí'ví/ 'voice'. Under these circumstances the pattern HL exists allomorphically for monosyllabic noun prefixes in Z, Nd and Sw. Disyllabic prefixes bear one of the allomorphs HH~HL in all languages. Xh and Nd differ from Z¹ in having the monosyllabic prefix /î'n-~î'm-~î'n-~î'n̄-/ for nouns of class 10 with stems of two syllables or more, although Xh does not, in the case of some nouns, differentiate plural from singular and both classes 10 and 9 bear the same prefix /î'n-~î'm-~î'n-~î'n̄-/ (see footnote 2, p. 81). Sw has the prefix /tî'n-~tî'm-~tî'n-~tî'n̄-/ in class 10.

7.4.3. The prefixal tonomorph L forms copulatives from nouns in Z, Nd and Sw, but is lacking in the tonal morphology of Xh, e.g. Xh /ngá6ántù < ng-á6ántù/ 'They are people', /zízityà < z-ízityà/ 'They are dishes'.

7.4.4. The tonomorphologic class HH found amongst nouns with disyllabic stems in Xh (e.g. /í'cící/ 'earring', /í'qáqá/ 'polecat'²) appears to be missing in the remaining Nguni languages and apparently also in some northern dialects of Xh.

7.4.5. In the tonal morphology of the verb (as set out for Xh at 6.4.4), certain differences in tonomorphs are observable. Compare, for example, the stem-pattern LHL~L̄LHL (for HL stems) in the indicative perfect tense positive in Z, Nd and Sw with HLL in Xh; e.g. Z, Nd, Sw /6áhàmbìlè/ Xh /6áhhàmbìlè/ 'They have gone'

Among several notable differences associated with the verb in Sw is a distinction between the indicative present tense negative and the indicative past tense negative which is solely dependent upon the toneme patterns,³ e.g.

¹ There are reliable reports of certain Z dialects with monosyllabic prefixes in class 10.

² Cf. Z /í'cící/ and /í'qáqá/.

³ Sw lacks the negative suffix /-anga/ which consistently marks the indicative past tense negative in other languages, e.g. Z /àkàlímàngà/ 'He has not ploughed'.

/àkàlímí/ 'He does not plough', cf. /àkàlímí/ 'He has not ploughed'

/à6àgězi/ 'They do not wash', cf. /à6àgèzi/ 'They did not wash'

7.4.6. The association between the cluster $\bar{H}L$ and particular points in the segmental morphologic structure such as the short perfect tense suffix, class 2a plural prefix, remote past indicative subjectival concords, etc., (for Xh see 6.2.7) does not occur in Sw to the same extent as in the other languages. For example, the short perfect tense suffix is /-é/ in Sw, the remote past subjectival concords /sá- lá-/, etc., and the class 2a prefix /66-/. The loss of the copulative auxiliary verb *-li does^{not} appear to be marked by $\bar{H}L$ in Sw (nor in Nd) as it is in Z and Xh, e.g. Sw /sík̄hòná/, cf. Xh /sík̄hòná/ 'she being present' (participial tense) <*sili-khona.

Another aspect of the lower frequency of $\bar{H}L$ in Sw is the small number of nouns that appear in the tonomorphologic class distinguished by the pattern $\bar{H}LL$. Far fewer nouns occur in this class in Sw. /í'mbütì/ 'goat', for example, is found in the HL class, while its cognates in Xh, Z and Nd are found in the $\bar{H}LL$ class.

7.4.7. In certain circumstances our Nd informants show a tendency to ignore grammatic contrasts which depend upon the cluster $\bar{H}L$ and such alternants as /sílímé ~ sílímê/ 'We have ploughed' (indicative perfect tense), /lò6ání ~ lô6ání/ 'with whom' (plural),¹ /ínàná ~ ínàná/ 'moons',² have been recorded. Alternants which retain $\bar{H}L$ seem to be associated with careful speech and contexts which do not in themselves convey a plural significance, past time reference, etc.

¹ Cf. /lò6ání/ 'with whom' (singular).

² Cf. /ínàná/ 'moon'.

7.4.8. A third toneme in Sw. In Sw the two tonemes

(individually or in the clusters HL LH LHL) and step juncture account for not quite all of the pitch contrasts in our data. There remains a very restricted group of monosyllabic morphemes whose representatives always bear a mid tone which is clearly contrastive in relation to all other tones. There appears to be no alternative to recognizing a third toneme which we mark M or /'/. In our data this group comprises only the demonstratives /lě ló lá/ and the clitic /pjé/,¹ and the distinctive quality of the mid tone is attested to by the following :

/lěndlēlà/[-__] < /lě-índlēlà/ 'this way' : /lěndlēlà/ [-__] < /la-índlēlà/ 'of the road'
 /sílá/[_-] 'We are here' : /sílá/[-'] 'Grind!'
 /6áhámà lě/['-'] 'They walk over there', cf. /6áfúnà lě/['-'] 'They want this one'

Notice also :

/núyè ló/['-'] 'It is this one'
 /há•mbànjé/['-'] 'Just go'

7.4.9. Non-phonemic differences. Most dialects of Xh

differ from other forms of Nguni in the extent to which representatives of the high and low tonemes are contrasted in speech. In Xh the pitch-interval between representatives of these tonemes is noticeably wider and contrasts more clearly drawn, and in the rough and tumble of everyday speech such contrasts appear to be less frequently obscured in Xh than in the other languages.

¹

In a number of problems of analysis the demonstratives /lě ló/ and /pjé/ 'merely, only' have been cited as representative of a group of monosyllables appearing variously as clitics, roots and free forms, that present contrasts in sound feature that do not fit into the predominant pattern of contrasts. (See, for example, "The interpretation of mid vocoids as syllable peaks" at 3.3.1 ff., and unpredictable inherent-length occurrences discussed at 6.2.6 and 7.3.2.) A diachronic investigation would probably explain the origin of these deviant sound contrasts which is not clear to us at present. It is possible that they are connected with a new-found syntactic independence, or the development of a monosyllable (with this independent status) from a form that originally comprised more syllables than one.

CHAPTER 8

JUNCTURES

1. Introduction

8.1.1. In addition to step juncture already defined at 6.2.10, two other junctural phonemes are recognized in "open juncture" (/’/) and "terminal plus juncture" (/+/. In addition, a length feature associated with some pre-pausal peak-vocoids, which is of the nature of a "hesitation form" in Nguni, requires phonologic interpretation and is tentatively identified as a juncture, although in the ultimate analysis of the intonation system, it may be better to treat it as an intonation constituent with, possibly, a different status and set of relations from that which we have given it. It is labelled as "pre-pause bar juncture" (/|/).

Open juncture is of the nature of a significant "break" between syllables and its identification as a juncture has a number of parallels in other recent analyses of phonologic systems. Terminal plus juncture and pre-pause bar juncture represent our interpretation of the great majority of "imposed" length occurrences. Both can be lifted off and isolated in a manner typical of intonation constituents and both may, in fact, eventually be incorporated in the intonation system, although our present inclination is to postulate no correlation between them. The actual representatives of /+/. and /|/ can be identical in one utterance, but these junctures remain separate according to the placement of the length feature. The representation of /|/ only occurs immediately before pause, while that of /+/. never occurs there. The definition of /+/. includes reference to a grammatic boundary and the separation of /+/. from instances of inherent length relies upon this feature of placement.

Aspects of our interpretation of a length feature associated with peak-vocoids, in which the junctures /+ / and /| / are most implicated, involve not only unorthodox procedures, but direct defiance of certain generally accepted basic premises. The reason for resort to such methods has already been given. Our analysis cannot be sustained, however, without some defence of it against certain statements and implications of current theory and methodology that challenge its validity, particularly those relating to phonemic intersection and the relevance of grammatic structure in phonologic analysis. In Chapter 9 we are concerned with examining the validity of our interpretation of peak-vocoid duration.

2. Terminal Plus Juncture

8.2.1. Representation of /+ /. All examples of inherent length cited in 6.2.6 and 7.3.2 in previous chapters, whether the concomitant of $\widehat{HL}$ or the representative of the rare leftover /· /, can be regarded as part of configurations of sound features that constitute certain morphs or larger grammatic units. A different type of long-peak-vocoid occurrence¹ which is not a permanent part of any morph or word is observed in long utterance-penultimate peak-vocoids/^{and is}revealed in such comparisons as :

Xh: /lôndòdà+ / [lɔ·ndɔ:ɖa] 'that man'

/lôndòdà yákhò+ / [lɔ·ndɔɖaja:khɔ]² 'that man of yours'

/lôndòdà yákhò éndálà+ / [lɔ·ndɔɖajakhwenda:la]² 'that old man of yours'

These serve not only to illustrate the transient character of utterance-penultimate length, but also exemplify the two

¹ Only "short" and "long" peak-vocoids are differentiated in this chapter. Other relative lengths and their structural interpretation are dealt with in Chapter 9, which includes a description of length present in a single long peak-vocoid in different structural "layers".

² We ignore temporarily the possibility of a change in style producing "penultimate length" in /lôndòdà / and /yákhò / (see 8.2.7 below). The style of speech associated with the introduction of additional junctures favours, to some extent, pauses between words. Our point is best illustrated, therefore, if these utterances are made with "joined transition", viz. /lôndòdàyákhò+ / and /lôndòdàyákhwéndálà+ /.

different types of length occurrence. Compare also the following :

- Z : /ngɪfúnà ìnjǎ+/[i:pdʒa] 'I want a dog'
 /ngɪfúnà ìnjǎnà+/[ɪndʒa:na] 'I want a small dog'
 /ngɪfúnà ìnjǎpânà+/[ɪndʒapɑ:na] 'I want a very small dog'

In utterances which are sufficiently long there will be utterance-medial instances of imposed length bound to the penultimate syllables of words, e.g. Xh /lôndòdà+ùyi6ónàyò+/[lɔ·ndɔ·da uji6ɔna:jɔ] 'That man whom you see', Z /ìnjǎ+ nà6ántù+/[i·pdʒa na6a:nt'u] 'The dog and the people'. (The difference in relative length between the shorter utterance-medial "penultimate length" and utterance-final "penultimate length" is equated structurally with an intonation constituent.) The type of imposed length now under discussion is thus seen to occur at a fixed point in relation to word-boundaries, although it is not normally found at all such boundaries. A glance at the pairs of utterances presented at 8.2.6 shows that these occurrences of a length feature have contrastive quality and there can be no doubt, therefore, regarding their structural relevance. In our analysis, such length is interpreted structurally as "terminal plus juncture" and transcribed as /+/- inserted at the end of words or between words. Reasons for assigning it the status of a juncture will emerge in discussion and examples below.

The definition of this junctural phoneme must include the fixed point (in relation to word-boundaries) at which it is represented, and this immediately presupposes a ready ability to identify the boundaries of words. According to grammatic criteria¹ most words are easily separable

¹
 A method of word-division employing grammatic criteria has been developed for Bantu languages by Guthrie in : Bantu Word Division, International African Institute, London, 1948. More recently, Greenberg has proposed a means of defining words, which has a more universal application and is based upon the distribution of grammatic units. (Joseph H. Greenberg : Essays in Linguistics, New York, 1957, p. 27.)

in Nguni and present orthographies present a fairly faithful reflection of the application of these criteria. Problems of word-division which could affect our ability to recognize /+/- are mainly concerned with a few monosyllables that may be either words or clitics of which /pjé/ or /pjé·/ 'only, merely' (or 'like this') and /ké/ or /ké·/ 'so, then' are the most prominent. Phonologic criteria have been found to have a very limited application to the problem of word-division (see 8.6.1). The problem is, in any case, that of the analyst, and it must be assumed that the native speaker has the same subjective awareness of the word as a separate unit where /pjé ké/, etc. are concerned, as elsewhere.

8.2.2. The occurrence of /+/-. Providing that normal conversation provides the bulk of the material for investigation, a length feature signalling /+/- is seen to be associated mainly with groups of words which are linked by some of the closest syntactic bonds in the sentence. Such phrases have the following types of internal structure :

(a) Verb - adverb.

Kh: /6épháthíswê ngúmthêthò+ ériní+/- 'having been dealt with by the law in Grahamstown'

/á6ántù+ á6álímà áphà+/-¹ 'people who plough here'

Z : /siyì6ónà kàníngì+ ékhâyà+/- 'We often see it at home'

Nd: /6álímà khàthésì+/- 'They plough now'

/sìlímê kùhlé+ éhlàthínì+/- 'We have ploughed well in the forest'

Sw: /kú'lálà émpànò+/-¹ 'to lie in the doorway'

(b) Verb (lacking an objectival concord) - noun or pronoun (in predicate - object relationship).

Kh: /índòdà ífúnà ézàkhé+/-¹ or /índòdà+ ífúnà ézàkhé+/-

'The man wants his ones'

Z : /sàthólà úmfánà+ étṣàníní+/- 'We found the boy in the grass'

¹

With joined transition which is likely to be found at a number of word-boundaries in quick speech, these will be: /á6ántw+á6álímáphà+/-, /kú'lálélnànè+/-, /índòdífúnézàkhé+/-.

Nd: /célà ímàlí+/ 'Request money!'

Sw: /ɲì6ítà émad̄zòd̄zà+ ímálàṅà óṅkhè+/ 'I call the men
every day'

(c) Noun - qualificative.

Xh: /ndâ6óná útɔk'ì+ íṅjá k'átàtá+ ínhámbà éndlèlèṅì+/
'I saw father's dog Toki walking in the road'

Z : /ámálùṅgà óṅk'è+ ómzĩmbà+/ 'all the limbs of the
body'

Sw: /íṅjá yámì+ léṅkhúlù+/ 'my big dog'

Nd: /íṅk'òmó yódwà+/ 'a beast only'

(d) Noun - qualificative - adverb, qualificative - adverb, etc.

Xh: /íc̄nwàdí é'ṅk'úlú k'àkhúlù+/ 'a very big book'

Z : /m̄khúlù káṅjàṅì+ úsìphó+/ 'How big is Sipho?'

Sw: /6áhámbà+ lí6àṅá lélídzè kàkhúlù+ ṅètípàwò+/ 'They
walk a very great distance on foot'

These examples illustrate, although by no means exhaustively, the syntactic nature of the commonest types of "phonologic phrase" demarcated by /+/. In different situations the utterances or portions of utterances given above may include more terminal junctures, but, as indicated below, the incorporation of additional /+/'s is probably a matter of stylistic choice.

8.2.3. The marking of /+/' at the end of, or between, words, although its actual representation is one syllable removed from this point, reflects the syntactic associations of this juncture. There are obvious disadvantages to marking it at a border which has no syntactic significance and there is a sound practical reason for the avoidance of its representation in the more logical position of the last syllable of the word, viz. because of the strong tendency to devoice utterance-final syllables and to elide them in joined transition utterance-medially. This would quickly render inoperative an isolated sound unit located in these syllables.

8.2.4. There are certain points in utterances where /+/
is never represented and others where it hardly
ever occurs.¹ It is patently impossible for /+/
to occur after any one of the small number of monosyllabic words
found in Nguni, e.g. the demonstratives /lé ló/ (Sw /lè
lò/); conjunctives Z, Nd /x̄ná/, Xh /xá/ 'when, if', etc.
/+/
is never marked after ideophones, and similarly after
3rd positional demonstratives and demonstrative copulatives
with suffix /-ya/, e.g. Xh /êziyâ/, Z /lèziyâ/, Sw /lètìyá/
'those yonder'; Xh /nâsiyâ/ 'There it is', Z /nâmpâyá/ 'There
they are'. /+/
never occurs in our data after a verb in the
short perfect tense (e.g. after Xh /6épháthíswê/ in the
first example given under (a) in 8.2.2 above). Some
conjunctives never appear to be followed by /+/, e.g. Xh
/úk'ú6à/ 'that, if'. Inflected forms of the monosyllabic
demonstratives never occur with /+/, e.g. Z, Nd, Sw /kú'ló/
Xh /k'úló~k'úló./ 'from this one'; Xh /ngùló~ngùló./ 'It
is this one'; Z, Nd /yilé/ 'It is this one'; and also forms
incorporating /njé/ or /njé./ 'like this' as a stem, e.g.
Xh /k'únjé~k'únjé./ 'It is like this' and Z /í'ntó énjě/
'a thing like this'.

8.2.5. Certain words are almost always followed by /+/,
probably due to a frequent syntactic isolation.
These include many interjectives, e.g. Z, Sw /yě6ò+/
'Yes'; Xh /êwé+/
'Yes'; Z, Sw /h̄h̄yì+/, Xh /h̄h̄yì+/, Nd /át̄j̄i+/
'No'. Z, Nd /kódwà+/, Xh /k'ódwà+/, Sw /kódzwà+/
'but'; Z /úkúthi+/, Sw /kút̄shi+/
'that'; Z, Nd /úkúzè+/, Xh /úk'úzè+/
'so that' are among the conjunctives that are nearly always followed
by /+/
in our data.

8.2.6. The function of terminal juncture. Features associat-
ed with the occurrence of imposed word-penultimate
length that condition out interpretation of it as a juncture
are : (a) although of established phonologic relevance, it

¹
Observe that it is possible for an utterance to be entirely
devoid of terminal junctures, e.g. Xh /6èñiphúlàphúlà
k'úsásáñjé./ 'You were listening this morning'.

cannot easily be assigned to any adjacent morph as a constituent because different occurrences of the same morph frequently lack it; (b) it demarcates rather than differentiates (the normal function of vowels and consonants).

Although terminal plus juncture occurs potentially after most words in an utterance, in any particular utterance only a limited number must be regarded as essential as far as the syntactic structure is concerned, and any additional /+/'s found utterance-medially have no structural significance, but apparently connote differences in style of speech. The following pairs of utterances demonstrate that some terminal junctures are structurally essential.

Xh: (a) /6àngá6ù6ónà¹ ú6ùsò 6ákḥò+ 6ónk'è+ á6ágqìthà
áphà+/ 'All those who pass here can see your face'

(b) /6àngá6ù6ónà¹ ú6ùsò 6ákḥò 6ónk'è+ á6ágqìthà áphà+/
'Those that pass here can see the whole of your face'

Z : (a) /6àngá6ù6ónà¹ ú6ùsò 6ákḥò+ 6ónk'è+ á6ádlùlà láphà+/
'All those who pass here can see your face'

(b) /6àngá6ù6ónà¹ ú6ùsò 6ákḥò 6ónk'è+ á6ádlùlà láphà+/
'Those who pass here can see the whole of your face'

Nd : (a) /6àṇà6ù6ónà¹ ú6ùsò 6ákḥò+ 6ónk'è+ á6ántù+/
'All the people can see your face'

(b) /6àṇà6ù6ónà¹ ú6ùsò 6ákḥò 6ónk'è+ á6ántù+/
'They can see the whole of your face - the people can'

Sw : (a) /6àṇà6ù6ónà¹ 6ú'sò 6ákḥò+ 6ónkḥè+ lá6ádlùlà láphà+/
'All those who pass here can see your face'

(b) /6àṇà6ù6ónà¹ 6ú'sò 6ákḥò 6ónkḥè+ lá6ádlùlà láphà+/
'Those who pass here can see the whole of your face'

In each language (a) and (b) are contrasted by the presence or absence of /+/' after /6ákḥò/. Under these circumstances

¹
This juncture is common, but structurally non-essential, and may not occur.

/+ / may appear to have differentiating function, but its real function is to link /ú6ùsó 6ákhò/ (Sw /6ú'só 6ákhò/) 'your face' with what comes after it, or to separate it from that portion of the utterance. It must be observed, however, that when they become aware of the minimal difference, informants tend to reinforce /+ / with pause, placing it after /6ákhò/ in (a) and after /6ónk'è/(/6ónkhè/) in (b). It seems too, that a differential of a higher order can be selected, viz. an intonation, and such intonational features as the extra length of the penultimate peak-vocoid and the noticeably lower pitch of the final step, are evident in such cases before the pauses referred to. In providing examples of essential terminal junctures, these utterances remain satisfactory even under these circumstances, however, because the second layer of peak-vocoid length signalling intonation, presumes the presence of the first layer, i.e. this intonational constituent can only exist if /+ / is already present (it is entirely lacking in utterances which terminate in monosyllabic words, for example).

The analyst finds more terminal junctures than the essential ones if his data includes only the careful speech of informants. It requires an examination of utterances, or portions of utterances, extracted from normal speech to observe the primary function of /+ /, viz. to mark off what are mostly groups of words that are syntactic immediate constituents of the first or second layers.¹ As partially exemplified above, such groups comprise syntactic immediate constituents such as : noun - possessive, noun - adjective, noun - adjective - adverb, verb - adverb, verb - noun (in predicate - object relationship), verb - noun - adverb, etc.

¹

There are few utterances in which a complete correspondence will be found between such groups grammatically and phonologically defined. This is because of the variable number of terminal junctures that may be included in an utterance, and also for the reason that even phonologic phrases isolated by only structurally essential junctures, do not always coincide with phrases that are grammatically defined. Some conjunctives, for example, are regularly isolated by /+ / and others not (see 8.2.4 and 8.2.5 above).

These are the commonest types of phonologic phrase demarcated by /+/, particularly noun - possessive, noun - adjective, etc. (i.e. a noun plus associated qualificative). Others, such as noun - verb (in subject -predicate relationship) may or may not have an intervening juncture. The introduction of more than the structurally essential junctures is discussed at 8.2.7 below.

Intonations divide up many longer utterances and, at the next lowest level, terminal juncture provides the analyst with a point at which utterances can be broken down (if one adopts an "IC-approach" after the manner of Hockett, op. cit., §22, §324). The term "phonologic phrase" is applied to portions of utterances between two terminal junctures, or between /+/ and the beginning or end of an utterance. The phonologic phrase has an important association with the process of tonal stepping, because it is at the boundary of such a phrase that the process often starts afresh with a higher point of departure in the pitch-range of the speaker. Alternatively there may be an abnormally big downstep.

8.2.7. Intermittency in the occurrence of /+/. Utterances
in which a terminal juncture occurs after almost every word have been observed under the following conditions :
(a) A group of Ndebele-speaking kindergarten children repeating the Lord's Prayer after the teacher (in one to three-word groups); (b) In a Xh school dictation test; (c) Two women conversing across a valley in Zululand (i.e. where a linguistic signal has difficulty in getting through to the hearer under conditions of considerable noise interference or intervening distance). Under the latter circumstances each phonologic phrase is usually followed by a pause. It has also been observed that important passages in church sermons usually have more terminal junctures than the structurally essential ones. On this evidence the particular significance of the introduction of non-essential terminal

junctures is seen to be a matter of style of speech rather than demarcation.

The introduction of additional /+/'s raises the syntactic status of individual words, but at the same time diminishes the effect of this terminal juncture in indicating where the closest syntactic bonds lie. The question then arises whether there is any compensation for this loss of function. On examination, however, it is found that terminal juncture is only one of the signs employed in syntactic grouping. "Concords" that indicate agreement between nouns and adjectives, nouns and verbs, etc., serve much the same function as /+,'^{and}/ in a number of situations syntactic links are adequately signalled in this way. There are thus at least two means available for fulfilling a vital syntactic function.

While long stretches of speech are never completely devoid of terminal junctures, there are utterances in our data with fewer than the structurally essential ones. For example, one informant presented the first Xh example given at 8.2.2 (c) as /ndâ6ónútók'ì+ ònják'átàtìhāmbéndl̄l̄l̄nì+/. The style of speech was rapid conversation style and it is clear that utterance-medial terminal junctures are subject to effacement in quick speech in the same way as other phonemes. This is the reason for the absence of /+/' after /ònják'átàtá/ and it is, therefore, of no consequence as far as description of phonologic structure is concerned. There are undoubtedly occasions when "penultimate length" is included in the essential minimum of sound features necessary for the recognition of a particular linguistic signal. It is possible for this situation to arise in connection with one of the utterances given at 8.2.6 above, for example.

3. Open Juncture

8.3.1. Transition between syllables. Between one syllable peak and another most transitions are "smooth", i.e. the ^{speaker} / moves through one or more intervening contoids or a glide vocoid without any discernible "break" between syllables. "Breaks" that do occur utterance-medially may be divided broadly into two types : (a) Periods of silence (pauses) of varying duration without any associated changes in the representation of adjacent phonemes other than a tendency to devoice a pre-pause vocoid¹ in the manner of many utterance-final vocoids. (b) A relatively short peak-vocoid with an abrupt glottal arrest preceding a pause of short to very-short duration, which is followed by a vocoid commencing in a way typical of utterance-initial position. (In some Xh dialects a glottal catch may be heard, particularly in slow precise speech.) If a contoid follows, then **its** onset is usually not discernibly different from that which occurs medially.

Apart from a possible significance in the intonation system, there is no evidence that pause is structurally organized and "breaks of type (a)" (see above) are arbitrarily placed to a large extent and appear to have no place in the structure of the signal.² "Breaks of type (b)" occur mostly between words, but may be found word-medially in a small number of words. In the former case such breaks are usually, but not always, intermittent in occurrence, and their presence or absence seems to be associated with changing situations and styles of speech as indicated below. In the latter case, however, they are permanent and reappear in every recurrence of the word. The most tangible evidence of the contrastive quality of "breaks of type (b)" is found in a minimal pair presented by some Xh dialects (see below)

¹ Undue lengthening of that vocoid we regard as structurally significant and interpret it as pre-pause bar juncture.

² Between words, the filling of pauses may involve one of the processes mentioned under "Joined transition" at 10.2.1.

and the features concerned in this type of "break" require structural recognition in all forms of Nguni. In our analysis they are phonemicized as "open juncture" and transcribed by a raised comma, i.e. /'/. The distribution of open juncture is confined to utterance-medial positions.

8.3.2. Occurrences of /'/'. With few exceptions, word-medial open junctures occur in all forms of Nguni mainly in recent loans (predominantly nouns) from English and Afrikaans, e.g. Xh, Z, Nd, Sw /úm,áfrík'á/¹ or /úm,áflík'á/² 'an African'; Xh /úm,ápílè/ 'apple tree'; Xh /ú' ,á~ú' ,á./ 'A'; Sw, Nd /ú' ,á/ 'A'; Nd /í' ,ólìnjì/ 'orange'. Xh undoubtedly makes the greatest use of word-medial /'/' and provides an example of fairly common occurrence in which it is incorporated in an indigenous form, viz. between the prefix /k'wa-/ and any vowel-commencing morph which follows, e.g. /k'wà,êlògâma/³ 'that name too'. In these examples /'/' seems to pattern as a consonant with the task of breaking a non-permitted word-medial VV sequence arising in the absorption of vowel-commencing nouns from English or Afrikaans which have to be fitted with a vowel-terminating prefix.⁴

The following include examples of open juncture between words which appears regularly and is never omitted.

(a) Before ideophones and frequently after them.

Xh: /k'wáthì ,gqì' ézántsì+/' 'and it suddenly appeared from below'

Z : /kúvùlékìlè ,ngé' émpàngò+/' 'The door is wide open'

Nd: /kúmhlóphé ,qhwa' phákàthí +/' 'It is pure white inside'

¹ A comparison of the realization of the sequence /m,a/ of /úm,áfrík'á/ and /ma/ of Z, Xh /úmàngò/ 'steep incline' illustrates the contrast between the presence and absence of a "break of type (b)" in a closely-similar phonetic environment.

² For discussion on the unusual cluster /fl/ or /fɛ/, see 12.1.9.

³ Cf. its occurrence before a consonant-commencing morpheme in /ík'wàlùngìlè/ 'It too is alright', which example also dispels any notion of /k'wa/ being a monosyllabic word and not a prefix.

⁴ Observe that the glide /y/ and also /h/ may be used for this purpose, e.g. Xh /í'lyúré/ 'hour' < Afrikaans "uur", Z /í'háwà/ 'hour' < English "hour".

Sw: /kúmhlóphé kútshé,hhú/ 'It is pure white'

- (b) Some Xh dialects (although not that of our informants) have /' / as a minimal difference in a distinction between two different morphemes /njé/, e.g.

/ndìh̄hám̄bà,njé áphà+/ 'Here, I go this way' :

/ndìh̄hám̄bànjé áphà+/ 'I merely walk here'

A similar minimal pair differentiated by /' / has not been found in Z. It is also lacking in our present data on Nd and Sw.

- (c) Between monosyllabic demonstratives and substantives which are separate morphologically. (In different circumstances these demonstratives are compounded with nouns, e.g. Nd /lúmúzi/ 'this village' < /ló-úmúzi/ Xh /lóm̄ntù/ 'this person' < /lô-úm̄ntù/.)

Xh: /ngùlô,úm̄khùlù+/ 'It is this one, the big one'

Z : /lé,f̄'ndũnà/ 'this one, the induna'

Nd: /yiló,úmúzi/ 'It is this one, the village'

8.3.3. While it appears possible to insert /' / at almost any word-boundary in the interior of an utterance, the insertion of open juncture at a large number of such boundaries is reported by informants to be speech which is quite unnaturally stilted. In this connection the use of a number of non-essential open junctures seems to be associated with a style which may be described as "pedantic". The use of an occasional non-essential open juncture, however, seems to meet a need for clarity quite apart from any stylistic connotation. There is no doubt that the marking of word-boundaries in an utterance makes for greater clarity than if smooth¹ transition occurs at such points. In Xh, for example, an attempt to identify in the speech of a willing informant all phonetic differences between the two utterances given below, regularly produced an open juncture in the first utterance (but not in the second). Observe that in smooth transition the syllables ^{on either side of} / the word-boundary have almost identical realizations in the two utterances. The omission

¹Termed "joined" when considered phonologically at 10.2.1.

4. Pre-pause Bar Juncture

8.4.1. Pre-pause long vocoids. In normal unprompted speech some pauses of the type referred to at (a) in 8.3.1 above differ from others in being preceded by a long vocoid - on occasions quite abnormally long. First impressions are of such length as a "pause-filler", serving to carry the speaker across an inconveniently-placed pause for thought or pause for breath which, if unmarked in any way, may mislead with regard to the grammatic structure of the utterance, or may even lose the speaker his right to continue the discourse. It thus serves to signal continuity where the imperfections of the transmitter of the signal tend to indicate discontinuity.

The nearest English equivalent in function to pre-pause vocoid length is probably to be found in certain hesitation forms, but this length feature cannot be fitted into the structural framework already constructed for Nguni and must have its own phonologic interpretation. It is clearly "imposed" length because there are many other occurrences of the particular morphs or words involved to show, by comparison, that the feature is transient and not part of any such morph or word.

Both the pause and the extra length of the vocoid are of highly variable relative duration. The period of silence may, in fact, be very short, i.e. the extra length of the vocoid almost entirely filling the gap. The vocoid itself, however, is discernibly longer than any normal short vocoid in the utterance and may even be the longest in the utterance. In attempting to find the most appropriate niche for pre-pause length, instances must be noted of what is seemingly the same length feature occurring utterance-finally, as well as where utterances are interrupted. The best example of this is ⁱⁿthe Xh equivalent to the exclamatory "Why?" (/wá² //) of English, viz. /ngó6á+/[ngó•6a:] 'Why?' (literally "Because?"), cf. /ngó6à+/'because'. There is a suggestion here of pre-pause length as an intonation constituent. (The

substitution of final tonemes indicated in the example is frequently associated with this length occurrence. See 8.4.4 below.)

Pre-pause length is not included in the broad description of certain more conspicuous intonation constituents made at 10.2.1 ff., for the reason that it can be described with greater precision than the latter, and, in addition, it seems to be more independent in its occurrence. The interpretation of pre-pause length as a juncture, viz. "pre-pause bar juncture" (/|/),¹ fits the present data best and is one that may well be maintained if /|/ is eventually found to be part of the intonation system. It is highly probable that the length occurrence identified as /|/ is involved in a wider set of relations than is indicated here, and has a more complex role in the structure than is assigned to it in these paragraphs.

/+ / and /|/ are separated by the placement of the representative of /|/ before a pause where the representative of /+ / can never occur. /|/ never coincides with open juncture in our data.

8.4.2. Occurrences of /|/. Most pre-pause junctures are

found to coincide with phonologic-phrase boundaries and there is a strong tendency for /+ / and /|/ to fall together (length is then located in the two syllables before the pause), even to the extent of introducing structurally non-essential /+ /s to coincide with /|/. /|/ may, however, occur without /+ / and this is most likely to be found where the closest-knit syntactic structures such as noun - adjective, noun - possessive, etc., are interrupted, e.g.

Xh : /yí6á| séndèndéni+ yó'lwímí ló'páná wómntù+ / (/yí6á| /
[jɪ6a: :]) 'Guide this son of man in his speech'
(literally : 'Be on the tip of the tongue of this
son of man')

¹ Thus /ŋg66á|+ / 'Why?'.
1

/í'gámá élikhúlú| lɛ́ŋk'ósí yêthú+/(/élikhúlú / [olikhulu:])

'The great name of God'

Z : /ámándlǎ| âmí+/¹[amand¹ǎa:: a:mi] 'my strength'

/kúzè kúp̄hèlé| împí+/(/kúp̄hèlé|/[guphɛɛ:]) 'until
the strife ceases'

These examples and those that follow are mostly from recorded church sermons and coincided with pauses for breath or thought. The essential continuity that goes with the incantation of a prayer is also the reason for a number of pre-pause junctures in this particular style of delivery.

Where pre-pause juncture coincides with /+/, both the ultimate and penultimate peak-vocoids before the pause are long. In terms of relative duration such vocoids may be equally long, or the ultimate vocoid may exceed the penultimate in length in varying degrees. The following are examples in which /+ / and /| / coincide.

Xh: /ôthí+ ùnlólí éáé^hwèlónì áákhó|+ ùsé ùááônà+ sóŋk'è+
ááémi sómh̄lâá+/¹ 'Who in your holiness....see all
the inhabitants of the world'

/ílizwí|+ lèthú|+ sìzák'ùlífumánà+/² 'Our text...we will
find'

Z : /ísíthèlò|+ síyáfúnékà kíthì sóŋk'è+/¹ 'The fruits....
are expected from us all'

/úkùfá|+ kúŋgùkùfá+ / 'To die...is to earn'

Sw: /sóŋkhé|+ áátshì+ / 'All...say'

Pre-pause juncture very seldom coincides with any lesser boundary than that of a word and never occurs in the interior of a morph. The very few word-medial examples of /| / that have been observed indicate that it only coincides with certain pre-radical morpheme boundaries.

Xh: /ndiyà|yìthándà+ / 'I like it', cf. the single word

/ndiyàyìthándà+ /

/àndì|yífúni+ / 'I do not want it' cf. /àndìyífúni+ /

¹
Notice the substitution L > H with regard to Xh /áákhò/ 'your' and Z /ísíthèlò/ 'fruit', /ámándlǎ/ 'strength'.

²
/ílizwí lèthú+ / is a noun - possessive phrase and is very seldom split into two phonologic phrases.

The above examples were presented by a Xh speaker reading a handwritten text and experiencing some difficulty in recognizing certain words. The example below is based upon an extract from a Xh church sermon where the preacher was temporarily "lost" for a suitable "word".

/á6ákùcèliléyò+ ná6á|k'ùthándàyó+/ 'those who have requested it and those....who like it'

8.4.3. Certain conjunctives, particularly monosyllabic ones such as Xh /xá/, Z, Nd /xⁿá/, quite frequently occur with a long vocoid and /|/ seems to provide the interpretation of such length. In speech Xh /úk'ú6à/ 'that' is frequently [uku6a:], [uku6a:~:], etc., preceding a pause. These forms are transcribed as /úk'ú6á|/. (Toneme substitution takes place in the last syllable.)

8.4.4. Amongst the examples given above are a number indicating that /|/ often coincides with the substitution of a word-final low toneme for a high, when pause is made at a word-boundary where it is possible to make this change. It has never been observed word-medially. The following is an example from Z :

/úkúthì 6áhàmbílé|+ nóma chá/ 'whether they have gone or not', cf /6áhàmbílé+/ 'They have gone'

This substitution of L > H is not confined to an association with /|/ and occurs quite widely elsewhere in utterances. With our present data it is not possible to fit this substitution of tonemes accurately into the grammatic structure, but it is likely to be of some significance in the intonation system. Items in our data suggest that this tonemic substitution sometimes signals continuity in much the same way as /|/.

5. Step Juncture

8.5.1. This juncture is essentially a phoneme of convenience adopted in order to avoid complexity connected with giving phonemic status to an ... allotone whose conditioning environment is temporarily removed. /¹/ is described at 6.2.10.

6. Junctures and a "Phonologic" Word

8.6.1. Word division. Practical experience has convinced many other linguists since Sapir¹ that the word is the linguistic unit that native speakers isolate most readily. No linguist, however, has achieved widely-acclaimed success in devising objective criteria according to which these sound-forms can be isolated in a manner which matches a native-speaker's ability to perform the same task subjectively. While it appears that for the analyst the most universally-applicable criteria of word-division are grammatic, there is evidence to show that in some languages the demarcation of words is a task that is regularly performed by one or more units of the phonologic structure. (In Czech, for example, it seems possible to define a word in terms of the stress placed on initial syllables.) It is our purpose here to examine briefly whether the presence of certain phonologic units can be used as a valid criterion in the separation of words. If this is found to be the case, then it is clearly one or more of the junctures that is involved.

8.6.2. Only /+/- and /'/' can be considered as possible criteria in the delimiting of words. "Penultimate length"² (i.e. /+/-) is often recognized as the chief criterion of word-division, but it has already been stated that in

¹ Edward Sapir : Language, New York, 1921, footnote 6, p. 35.

² Doke in Z identifies stress as the "accent" in word-penultimate syllables (Phonetics of the Zulu Language, Johannesburg, 1926, § 11). We prefer to regard stress as non-distinctive and conditioned by the presence of the length feature.

normal speech many words pass without any trace of "penultimate length". What /+/-/ demarcates are syntactic entities comprising one word or several words. The association of /+/-/ with word boundaries is brought about by the fact that the ends of most (but by no means all)¹ words coincide potentially with the ends of phonologic phrases, and length signalling /+/-/ occurs in a fixed position in relation to the end of a grammatic word. The factor which precludes any use of /+/-/ as a criterion in word-division in this thesis, is the inclusion of the placement feature (in relation to word-boundaries) in the definition of terminal juncture. Circular-ity is introduced into the description if word-boundaries are subsequently defined in terms of terminal juncture.

As regards open juncture, only a small number of word-boundaries are actually marked by /'/' in utterances. Open juncture as a possible demarcator of the word has the further disadvantage of occurring word-medially at a small number of morpheme boundaries as well as between words. Because /'/' never occurs at any lesser boundary than that of a morph and mostly between words, it can be applied in a limited way to word-division and be cited in the negative criterion : "A point at which open juncture never occurs and cannot be inserted is not a word-boundary." This criterion has been found to be applicable to the following :

Orthographic ma ihambe 'Let him go' of Xh is actually the single word /màýĩh̃hámbe/, because of the inability to introduce open juncture anywhere in this form. Xh nge behamba 'They ought to go' and Sw nga uyawuvala 'You ought to close it' are /ngé6éh̃hámbe/ and /náwùýàwùvǎlà/ respectively for the same reason. Z [ma:pdʒɛɛ] 'at this moment' (cf. /mánjě+/ [ma:pdʒɛ] 'now') is a good illustration of the shortcomings of "penultimate length" as a criterion, because the inability

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Terminal juncture can never be represented in monosyllabic words and ideophones. 3rd positional demonstratives, demonstrative copulatives and certain conjunctives in all languages are also excluded, together with forms such as Xh /k'úpjé/ 'It is so', Z /kú'ló/ 'to this one', etc.

to insert /' / shows this to be the single word /má·njěké/,¹ whereas a comparison with /mánjě+/ suggests the separation of /ké/. Similarly Xh [ŋgo:kundʒe·] 'right now' may suggest a word-boundary between /ŋgók'ù/ and /njě·/ (cf. /ŋgók'ù+/ [ŋgo:ku] 'now') which the inability to introduce /' / shows is not the case. Thus /ŋgók'ùnjě·/.¹

Reliance on phonologic criteria in word-division is therefore possible to a very limited extent only, and it is grammatic data that provide the most satisfactory means of separating words.

¹ These words are therefore included amongst those in which /+/ is never represented.

CHAPTER 9

PROSODIC FEATURES

1. Introduction

9.1.1. Differences in pitch and quantity associated with syllable peaks require structural evaluation, but, as described at 9.3.1. below, differences in loudness, i.e. "stress", always appear to be predictable in terms of other items of the phonologic environment and give no evidence of contrastive function. A means of systematizing pitch differences has already been described in Chapters 6 and 7 dealing with tonemic systems. Differences in quantity are complex both in the variety of circumstances in which they appear and from the aspect of gradation, and a coherent treatment under a single heading is attempted in this chapter.

2. Differences in Peak-Vocoid Duration and their Interpretation

9.2.1. Unorthodox procedures in analysing length. Discussion and description in the following paragraphs are based upon a firm conviction that certain occurrences of a length feature are different in their function within the structure from others, and must be separated if contrasts that are made in the grammatic system are all to be accounted for. In making this separation we can find no alternative to disregarding temporarily the premise that excludes reference to grammatic structure in phonologic analysis. While endeavouring not to lose sight of the basic tenets of linguistic theory, we have, under the circumstances, to develop our own procedures in order to produce an analysis.

9.2.2. Occurrence and interpretation. In the Xh utterance given below the short peak-vocoids of the unnumbered syllables differ from those of the numbered syllables in duration. The length features incorporated in the numbered syllables all differ from each other in some aspect of their occurrence¹ and this utterance is selected as illustrative of all the "length occurrences" to be found not only in Xh, but in Nguni generally (except for those that differentiate ideophones which are dealt with separately in Chapter 11). Phonemes in the utterance whose representation depends upon a length feature are /+ | •/ and an unmarked intonation constituent in the utterance-penultimate syllable.

[kunga₁·ndzimakakhu₂·lu //a: kundze₃· kwe·sisi₄·zwè₅·zwè₆]
 /k'úngá·ndzìrà k'àk̄hùlù+ xá| k'únjé· k'wềsìsìzwè+/

'It would be very difficult in this nation if this is so'

Comparisons that are likely to be readily available in any sizable corpus, reveal the length feature of syllables 2, 3, 6 as isolable. Comparisons such as the following demonstrate that they are not part of the representation of any unit of the "normal" morphologic structure (i.e. excluding the intonation system).

[kakhulukanga:·ka] /k'àk̄hùlú k'ángàk'à+/ 'so big'
 [kwe·sisizwèse:·thu] /k'wềsìsìzwè sêthú+/ 'in this nation of ours'

As regards /xá|/ (syllable 3), there will be many representations of this conjunctive elsewhere in the data that lack the length feature. In this particular utterance the assumption is made that the speaker paused for breath or thought after the conjunctive, and wished to signal continuity, i.e. that there was more of the utterance to come.

The association existing between syntactic environment and length occurrences found in syllables 2 and 6,

¹ There are also differences in relative duration, but this is temporarily ignored. It is necessary later to separate two different "lengths" which can contrast with each other and with the absence of a length feature in normal short peak-vocoids.

particularly those found utterance-finally, is seen in comparisons such as those made above. Once the analyst becomes aware of pairs of utterances such as those presented at 8.2.6, contrastive quality must be attributed to "penultimate length". Intermittency in the occurrence of /+/- must then be regarded as a matter of free alternation in which the alternants differ in phonemic structure. The stylistic aspect of this alternation has already been mentioned at 8.2.7.

9.2.3. Representatives of monosyllabic conjunctives are particularly prone to acquire the type of length feature illustrated in syllable 3 and, in the early stages of an analysis, length differences between [//a], [//a·], [//a:], etc. may well be postulated as free variation. Such length will always be found to occur before pause, however, and this links it with other intermittent occurrences of length as a "pause-filler" under conditions illustrated at 8.4.2. Although the structural role of sound features interpreted as /|/ is somewhat blurred at present, factors determining our present preference for treating them as a juncture have been stated in 8.4.1.

/+/- and /|/ are distributed in terms of grammatic units and the assumption is made that the placement feature of /|/ at a point where /+/- can never be represented precludes intersection of these phonemes. Length and placement thus assume the status of phonologic components in the representation of /|/. At this point it is necessary to bear in mind that /+/- has also to be kept separate from occurrences of inherent length, and only the feature of placement (representation in the penultimate syllable of grammatic words) can be regarded as responsible. Here too, therefore, placement together with length assumes the status of a phonologic component. When examining these statements from the aspect of linguistic theory, it is found that apart from obvious level-mixing, significant placement is normally an untenable postulation. We believe, however, that there are special circumstances involved here and the theoretic validity of our postulations

is discussed at 9.2.8 below.

9.2.4. Length in syllables 2 and 6 both represent /+/, but . differ noticeably in duration. The extra-long peak-vocoid of syllable 6 is interpreted as a sequence of two structural units represented by a length feature, the first being the representative of /+/- and the second an intonational constituent whose existence depends upon the presence of /+/. This constituent occurs in one or more intonations particularly associated with plain statements as opposed to certain types of question. In quantity, the intonation constituent is the difference between the "checked" (see 9.2.12 below) duration of the representative of /+/- and the total duration of extra-long utterance-penultimate peak-vocoids. The following examples from Xh illustrate the intonation constituent in comparisons in which /+/- occurs firstly with this constituent and in the last two examples without it.

/6á6ík'á índà6à+/[6a6ika inda:•6a] 'They report an affair'

/6á6ík'á índà6à+/¹[6a6ika inda•6a] 'Do they report an affair?'

/6á6ík'á índà6à+ ɛ̀ŋk'òsínì+/[6a6ika inda•6a ɛ̀ŋkosi:•ní] 'They report an affair to the chief'

Compare also /yíndà6à yésízwè+/[jinda6ajɛ+si:•zwɛ] 'It is a matter for the nation' demonstrating that junctural and intonational length are both "imposed".

9.2.5. The length occurrences of syllables 2, 3 and 6 have been labelled "imposed" and, were it not for other, different occurrences of length which is "inherent"², would

¹ An intonation constituent of pitch is not transcribed. Note that it is possible for /+/- to occur after /6á6ík'á/ in all three utterances.

² "Inherent" should be taken as a label covering length occurrences which are not "imposed", i.e. regularly isolable with a function different from that of the common run of phonemes that differentiate morphs of the normal morphologic structure. A strict literal interpretation of "inherent" must not be made, because /ɲjé•/, for example (see syllable 4), has an alternant in /ɲjé/. The latter is rare in the speech of our Xh informants, however, and possibly has stylistic connotations.

probably yield to conventional analytic procedures for handling sound units which are isolable from the constituents of morphs of the normal morphologic structure, such as junctures and intonation constituents. Inherent-length occurrences are found in syllables 1, 4 and 5 and the most difficult problem of analysis to be found in Nguni phonology is how to separate them from imposed length representing /+ / and /| / with clearly-defined structural roles. If there is no means of separating them, then /+ / (if not /| / also) must be united with all instances of length that is inherent and one interpretation made. The role of /+ / in the syntactic structure would then be completely obscured. We regard it as a feasible proposition that in the operation of the system, this separation is made by associating the representatives of /+ / and /| / with specific points in the environment - grammatic in the first case and phonetic in the other.¹

Accepting the separation of "imposed" from "inherent" length in the manner indicated above, immediately requires that some consideration be given to the situation arising at points where inherent length coincides with representatives of /+ / and /| /, irrespective of the interpretation that we give to inherent length. (This aspect is dealt with at 9.2.10 below.) Some support for our analysis is found in the fact that, largely through the workings of the morphophonemic system, there are definite means available to prevent the obscuration of /+ / by the length concomitant of HL (respectively the most frequent occurrences of "imposed" and "inherent" length).

9.2.6. The length concomitant of HL supplies the majority of inherent-length occurrences. Syllables 2 and 5 contain examples and the allomorphs /khûlù/[khu.lu]~ /khúlú/[khulu] indicate the particular association of the length feature with the cluster HL. Examples such as /êsi/ 'this'

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The presence or absence of pause is stylistically, but not phonologically, relevant.

may be misleading because only two toneme patterns are associated with this segmental morpheme (viz. $\bar{H}LL$ and $\bar{H}LH$), both of which place $\bar{H}L$ on the first syllable. The separation of the length feature from the segmental structure is thus not clear in this particular morpheme. Interpreting the length of syllable 2 involves certain complications, because this is one situation in which the morphophonemic system regularly brings about a concurrence of $\bar{H}L$ and the representative of /+/ as a means of obviating the conflict between the two. (Because of this it was possible to cite syllable 2 as an example of imposed length also.) The analysis of length in syllable 2 must be made after length has been evaluated structurally in other uncomplicated occurrences.

While length coinciding with $\bar{H}L$ is always predictable in terms of the high-falling glide, that which coincides with high tone in syllables 1 and 4 is not. As length "occurrences" the latter are always considerably less frequent. Our Nd data contain no examples of unpredictable inherent length (although it is quite possible that it exists) and our Sw data ^{only} the examples of it in the 3rd positional demonstratives mentioned at 7.3.2. Our Xh and Z data include a varying number of examples, depending largely upon dialect. In these, unpredictable inherent length coincides with high tone (with one exception in Z) and is mainly found under two different sets of circumstances. (a) That exemplified in syllable 1 of the Xh utterance given above where length marks a point where a syllable has been elided (/k'úngá.ndzìrà < k'úngá6á ndzìrà/ 'It would be difficult'). (b) That of syllable 4 where /njé./ is representative of a small group of monosyllables in which /lé. ló. k'é./ are often included. There is no immediate evidence of elision in examples of this kind. (Fuller exemplification of (a) and (b) will be found at 9.2.7 below.)

With certain exceptions, of which /k'úngá.ndzìrà/ is one and Xh /lá.mádòdà/ 'those yonder men' mentioned at 6.2.6 another, there is a great deal of variation in Nguni

associated with most instances of unpredictable inherent length mentioned under (a) and (b) above. This is largely between languages and dialects, but occurs also within idiolects. In the latter case it usually gives the appearance of free variation with probable stylistic connotations, but subtle differences in meaning can be associated with others. In view of the latter, and forms such as Xh /k'úngá·ndzímà/ and /lá·mádòdà/ in which a length feature unassociated with $\overline{HL}$ is regularly incorporated, unpredictable inherent length must be regarded as contrastive and it is marked as the phoneme /·/.¹

Conventional procedures require that this interpretation be extended to the far more numerous occurrences of length as the concomitant of $\overline{HL}$. If cognizance is taken of frequency and functional load as suggested in connection with "peripheral contrasts", then the function of the length feature on which the system really depends is that connected with junctures, particularly as a marker of syntactic boundaries. The predictability of length elsewhere (in its relationship with $\overline{HL}$), and also free variation such as Xh /lé·~lé/ 'this one' in which it is sometimes involved, are indicative of a small functional load. The small number of cases in which unpredictable inherent length unquestionably contributes to the distinctiveness of a morph presents the length feature in the marginal type of contrast conceived of as "peripheral contrasts". In some Xh dialects /·/ may be infrequent in occurrence, but not rare. There is, however, the aspect of conflict with the established pattern of contrasts to be considered. A high degree of internal conflict is implied in an analysis in which length is employed not only to signal junctures of high frequency, but also a high-frequency phoneme which distinguishes morphs. It is barely conceivable that a linguistic system would tolerate such

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An interpretation of length as component rather than phoneme would be difficult to sustain in view of its free associations with different peak-vocoids and distinctive tones.

conflict. It is our decision, therefore, to regard /•/ as a leftover and any contrasts dependent upon it as "peripheral contrasts". /•/ is marked only where inherent length occurs with high or low tones and not where it coincides with HL.

9.2.7. Examples of /•/. /•/ is exemplified fairly fully in this paragraph because of the small number of forms in which it occurs.

The commonest occurrences of /•/ coinciding with comparatively recent syllable elision, are in /í•-/ (< /ííí-/) and /ú•-/ (< /úúú-/) as free alternants in Z of the prefixes of classes 5 and 11, although dialectal preference and stylistic choice are factors governing the presence of the "long" prefixes.¹ (These prefixes do not take this form in Sw and they are always "short" in Nd.) The "long" prefixes also produce a length feature in representatives of adverbial and possessive prefixes which replace them in inflexions, e.g. Z /nĕ•dàdà < nà-í•dàdà/ 'with a duck', /wĕ•dàdà < wà-í•dàdà/ 'of a duck'.

In certain contracted forms of the verb conjugation, /•/ regularly marks a point where a syllable has been elided, e.g. Xh /k'úngá•ndzìrà < k'úngá6á ndzìrà/ 'It would be difficult', /6á•k'ùthēngà < 6ázàk'ùthēngà/ 'They will buy'; Z /66•thēngà < 6áyóthēngà/ 'They will buy'. Xh /lá•/in /lá•mádòdà/ is a contraction. The full form of this demonstrative is /làwá/ 'those yonder'. Xh /ú•má•/ 'my mother' is probably a contraction of the less common /ú•màrà/.

Except for the noun prefixes of classes 5 and 11, there is no evidence of free variation (either dialectal or stylistic) connected with occurrences of /•/ exemplified above. With the forms given below (of which Xh /njé•/ is representative) there is a great deal of variation in the manner indicated in each case. While we are satisfied that /•/ must be marked in most cases where it is indicated, we

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Our Xh informants only have the allomorphs /í-/ [i•] ~ /í-/ [i], /ú-/ [u•] ~ /ú-/ [u] which are morphologically determined.

are not always certain that expressive features or possibly an intonation constituent have been successfully separated from /•/ in these particular forms.

The variants of the demonstratives /lě•~lé/, /lǝ•~lǝ/ are mainly dialectally determined. The former in each case predominates in Xh although the latter have been recorded (occurring also as /lě lǝ/). In Z the reverse is the case, but both in Xh and Z there are a few instances of free variation within one idiolect with fairly strong indications of a difference in style. /njě•~njě/ 'only, merely' (or 'like this'¹) takes this form in Xh and fluctuation is primarily a question of dialect (our informants favour /njě•/). In Z the situation is more complex because /njè/ 'like this' and /njě/ 'only, merely' may contrast dialectally, in which case the latter occurs also as /njě•/. In one Z dialect examined there is evidence of a subtle difference in meaning associated with the latter variation. /zé~zě~zě•/ 'naked' appears mainly as a dialectal variation in Xh, while Z only has /zě/. /k'ě•~k'ě/ 'so, then' is largely a matter of stylistic choice in Xh. Only /ké/ is found in our Z data. /•/ is generally of higher frequency in Xh than in Z and in the former, variation is also associated with loan-words with monosyllabic stems such as /ú'á~ú'á•/ 'A'. Except for Sw, ^{variants of} 3rd positional demonstratives in Z provide the only example of /•/ coinciding with a low tone, e.g. /lě•.zìyá/ 'those yonder'. The only occurrences of /•/ in our Sw data are in /là•6à là•wà² lè•tìyá/ 'those' or 'that yonder'. Apart from the idiolect mentioned at 7.3.2 we have no examples of /•/ in Nd.

9.2.8. Linguistic theory and our analysis. In our interpretation of peak-vocoid duration phenomena in this chapter, the principles of conventional methodology have been

¹ These are homophones in Xh.

² For example, in /là•wà•mântì/ 'that water'.

abrogated by including reference to a grammatic boundary in the definition of /+/, in order to separate ^{it} from length occurrences which are given a different interpretation. Orthodox procedures would also require that every occurrence of inherent length be marked as distinctive on the evidence of the small number of forms mentioned in 9.2.7. Our contention regarding peripheral contrasts stands as justification of the latter, and our particular concern here is whether the complete rejection of grammatic structure when identifying relevant "environment" is something inherent in linguistic signalling itself, or whether it is merely part of the discipline imposed upon the phonologist to guide him clear of certain pitfalls when making his analysis. It is always necessary for linguists to bear in mind that methodologic statements are not statements on how the native speaker constructs utterances, or receives them as linguistic signals. In all our discussion on the interpretation of length in Nguni, whatever challenge there may be to the validity of certain currently-accepted premises of phonologic analysis, lies in the facts themselves - it is not our intention to argue on the basis of theory.

9.2.9. /+ / and /| / are uncorrelated and they contrast only in their presence or absence. It is possible for them to have identical representation, but as previously indicated the feature of placement separates them. The placement feature on which /+ / relies to separate it from /• / and also the length concomitant of HL, is its fixed position in relation to grammatic word-boundaries.

While there may be good reasons for confining the analyst strictly to phonetic data in phonologic analysis, it is hardly likely that the native speaker practices such exclusiveness of levels. He undoubtedly shows some awareness of the contrastive quality of distinctive sound units individually, but his immediate awareness of them is not as beads on a string, but in meaning-based configurations. In speech he

discloses a ready ability to place such configurations in the grammatic hierarchy and in the various sets of relationships that exist within the system. Other Bantu linguists and ourselves have^{had}/experiences similar to those of Sapir in finding the word as the linguistic unit of which the native speaker is most keenly aware. In whatever manner analysts may define the "word", it is sound configurations at this level that stand out most clearly as separate entities. There is no reason, therefore, why the native speaker should not be aware of one of the boundaries of such a unit, or why he should not associate with that boundary a sound unit with the particular structural role of marking off portions of utterances in which words happen to be the primary units.

Significant placement is a highly contentious aspect of our analysis, but it must be borne in mind that placement in relation to a word-boundary is postulated as significant in connection with a sound unit whose function is not that of differentiating morphs of the morphologic structure, but of demarcating syntactic structures, i.e. arrangements of words. It is clearly impossible to regard placement as a significant feature in vowels, consonants, etc., which have differentiating function, but there are good reasons why a sound unit with demarcative function should have a fixed point of occurrence in the units which it demarcates.

Placement therefore prevents the intersection of /+/-/ and /|/, and also /+/-/ and /•/ as long as the latter do not happen to fall at the same point in an utterance. This is also the means of separating /+/-/ from the length concomitant of HL and this is successfully accomplished up to the point that the two happen to fall together.¹ The following paragraphs are concerned with the problem of intersection and the obscuration of phonemes that have length as a primary component.

¹ Under these circumstances there must be automatic recognition of /+/-/. There is no question of phonemic intersection.

9.2.10. "Intersection" and the masking of /+ / and /| /. True

intersection as visualized by linguistic theorists is possible between /• / and /+ /, /• / and /| /. The distribution of HL in an utterance is also unrestricted and the occurrence of its length concomitant in word-penultimate syllables may therefore reduce the efficiency of /+ / as a contrastive unit. (For reasons given later, there is little likelihood of this happening in connection with /| /.) Various processes are at work in all four languages, however, to obviate to a large extent the effects of this overlapping.

9.2.11. On a basis of frequency, potentially the most

serious threat to the system is that of the overlapping of the length concomitant of HL with /+ /. However, the morphotonemic process described at 6.4.7 provides tonal allomorphs in which penultimate HL is substituted by H when there is no following /+ /, the process being reversed when there is this juncture. The following exemplify this further.
 Xh: /ùfúnà á6àthâthù+ / 'You want three', cf. /ùfúnà

á6àthâthúná+ /¹ 'Do you want three ?'

Z : /zèntômbĩ+ / 'of a girl', cf. /zèntômbĩ yâmi+ / 'of my girl'
 /îfá+ / 'inheritance', cf. /î'fá lâmi+ / 'my inheritance'

Nd: /âwùmkhûlù+ / 'You are not big', cf. /âwùmkhûlú kâkhûlù+ /
 'You are not very big '

Sw: /6ûsô+ / 'face', cf. /6ú'sô 6ákhò+ / 'your face'

This morphotonemic process works to bring /+ / and HL together as a regular occurrence and not in a chance association. In this way the length feature becomes temporarily associated with /+ / and HL in combination and not with either one of them individually. The effectiveness of this process in obviating conflict within the system must be viewed against the large number of word-penultimate occurrences of HL. The substitution HL > H does not, however, operate in every case. For example, monosyllabic verb stems in the indicative remote past tense with toneme pattern HLH (such as Xh, Z /wâphá+ /

¹ /ná / is an interrogative clitic.

'He gave') maintain this pattern throughout. Other examples are demonstrative copulatives such as Xh, Z /nâsí+/ 'Here it is'. Such forms are not numerous, however. It should be observed that /+/^{latter} must be marked in every occurrence of these forms.

Potentially, the length concomitant of HL may also obscure /|/, but, as observed at 9.2.12 below, /|/ is represented by "unchecked" duration, while inherent-length occurrences are always "checked" (approximately twice the duration of a normal short vocoid) so there are means available for avoiding the obscuration of /|/. For example in Z /6áhámbe| 6áyà lé/ 'They went far away' the vocoid with which /|/ is represented is clearly longer than twice the duration of the normal short peak-vocoid.

The possibility of /+/^{latter} and /•/ overlapping and destroying contrasts between morphs that incorporate the latter, has been investigated in Xh¹ and it seems that a difference in toneme pattern always contributes towards maintaining

contrast in such cases, although there are no regular morphotonemic changes involved. For example, pairs such as /lá•ntó/ 'that yonder thing' and /lântó+/ 'of anything' ([la:nto] in both cases) are differentiated by their toneme patterns. Pairs such as this have been difficult to find, however, because, quite apart from the low frequency of /•/, the latter is seldom found in penultimate syllables.

There remains the possibility of the mutual obscuration of /|/ and /•/, but here too the difference between "checked" and "unchecked" duration provides a means of differentiation. /•/ is always represented by "checked" duration. (In instances of abnormally long vocoids sometimes found in the representation of Xh /njé•/ 'just, merely', Z /lé•/ 'far away', etc., some interpretation of the added length is necessary - possibly as /|/ or as an expressive feature.)

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The low frequency of /•/ makes an almost exhaustive investigation of this kind a relatively simple matter.

9.2.12. Relative duration. Ranging the peak-vocoids of any utterance along a scale of relative duration¹ is not likely to reveal any clear gaps between different, contrasting "lengths", although it is often possible to separate most "short" peak-vocoids from those that are longer in duration. When the various occurrences of imposed and inherent length are correlated with the scale of relative duration, however, it is found useful to identify three "lengths", viz. "short", "long" and "extra-long" and also to distinguish between "checked" and "unchecked" length. "Short" is applicable to the majority of syllables in most utterances where a feature of length is clearly lacking. By ear and instrument "long" is approximately double the duration of "short" and is associated with most occurrences of inherent length, either as the concomitant of HL or as representative of /./.² Representatives of /+ / utterance-medially, and finally in utterances which lack the length constituent of intonations already mentioned, are also "long" and "checked". /| /, on the other hand, is represented by "unchecked" duration, and varies widely from not more than twice the duration of "short" to abnormally-long peak-vocoids. Where /+ / and the length constituent of intonations exist together, the peak vocoid is "extra-long".³ The intonation constituent, however, is associated with "unchecked" duration.

In our data differences in duration between short peak-vocoids and those that are longer cannot all be account-

¹ Careful attention must be paid to the aspect of relativity and comparisons involving duration must be carried out within a single short utterance, or restricted portions of longer utterances. Z /kú'ló/ 'to this one', for example, may, in isolation, be found with peak-vocoids that would rate as "long" in other longer utterances. There is, however, no possibility of any length feature occurring in this particular form. (/+ / is never represented in it.)

² It must be emphasized that these are general statements and inherent-length occurrences may be considerably longer than "checked long". In such cases it is necessary to postulate an overlay of "expressive" length, or possibly the presence of /| / (of "unchecked" duration).

³ This is the only case where two phonologically-relevant length occurrences (i.e. excluding expressive features) falling at the same point in an utterance are consecutive and not concurrent.

ed for in terms of the interpretation presented above. In normal speech, length as an expressive feature quite often overlays length occurrences organized as part of the regular phonologic structure. In the absence of an analysis of the paralinguistic system and peak-vocoid length as part of it, it is not always easy to draw a line between length which is linguistically organized and that which is not. The definitions provided above require, however, that in any representation of /+ / and /• / which is clearly longer than twice a normal short peak-vocoid, the feature of extra length be accounted for in some way. This also applies to the length concomitant of $\bar{H}\bar{L}$. In this connection, the following are some of the problems with which ^{we} are faced.

Z : [le:] 'far away'

This particular form is frequently associated with an overlay of expressive length, but whether all the duration which exceeds "short" is expressive, or whether the morph is to be interpreted as /lɛ•/, is problematic. [lɛ+] 'far away' is also recorded in this idiolect (i.e. without a length feature) and our present inclination is to identify the morpheme as /lɛ/ and all the length as "expressive".

Kh : [ɛ+:ziɟa::] 'those far over yonder'

In this case "checked" length coincident with the final $\bar{H}\bar{L}$ in /ɛ̌ziɟâ/ is much exceeded and this is attributed to an expressive feature.

Kh : [ndihambandʒe::] 'I am going, aren't I?'

With the background of indignation or annoyance that goes with this utterance, the interpretation of length which exceeds the "checked" length of /• / in /ɲjɛ•/ is problematic. It is possible that in this case the length feature is part of the intonation system (it could conceivably be /| / in a somewhat wider role than we have visualized). Alternatively, the best interpretation of length may be as an expressive feature.

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3. Stress

9.3.1. Occurrence. Differences in relative loudness or prominence between syllables are heard in all forms of Nguni. An ability to separate satisfactorily differences in intensity from differences in pitch and quantity by ear alone, is a matter of some conjecture.¹ It can be broadly stated/^{however} that stronger stress is an ingredient of "prominence" in Nguni, but the latter also includes a feature of length and sometimes high pitch. In comparison with English, stress differences occur along a narrow scale of variation and we are able to differentiate consistently only "stressed" from "unstressed" in normal utterances. In being predictable in terms of length and sometimes high pitch, stress is regarded as structurally inconsequential and is disposed of below in terms of units of suprasegmental phonology which have an assured place in the structure. While stress differences find no place in the linguistic structure, strong stress as an expressive feature has definite significance.

9.2.2. Greater prominence goes more with combinations of the following features of length and tone than with either one of them individually.

- (a) Long vocoids usually coincide with greater prominence, which increases in proportion to the duration of the vocoid.
- (b) Highpitch (relative to other adjacent pitches) may also be associated with greater prominence.

The most prominent syllables in utterances are undoubtedly those that combine the length feature of /+/-/ with intonational length and high pitch. For example, Sw /inâma+/-/ 'It is meat' has a prominent second syllable whereas there is not as much difference in relative prominence between the syllables of /inâmanâ+/-/ 'It is a little meat'. Z /izimfânâ+/-/ 'small sweet reeds' has a prominent penultimate

¹ In English, differences in prominence which have long been attributed to stress, now appear to be more dependent upon pitch. (See Dwight L. Bolinger : "A Theory of Pitch Accent in English", Word, 14, 2-3).

syllable whereas that of /ímfànà+/ 'small sweet reed' has considerably less prominence. The penultimate syllable of Z /sìphùmílèké+/ 'and so we went out' has some prominence which is usually not as great, however, as that of the penultimate syllable of /sìphùmílè+/ 'We have gone out'. Stress which is frequently associated with the demonstrative suffix /-ya/ arises from high pitch in combination with abnormal vocoid length deriving partly from length as an expressive feature and partly from the concomitant of the high-falling glide, e.g. Z /lè sìyâ/ 'that yonder'. In Xh /nâsíyâ/ 'There it is yonder' the first and last syllables are sometimes said to be stressed for similar reasons. Stress which is often attributed to the monosyllabic demonstrative, e.g. /lé/ or /lé·/, /ló·/ or /ló/ 'this one',¹ appears to be mainly a manifestation of stress as an expressive feature because examples of these demonstratives have often been recorded with no greater prominence than that of adjacent syllables. Demonstratives are among the forms that are often overlaid with expressive features. In current analyses the short perfect tense suffix /-ê/ is also often linked with a feature of stress,¹ but we attribute the small degree of additional prominence mainly to the length concomitant of HL.

¹
For mention of this in Z see Doke : Text Book of Zulu Grammar, Fourth edition, Johannesburg, 1947, § 50.
For Sw see D.Ziervogel : A Grammar of Swazi, Johannesburg, 1952, § 9.

CHAPTER 10

THE PHONOLOGY OF THE UTTERANCE

1. From Word to Utterance

10.1.1. Phonologic criteria in utterance analysis. It has already been shown that the word is phonologically definable only to a very limited extent and is not a clearly marked unit when dividing utterances internally according to phonologic criteria. The syllable was the largest unit found to be clearly definable phonologically under the heading of the "Phonology of the Word", and it is our purpose here to continue beyond the syllable and see what items of phonologic structure lie between the essential structure of the syllable and that of the utterance, and to what extent they (i.e. phonologic items) provide the unique, essential constituents in units at levels higher than that of the syllable. In doing so, it is necessary to include brief consideration of the nature of the transition between words that follow each other in the stream of speech and may begin and end in vowels, thus creating potentially a sequence which is not permitted word-medially.

10.1.2. Short utterances often have no noticeable internal pauses, but pauses of various lengths are a feature of many longer utterances. There is no definite evidence that pause is significant in regular phonology, although, as mentioned at 8.2.6, it apparently serves to reinforce /+/-/ at important phonologic-phrase boundaries and is sufficiently frequent after utterance-medial intonations to be considered as filling a similar role there. When examining the "same" or similar utterances made in different situations and by different speakers, pause is seen to have considerable significance under the heading of "style", but significance

in the structure with which we are dealing is highly unlikely.

10.1.3. Within utterances an occasional /'/ between words may serve to demarcate a word, but the latter unit is more of an abstraction than a reality in utterance analysis based purely on phonologic criteria. /'/ between words has demarcative function, although word-medially it may pattern as a consonant. Because of the distribution of /',/ it is best avoided as a criterion in the type of analysis in which we are now engaged. After the syllable, the next unit is the phonologic phrase comprising a stretch terminating with /+/. Within phonologic phrases, non-permitted sequences of phonemes that occur potentially at the boundaries of grammatic words are^{often} obviated by some of the processes discussed at 10.2.1 ff. A VV sequence utterance-medially, however, marks a boundary between words, but, as indicated below, serves as an unsatisfactory criterion of word-division.

In utterance analysis the macrosegment with an intonation as its unique constituent, provides the next level after the phonologic phrase. Intonations are essential constituents of utterances and comprise a separate system of selected sound features arranged in various combinations and having their own peculiar associations with utterances and portions of utterances. Intonations are regularly located at the end of utterances, but occur utterance-medially also (some examples are provided at 10.3.1 below). While the macrosegment exists at the next highest level above the phonologic phrase, the end of a macrosegment will not always coincide with the end of a phonologic phrase, because of the existence of words in which /+/' cannot be represented. As most of these words can occur utterance-finally, there is no reason why they should not coincide with the end of a macrosegment utterance-medially. The limit to phonologic analysis of the utterance is reached with the macrosegment. Beyond the macrosegment appear to lie only recurrences of phonologic phrases and macrosegments with the same internal structure.

2. Word Transition

10.2.1. Joined transition. The boundaries between words in sequence may coincide with pause and possibly /|/, or may be marked by /,/. Alternatively, the speaker may move across the word-boundary with the same "smooth" transition that occurs between word-medial syllable peaks (except, of course, where word-medial /,/ is present). Such "joined transition" is, in normal quick speech, the commonest method of passing word-boundaries and presents no structural peculiarities providing there is no possibility of vowels being juxtaposed across the word-boundary. (vowels never occur in sequence word-medially).

Z : /ùʃòŋjǎlò+/[uʃòŋdʒa:•lɔ] < /ùʃòŋjǎlò+/'You say so'

Xh: /h̄hámàk'ák'ùhlé+/[hambakaku:•ɛ] < /h̄hámà k'ák'ùhlé+/'Go well'

Nd: /sì6ònìsêkùhlé+/[si6onise•gu:•ɛ] < /sì6ònìsê kùhlé+/'We have shown well'

Sw: /kúlándzwàŋúyè+/[gulandʒaŋu:•jɛ] < /kúlándzwà ŋúyè+/'It is fetched by him'

Where joined transition is implemented between a word which, in isolation, ends in a vowel and another which commences in one, the structural consequences are felt mainly in the morphophonemic system. The following effects are observed :

(a) The final vowel is elided and the consonant(s) preceding it then constitute the margin (the onset) of the syllable of which the initial vowel is the peak,¹ e.g.

Xh /ndìh̄hámàbízòlò+ < ndìh̄hámàbê ízòlò+/'I walked yesterday', /índòdéndè+ < índòdà éndè+/'tall man'; Z /ŋgìphénìpàmà+ < ŋgìphénì ípàmà+/² 'Give me meat'; Nd /ísíṭésídǎlà+ < ísíṭà ésidǎlà+/'old basket'; Sw /m̄hléfikà+ < m̄hlá

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Note that the compounding of words sometimes involves the elision of the initial vowel as a grammatic process, for example the compounding of an absolute pronoun and noun in Z/wènáh̄hǎǎi+ < wèná+ íh̄hǎǎi+/'you horse'.

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This could alternatively be regarded as coalescence of /i/s.

éfikà+/ 'on the day he arrives'.

- (b) Usually as an alternative to (a), final /u/ or /o/ may be "consonantalized", i.e. /u > w/, /o > w/, and /w/ then becomes part of the onset of a syllable which has the initial vowel as peak, e.g. Xh /á6ántwá6alímáphà+ < á6ántù á6álímà áphà+/ 'people who plough here', /àk'úkhwékhâyà+ < àk'úkò ékhâyà+/ 'It is not at home'; Z /á6ántwá6ápè+ < á6ántù á6ápè+/ 'other people'.

In normal conversation, joined transition occurs quite commonly at word-boundaries that are also boundaries between phonologic phrases (i.e. where /+ / is located), although rarely when such a boundary coincides with a syntactic boundary of a fairly high order (e.g. that between clauses). In such cases one of the forms of disjoined transition is the general rule. The following illustrate joined transition combined with terminal juncture : Z /yě6+á6ántwànà+ ngi6àthándàkàkhûlù+ < yě6ò+ á6ántwànà+ ngi6àthándà kàkhûlù+/ 'Yes -children -I like them very much'; Xh /á6ántwá6ákhûlw+ á6álímáphà+ < á6ántù á6àkhûlù+ á6álímà áphà+/ 'important people who plough here'; Sw /6ántshw+à6áfúnì+ < 6ántshù+ à6áfúnì+/ 'People do not want'.

10.2.2. Throughout Nguni there is a general avoidance of the elision or consonantalization of the vowels of monosyllabic words, e.g. conjunctives such as Xh /xá/ and Z, Nd /x̄há/; demonstratives /lé ló/; etc. Some form of disjoined transition nearly always occurs after such monosyllabic words, although the following elision is reliably reported dialectally in Z : /x̄héfikà < x̄há éfikà/ 'when he arrives'.

10.2.3. Disjoined transition. In speech, the Nguni speaker usually¹ has the option of several alternatives in ways of passing word-boundaries. Joined transition is one of them and is systematic to the extent that no description of the grammatic and morphophonemic systems is complete

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A few word-boundaries must be marked by /' /.

without some reference to the allomorphs resulting from it. The remaining alternatives listed under "disjoined transition" involve something other than "smooth" word-medial-type transition.

A few word-boundaries must be marked by /'/, but apart from these, this juncture provides an alternative type of transition, which may have certain connotations as regards the style of speech. Examples of /' / provided at 8.3.2 ff. indicate that no morphophonemic changes are involved. In normal speech, not many word-boundaries are crossed in this way.

Disjoined transition may merely involve a pause between words which is highly variable in duration. When the pause becomes so short as to be barely discernible, it is only arbitrarily distinguished from another type of transition which involves the intrusion of a very weak laminal or [w]-type glide between unlike vowels; the former found between final /a/ and initial /i/, /i/ and /a/, /i/ and /e/, etc.; and the latter between /o/ and /a/, /u/ and /e/, /a/ and /u/, etc. These weak glide vocoids occupy points in utterances that fall within the normal distribution of /w/ and /y/. Native-speaker reaction to experimentation with full representation of these glide consonants is mixed. In Z and Xh this appears more acceptable after monosyllabic words than elsewhere, e.g. Xh /xáyéfunà+ < xá éfunà+ / 'when he wants',¹ Z /xⁿáyéfunà+ < xⁿá éfunà+ / 'when he wants'.¹ In other cases, e.g. Xh /ómðálà+yéfunà+ < ómðálà+ éfunà+ / 'the old one wanting it', transition through a clear glide consonant is not generally acceptable. The "weakness" of the glides referred to above is due physiologically to the weakening of glottal vibrations as the speech organs shift from the position of one vowel to another. Where there is no

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Strictly speaking, such examples should be included under "joined transition". This is a rare type of joined transition, however, which is more conveniently treated within the context of "disjoined transition".

possibility of a glide, e.g. between /a/s, there is simply rearticulation of the second peak-vocoid. It must be observed however, that there is a strong tendency for like vowels to coalesce, thus forming joined transition. In transcription a weak glide or rearticulation is not marked and vowels are merely juxtaposed, the juxtaposing of vowels being accepted as a type of disjointed transition. A clearly represented intrusive /y/ or /w/ must, of course, be inserted on the rare occasions that it occurs.

In word transition, the semivowel /m/ as a syllable peak behaves like any vowel, except that in word-final position it is never elided. Word-final syllabic /m/ is usually involved in joined transition, or is followed by pause or /'/.

3. Intonation

10.3.1. Intonation constituents and their occurrence. It is necessary here to account for certain frequently recurring sound features which seem to comprise part of the intonation system and certainly find no place in the structural framework already constructed. In short utterances they may be associated with the whole utterance, but Nguni intonation constituents seem more to be concentrated over the end-portions of utterances or macrosegments (in the case of utterance-medial intonations), than for the constituents of intonations to be spread throughout the length of an utterance as in English. Many utterances of average length appear to have only one intonation, but intonations do occur utterance-medially as, for example, in the following Xh utterances¹: (a) Sesi, isitya senkosi yethu /sêsi+↓ ísítýà sê'ŋk'ósí yêthú+↓/ 'The dish of our chief is this one', where the same intonation seems to end at each terminal plus juncture. (b) NdandinemiGuzo emininzi ndakungena egumbini. UzakundiGetha ? Uzakuthini ? /ndândínémíGúzò éminîndzì+

¹ Only two intonations^{appeared} to be represented in these utterances - one "statement-like" and marked by ↓, one "question-like" and marked by ↑.

ndâk'ingénà égùmbínì+↓ úzàk'ùndì6éthà+↑ úzàk'ùthíní+↑/

'I had many questions when I entered the room. Would he hit me ? What was he going to do ?'

Sound features which seem to function as constituents of intonations are presented below in sets of contrasts without any attempt to group them into particular intonations. In a full analysis of the intonation system, it will undoubtedly be necessary to define them much more precisely and narrowly than is done here. As discussion requires some distinguishing between intonations, this is done by a very broad reference to the meaning of one or more intonations.

10.3.2. Tone constituents. An at-present undefinable "lower region" in the pitch-range of a speaker seems to contrast with one or more "higher regions" as regards the representation of the tonemes of the utterance-final step or steps. Many plain statements end in the "lower region" (as in intonations marked ↓ above), whereas many questions (particularly those without interrogative words or clitics), and also the signalling of "continuity" referred to in connection with /|/, seem to locate the representatives of the tonemes of the final step or steps in a higher region (as in the intonation marked ↑ above). The same tone constituent is found in Xh /éwé+/ 'Yes' when assent is indicated without full agreement, or with certain reservations. A short utterance with the statement-like intonation referred to, may start high or low in the pitch-range of the speaker, but with an intonation that terminates in a higher region, there is some regressive anticipation of this and preceding steps are so located that no strongly marked ascent in tonal steps is discernible. To this extent an intonation may overlay a relatively large part of an utterance.

Another type of tonal contrast is that of abnormally wide pitch-intervals between high and low tonemes in a single step, and this contrasts with normal pitch intervals. Such exaggerated contrasts have only been observed in very short utterances such as Z /6áhàmbílè+/, Xh /6áhhàmbílè+/ 'They

have gone', and seem to be associated with strong, and possibly indignant, assertion or affirmation.

10.3.3. Length constituents. "Extra-long" utterance-penultimate peak-vocoids in many utterances have a clear association with one or more statement-like intonations.

The contrast is with peak-vocoids which are merely "long" (see 9.2.12) by virtue of the presence of /+/. In the occasional utterance where no final /+/ is found, other constituents have to be relied upon to signal the intonation. Length as a second, intonational layer to that which represents /+/ is represented by "unchecked" quantity and some quite wide relative differences in the total duration of utterance-penultimate "extra-long" vocoids may be heard. It is possible that some significance is associated with such differences.

In comparing broadly the "statement" with the "question", the contrast described above is most readily observed. The absence of a length feature in a second layer (manifest phonetically in a penultimate vocoid which is merely "long"), plus the tonal feature referred to above, seem to be amongst the most essential constituents of at least one "question-like" intonation (i.e. that represented by ↑ above).

10.3.4. Tempo. The feature of quicker tempo over all or part of an utterance was examined in connection with question-like intonations, because a quicker tempo is often discernible in short questions. The likelihood of this association was ultimately rejected, but quicker tempo does appear to be a constituent in at least one intonation that is associated in our data with mild annoyance or brusque affirmation. Fundamentally the difference is one of duration, but it is duration in a number of syllables in succession which are longer or shorter as a group than an equal number of syllables in preceding or succeeding stretches of the utterance, or even in a recently-uttered different utterance.

BEYOND THE REGULAR PHONOLOGIC STRUCTURE

1. Expressive Features

11.1.1. Identifying sound features apparently organized as part of the paralinguistic system. Paralinguistic systems comprise a field of communicative activity only recently prospected by linguists and no attempt at a comprehensive description of Nguni paralinguistics can be made here. It is necessary, however, to make a brief excursion into this field in order to account for certain sound features - mainly in the form of exaggerated degrees of pitch, stress and quantity- that are not infrequently incorporated in utterances in normal everyday speech, but have no place in any pattern of contrasts within the regular phonology (including intonations). Certain peculiarities associated with these features show that they are not part of the signalling system which is organized "linguistically", and yet they are obviously significant and make some contribution to the total content of the speech signals in which they appear. The features are identified below and reasons are provided for assigning them to a system beyond the border of "language".

11.1.2. The sound features referred to are not linked with items of the normal semantic inventory, but simply identify a degree of emotion with an extreme of nearness, farness; badness, goodness; strong assent or dissent; etc. Such features are linked directly with this item of content and are not organized through any higher structural level; moreover in both expression and content, contrasts are of the "continuous-scale type" and there is, for example, no possibility of identifying any discrete number of contrasts in pitch, stress or quantity associated with fixed degrees

of emotion.¹ Paralinguistic stress, pitch and quantity are doubtless only part of a larger system employing, possibly, subtler differences in sound feature which we have failed to recognize.

11.1.2. Description and occurrence. In Sw, representation of the demonstrative /lètá+/[lɛ:t'a] 'those yonder' may in some utterances be made at a pitch level higher than that of normal speech and peak-vocoids may be of quite abnormal duration, e.g. [lɛ::t'a:]. In this instance, extra (high) pitch and quantity correlate with an emotional attitude towards what is regarded as very great distance. An intermediate level (both in expression and content) will be found in [lɛ::t'a:] 'those yonder' (regarded by the speaker as being quite a long way off). Similarly in Xh /wâfík'á k'údálà+/'He arrived long ago', [kudá::la] with accompanying abnormally high pitch (particularly of the penultimate syllable) conveys an excessively long period of time in the speaker's estimation. Xh /lá·mádòdà+/[la::maðo·ða:] 'those yonder men' (together with discernibly higher-than-normal pitch) reveals an emotional attitude to the distance at which the men are from the speaker. The vocoid of the Xh adverb /phâ/ 'over there' occurs with a wide variation in pitch level and quantity according to the speaker's attitude to the distance involved, e.g. from the "normal" [pha·] through [pha:] and [pha::] to [pha:::]. In Z /kúdè+ kâkhúlú kâ6í+/'very far off', the speaker's emotional attitude to great distance (the latter / conveyed by items of the regular structure) is further enhanced by the raising of the whole phrase in the speaker's pitch-range and adding additional quantity thus : [gu::ðɛgakhuluga::6i]. Strong stress as an expressive feature occurs independently of

¹ Charles F. Hockett (op. cit. §023) cites "discreteness of contrast" and "duality of pattern" as criteria in establishing the boundary between "language" and what lies beyond it. On these grounds alone, the features under discussion appear to stand beyond the boundary.

pitch and quantity described above and correlates with emotionally-coloured emphasis. The best examples in our data are :
 Xh /h̄hámà+ ngók'ù+/ (with the penultimate syllable of the utterance strongly stressed) 'Go right this very moment';
 Sw /ìṇâmà+/ (with the penultimate syllable strongly stressed) 'It is meat'.

The first step along the paralinguistic scale of pitch and quantity is, for the investigator, sometimes difficult to discern, because the features concerned are principally located in parts of the utterance where high pitch and a long peak-vocoid already occur. It is quite frequently present in a slightly higher-than-normal representative of the high toneme in short negative statements such as : Z /àngìthándì+/ 'I do not like - not at all'. The quantitatives /6ónk'è+/, /sónk'è+/, etc., also give frequent evidence of a paralinguistic overlay in high pitch beyond the predictable limits of the tonal step in the representative of /o/, and in the duration of the latter exceeding the normal representation of utterance-medial /+/.

Our investigations of expressive features are not developed to the extent that more definite statements can be made regarding their organization. The particular area of the paralinguistic system occupied by "expressive" length, stress and tone is not immediately clear and it is not known what other sound features must be linked with them in that area. There are suggestions in our data that the overall substitution of normal voicing by glottal murmur may be significant from the paralinguistic aspect. It is possible that peculiarities in sound feature mentioned in available grammars in regard to various "interjectives", can be accounted for in terms of the paralinguistic system. When examining utterances culled from normal conversation, it has been found that in normal speech the incorporation of expressive features in speech signals is considerably more frequent than may be thought and, in Nguni culture, no complete understanding of communication between individuals

is possible without a complete paralinguistic analysis.

2. The Ideophone

11.2.1. The place of the ideophone in the overall structure.

The extent to which ideophones fall outside the regular structure at the phonologic and higher levels may be gauged from the peculiar features of members of this form-class discussed below. The area in which abnormalities such as exotic phones, abnormal distribution, extremes of pitch and quantity, and unique contrasts are to be treated in relation to the boundary of the regular phonologic structure (and even of "language") requires examination. Although much of the phonologic structure of ideophones (particularly the segmental constituents) conforms to the established patterns of the regular phonologic structure, a glance at peculiarities in contrast and sound feature with regard to prosodic phenomena, is sufficient to indicate that any attempt at treating ideophonic abnormalities in the regular phonologic system, makes for wide distortion of what are the regular workings of that system.

Features such as abnormally long vocoids and extra-high pitch (and also the emotionally-charged message with which all ideophones are associated) bring to mind the possibility of consigning ideophonic abnormalities to the paralinguistic system, but no such easy disposal is possible, because, whatever the area in the overall structure in which ideophones are eventually handled, that area clearly falls within the boundary of "language". Ideophones comprise a set of morphemes differentiated by a discrete number of contrasts in sound feature, which are linked with ^a/specific number of items in the semantic inventory distinct from one another as any others in the inventory. They thus constitute a system, or part of a system, that functions in typically "linguistic" manner. Phonologically the abnormalities of the ideophone must be treated in isolation and our suggested solution is to assign the abnormal phonology of certain

ideophones to a by-system which operates at points in utterances that can only be defined grammatically.¹ A complete account of ideophones must include reference to the fact that certain ideophones are frequently found with an overlay of expressive features, this being our interpretation of distinctly exaggerated pitch and quantity not infrequently found with ideophones. After lifting off the expressive features, it is found that the by-system lies beyond the boundary of the regular phonologic structure. The need to treat of rare cases of **distinctive** nasalization in the vowel subsystem of the latter, is an indication that this boundary is not entirely inviolable, and may be crossed when ideophonic derivatives retain some of the less extreme divergences after incorporation in the regular grammatic structure.

11.2.2. Ideophonic abnormalities. The isolation of the ideophone in phonologic analysis implies a resort to grammatic criteria and it is not considered out of place, therefore, to provide grammatic and other non-phonologic evidence of isolation in support of a separate treatment.

An ideophone occupies a section of an utterance within which neither of the junctures **/+/** or **/||/** is ever realized - the penultimate peak-vocoids of polysyllabic ideophones are never long to our knowledge. (This allows for an organization of contrasts in peak-vocoid duration in the manner mentioned below.) The representation of a unit significant in the functioning of the syntactic system is thus suspended over this section of an utterance. From the syntactic aspect also, the distribution of ideophones is, by comparison, very restricted and ideophones are confined largely to a position immediately after a cognate verb or qualificative, or some form of the verb **/-thi/**. Phonologically, open juncture preceding and frequently succeeding an

¹ The presence of open juncture on either side of an ideophone circumscribes to a limited extent the locality of the by-system, but this locality is not clearly separated from all others, because these junctures occur apart from ideophones in utterances.

ideophone marks its isolation more overtly. Morphologically, the complete absence of inflexion is, apart from certain interjectives, a unique feature in languages so highly inflexional as Nguni languages.

From the aspect of historical phonology, there is the fact that normal reconstruction on a comparative basis is almost impossible when applied to ideophones and begins to break down even at the low level of Proto-Nguni. In the realm of the ideophone it is clear that alternation, fluctuation and innovation proceed at the level of dialect or even lower, with a latitude which, if permitted in the regular structure, would reduce at an alarming rate the communicative efficiency of the languages. The common vocabulary of Xh dialects, for example, is, relatively speaking, found to be far smaller with regard to ideophones than with other normal items of the vocabulary. At the highest level of "Nguni" there is only a relatively small central core of cognate ideophones (in form and meaning) and the difficulties encountered in trying to trace in them the threads of patterned historical changes, differ sharply from the ease with which this can be done in more regular items of the vocabulary.

11.2.3. At the phonologic level ideophones present sound features and differences in sound feature which defy integration in the phonologic framework already constructed. The following paragraphs describe some of these peculiarities.

Nasalized vowels contrasting with oral vowels occur in Z, Nd and Sw, e.g. Z / $\bar{h}h\acute{i}h\bar{h}\bar{i}$ / 'of speaking haltingly', Nd / $\bar{h}h\bar{i}h\bar{h}\bar{i}$ / 'of speaking as with a heavy cold', Sw / $\bar{h}h\bar{e}h\bar{h}\bar{e}$ / 'of speaking under one's breath'. These ideophones appear to be current among most speakers of these languages. The unusual distribution found in Z / $\bar{p}h\bar{p}$ / 'of a bird flying' and the unique central lax vocoid of Z / $\bar{b}\bar{e}$ / 'of hitting in the small of the back' are more extreme divergences found

in some, but not in all dialects. Similar phenomena have not been recorded elsewhere in Nguni. The glottalization of all plain voiceless stops in ideophones is a general feature in Nguni - even in Xh where glottalization is an intermittent feature in the representation of phonemes of the regular structure, and patently non-distinctive.

In connection with the prosodic features, an examination of monosyllabic ideophones points to a high-frequency two-way contrast in peak-vocoid duration. Relative duration labelled "long" in our discussion at 9.2.12 seems to represent the "short" member of this contrast, i.e. the vocoid of a monosyllabic ideophone will always be longer than normal "short" vocoids found elsewhere in the utterance. The "long" member of the (ideophonic) length contrast has additional quantity which is often increased by a high susceptibility for acquiring an overlay of expressive length; this being, at least, our interpretation of some of the quite abnormally long vocoids (often accompanied by extra-high pitch) sometimes found in ideophones, e.g. Z /wĩ•/[wi:::] 'of the noise of a long object flying through the air'. Whether a clean separation of the "expressive" overlay is possible in such cases, can only be ascertained in a fuller analysis of this area of the structure. The length contrast in monosyllabic ideophones is illustrated by the Z minimal pair : /zwĩ̃/[zwi•] 'of being one only' : /zwĩ̃•/[zwi:::] 'of flinging, whirling'. Xh /ŋk'é/ 'of brittleness' exemplifies the "short", while /ṭyà•/ 'of flatness' presents the opposite member of the contrast based on length. (Our Nd and Sw data do not contain examples of this contrast of which we can be equally certain.) Pitch contrasts associated with monosyllabic ideophones all appear to be interpretable in terms of the regular tonemic system, e.g. Z /zwĩ̃/[˨] 'of great noise', /zwĩ̃/[˨˥] 'of being one only', /zè/[˨] 'of sparseness', /né/[˨] 'of sticking firmly'.

When the analysis moves to polysyllabic ideophones, prominent stress differences are noticed. Generally speaking,

ideophones of more syllables than two have strong stress on the initial syllable, distinct from the unstressed following syllables. (Stress is also noticeable in^{all}/monosyllabic ideophones, but not to the same extent as in those that are polysyllabic.) Stress, however, is predictable in terms of a length feature, because the so-called "stressed"¹ initial syllables of polysyllabic ideophones have vocoids that are at least "long" (according to the scale of contrasts mentioned at 9.2.12) and in this feature differ from the distinctly "short" vocoids of the unstressed syllables that follow. Neither here or in the regular phonologic structure does it therefore appear necessary to recognize distinctive stress differences; "prominence" in ideophones is essentially a length-stress complex. This was clearly indicated by a Z informant who produced a variant of klebu 'of ripping', with two strongly stressed syllables with "long" vocoids, viz [kl[?]é:bú:], instead of the usual [kl[?]é:bu]. Whether the short vocoids of unstressed syllables in polysyllabic ideophones provide a third member of the correlation according to peak-vocoid duration, is a problem of analysis which it is not intended to solve here. (Our analysis of phenomena outside the regular phonologic structure is partial and tentative.) In phonemic transcription of ideophones in this chapter, only two members of the length contrast have been differentiated.²

As regards pitch phenomena in ideophones, it may be necessary to recognize a third toneme because there are a few mid tones in disyllabic ideophones which it does not seem possible to account for in the usual way. The regular structure of Sw is, of course, equipped for this.

¹ C.M.Doke (Text Book of Zulu Grammar, 1947, Chapter XV) makes much of the feature of stress, but appears to miss the fact that it is coincident with a feature of length. For example, in §636: "The feature of these (i.e. disyllabic) ideophones is that, while the first syllable.....is stressed as usual, each syllable is short."

² The representative of /•/ in monosyllabic ideophones, therefore, differs in duration from /•/ in polysyllabic ideophones, being "extra-long" in the former and "long" in the latter.

The following are examples of polysyllabic ideophones incorporated in utterances.

Kh: /wāthí 'bù•lúgùqú' phántsí+/'He tumbled over'

/íthê 'cà•6à/'It is completely flat'

Z : /ímìkhóntò íthì '6è•nè/'glinting weapons'

/ígcwě̀lè 'swí' á6ántù +/'It is full of people'

Sw: /6átshì 'ǰè•lèlè/'They are slipping'

Nd: /úkúthì 'klí•k'í/'to be completely full'

CHAPTER 12

PHONOTACTICS

12.1.1. Distributional classes. Phoneme classes and single phonemes which are separate according to their distribution in utterances are : Vowels; semivowel /m/; consonants; tonemes; /°/; the junctures : /' + |/. (Junctures differ from each other in distribution and no correlation exists between them. They contrast only in their presence or absence.) Intonation constituents cannot be included in the statements on distribution made here, because the total stock of these constituents probably includes more than we have mentioned and the latter require a narrower definition than we have been able to provide. Step juncture has no significance except in an environment of high tonemes, and is only considered in connection with the latter and not in the broad array of segmental and suprasegmental phonemes that constitute an utterance.

12.1.2. The essential structure of minimal utterances. The smallest utterances in our data are the following : Xh [ɛ:] 'Yes', Nd [je:] 'Yes', Z [lɛ] 'This one ?'. A high-falling glide tone accompanies the Xh and Nd utterances and both occur in the "lower region" of the pitch-range of the speaker mentioned in connection with intonation constituents at 10.3.2. The Z minimal utterance was uttered with a high level tone in the "higher region" of the speaker's pitch range. These pitch features are the only intonation constituents we can discern in these utterances. The peak-vocoids of the Xh and Nd utterances can vary considerably in duration and may exceed the "checked long" duration of the length concomitant of HL. The most likely interpretation of such length is as an intonation component - possibly /|/ in a somewhat wider role than we have visualized in our analysis. In

any event, "extra-length" is not part of the minimal utterance whose peak vocoid may have no greater duration than "checked long". Without representing the constituents of intonations, the phonemic transcription of these utterances is : Xh /ê/, Nd /yê/, Z /lé/.

The smallest utterance is that of Xh comprising a vowel, a cluster of two tonemes and an intonational constituent of pitch. It is possible that an even smaller utterance with only one toneme can be found, but there is no utterance comprised of fewer phonemes than that. The Nd and Z utterances have a consonant as an additional constituent in comparison with the minimal utterance of Xh, but it is quite possible that minimal utterances with not more than one segmental phoneme exist in these languages also. (We have no suitable data on minimal utterances in Sw, which is not likely to differ, however, from those of the other languages.) The distributional classes essential to minimal utterances have been mentioned above. Those that are non-essential are junctures, consonants and /'/. It is unlikely that the semivowel /m/ ever provides the peak of a minimal utterance.

12.1.3. Phonemes in sequence. The phonemes that appear in sequential array are : vowels, the semivowel /m/ and consonants. /• + |// and the tonemes occur simultaneously with the vowels and syllabic /m/. /'// is also "suprasegmental" in that it has existence only in the presence of allophones of vowels or the semivowel /m/, but in certain aspects of its distribution it patterns as a consonant and must be identified in sequences of vowels and consonants. Syllable onsets (the domain of the consonants) are not involved in associations with suprasegmental phonemes because the tonemes and /• +¹ |// occur in utterance-initial syllables without onsets, just as they do in syllables with onsets, e.g.

¹ Notice that /+// is actually represented at a point one syllable removed from where this juncture is marked. Reasons for marking this juncture at the grammatic boundary have been indicated at 8.2.3.

Z Iya... [i:ja:] ([⁻ -]) /íyàt+/'He goes to...'; Xh o...funayo
[ɔ:: funa:jo] ([⁻ - -]) /ó|fúnàyó+/'he who wants'.

(Intonation constituents of pitch and tempo do, however, overlay sequences of segmental phonemes which include consonants.)

Utterance-initial syllables may consist only of a peak and lack an onset (for example the utterances given above). The peak of this, and every other syllable in an utterance, will, at the segmental level, consist of one vowel or syllabic /m/. Vowels do not normally cluster¹ and the next segmental phoneme in line will be the first or only consonant of the onset of the following syllable. Syllabic /m/, however, can easily be involved in a sequence in which only vowels appear (see below). The vowel (or syllabic /m/) of this initial syllable has a fixed association with at least one toneme and these two units comprise the first layer of immediate constituents in the syllable. Tonemes may occur singly or in clusters. In Xh the only permitted cluster is $\widehat{HL}$. In Z, Nd and Sw $\widehat{HL}$, $\widehat{LH}$, $\widehat{LHL}$ also occur. /·/ appears as an occasional, non-essential supra-segmental constituent of complex peaks. /·/s do not cluster.²

Temporarily excluding consideration of syllabic /m/³ and the type of disjoined transition across word-boundaries in which vowels are juxtaposed, a peak constituted in one of the ways indicated above will, in the majority of cases, be separated from the next by a margin comprised of one consonant. In the minority of syllable margins clusters of two to three consonants appear. As an occasional alternative to consonantly-constituted margins, open juncture may be the only phoneme occurring between one peak and the

¹

There is a possibility of a VV sequence across word-boundaries.

²

It is possible for /|/ which has length as a primary component to coincide with /·/ with consequences mentioned at 9.2.11. In this case, and also where /+/-/ coincides with /·/, the length components of the junctures exist concurrently with the representative of /·/.

³

But not of non-syllabic /m/ which is distributed like any other consonant.

next. Utterances and phonologically isolable portions of utterances never end in a consonant, but always in syllabic /m/ or a vowel. Initially, however, syllables may or may not have an onset comprised of one or more consonants.

Syllables in Nguni are, therefore, either of the "onset - peak" or the "peak" type and all "interludes", therefore, are "onsets".¹ Syllabic /m/ is always found as the only segmental constituent in a syllable of the "peak" type.

12.1.4. Consonant clustering. In all languages any one of the consonants or non-syllabic /m/ can constitute a single-consonant onset. In clustering, however, consonants fall into three distinct groups. The first of these groups is that of the nasal sonorants, viz /m n ɲ ŋ/ in all languages, labelled "N" in discussion on consonant clustering in this chapter. The second contains all consonants except those of the first group and /w/, and is labelled "C". /w/ stands alone and is labelled "w". Except for particular non-permitted sequences mentioned below, patterns of consonant clustering are exhausted in NC, Nw, Cw NCw. The grouping of examples in Chapter 4 is designed to illustrate consonants in these types of cluster and in all numbered paragraphs those cited at "2" exemplify the Cw pattern, except at 4.3.12 where they are illustrative of Nw. At "3" the examples are of the NC pattern, while NCw is exemplified in examples to be found at 2 and 3 which include : Xh, Z /íntwánà/ 'small thing'; Nd /ínk'wílím̀bà/ 'pigeon'; Sw /tíntwànè/ 'toes', /íngwè/ 'leopard'; Xh /í'ndzvánà/ 'good-looking person'; Sw /ínt̤wèè/ 'beard', /íngcwàlà/ 'first-fruits ceremony'.

In every NC sequence N is predictably a member of the same order as C. With click phonemes N = /ɲ/ and with non-click members of the lateral order N = /n/. Non-permitted sequences in connection with NC are : N6 in all languages (a morphophonemic change obviates this sequence arising from the combination of certain morphs); Nk in all languages (only

¹ For an interpretation of this terminology see Charles F. Hockett, op. cit., §22.

/k'/ is found in this sequence); Np̄h, Nth̄, Ntyh̄, Nkh̄ in all languages except Sw; N with click phonemes in all languages - except Nc, Nq, Nx in Xh and Nḡc and Nch̄ in Sw; N with nasal and non-nasal sonorants (of series 7, 8, 9 in the diagrams at 5.3.2 ff.) in all languages except in Nd with its unique Nl cluster; N with the laryngeals /h h̄h/ in all languages. Phonetically in Z and Xh there are no plain spirants in representations of NC sequences - only stops and affricates. Where the phoneme inventory contains an affricate corresponding to a spirant (e.g. /t̄s/ to /s/) the latter does not occur in sequence with N in these languages. If no affricative phoneme exists, then the required affricate in NC sequences is identified as an allophone of the spirant (e.g. [ɸf] of /f/ in Z and Xh). On this basis Ns, Nɕ, Nr do not exist in Z; Ns, Nz, Nɕ, Nr, Nz, Nḡr in Xh; Ns Nr in Nd. (All spirantal phonemes occur as phonetic spirants in the NC sequence in Sw.)

In all languages *mw is the only non-permitted Nw sequence (/w/ never occurs in sequence with members of the labial order).

All members of the labial order are excluded from the position of C in Cw sequences¹ and morphophonemic changes take care of such sequences produced when certain morphs combine. Although every possible Cw sequence in each language has not been exemplified, /w/ clusters potentially in Cw sequences with all other members of the consonant inventory. The only possible exception to this is where laryngeals fill the place of C in Xh. No examples of /hw/ and /h̄hw/ have been found.

Non-permitted clustering in connection with NCw sequences is covered by a combination of the restrictions imposed on NC and Cw clustering.

¹
All reported instances of this type of sequence have been investigated but the speech of our informants does not contain any of these. Forms such as esifweni recorded by Doke (C.M.Doke, Text Book of Zulu Grammar, 1947, § 584) were not acceptable.

12.1.5. Permitted and non-permitted sequences in syllable structure. In syllables of the onset - peak type the vowels /o u/ as peak never follow a Cw or NCw-type onset. With this exception, any one of the onsets (syllable margins) that have been described can combine with any one of the vowels as the segmental constituents of a syllable.

12.1.6. In all languages utterances can begin and end in syllabic /m/, e.g. Z /m̐fánà+/ 'Boy!' (a vocative form), Xh /ndìfúníntóyám+/ 'I want my thing'. In sequences of phonemes syllabic /m/ may be preceded and succeeded by a vowel, i.e. Vm̐V, Vm̐, m̐V. (An arbitrarily-selected toneme distinguishes the syllabic nasal here.) E.g. Xh /ó'wámàk'áfúni+/ 'My one does not want to', /yám/ 'mine'; Z, Nd /úm̐éli/¹ 'representative, lawyer', /m̐éli+/ 'O lawyer'; Sw /ànjím̐ém̐éti/ 'I do not shout at him'. Utterance-initially syllabic /m/ may also appear in the sequence m̐C (this sequence is impossible in final position because utterances do not end in consonants), or medially in Vm̐C, e.g. Xh /m̐ná/ 'I', /úm̐ntù/ 'person'; Z /m̐khúlù/ 'He is big', /úm̐lìmi/ 'cultivator'; Nd /úm̐hlââ/ 'the world'; Sw /úm̐séééti/ 'worker'. The sequences illustrated above cover completely the distribution of syllabic /m/.

12.1.7. Syllabic /m/ in sequences of phonemes. In each language there are peaks comprised of the sonorant [m] with an accompanying length feature (in contrast with non-syllabic /m/) and a contrastive tone. This we designate as "syllabic /m/", i.e. /m̐ m̐ m̐/. The length feature is associated with syllabicity, which is a property of all peaks and depends upon a certain minimum duration. In the presence of a distinctive tone which defines the syllable peak, no phonemic interpretation of the length feature is necessary. Junctures and intonation constituents are represented phonetically in the normal way in syllables with /m/

¹ In normal spelling ummeli reflects the morphologic, but not the phonologic structure. Phonologically the second m as a margin has no existence (see below).

as peak. Our data contains no examples in which it is necessary to associate /•/ with this type of peak.

Morphologic evidence points to /m/s in sequence (syllabic /m/ followed by non-syllabic /m/) in forms like Xh ummi 'inhabitant' < um-m-i, and Z, Nd ummeli < um-m-el-i. (the same radical, viz. /-m-/, occurs in these examples.) From the phonologic aspect, however, there is no difference in representation between syllabic m and mm (in sequences mi and mmi) in forms such as Xh eyam ikhona /é'yámíkhòná+/¹ 'My one is present' and ummiso omhle /úmísómhlé+/¹ 'a good basis'. In a word like ummiso a sequence of /m/s may be postulated on distributional evidence, viz. apart from the doubtful cases under discussion, an mV sequence never occurs word-medially, syllabic /m/ being found only before consonants or /•/. This, however, pertains only to word-medial positions. At a word-boundary in an example like Xh /é'yám-íkhòná+/ syllabic /m/ occurs immediately before a vowel and no morphologic evidence can be brought to show that there is an intervening non-syllabic /m/ between syllabic /m/ and the vowel. At the phonologic level it can be stated, therefore, that /m/s are not found in sequence word-medially.

12.1.8. The distribution of the junctures. Utterance-medially

/+ | •/ can only occur at the boundaries between morphs and therefore have morphemic distribution and differ from all other phonemes in this respect. /•/, however, obtrudes upon the distributional patterns of segmental phonemes in filling a position (word-medially) normally occupied by a consonant. Because of this, some reference to it was necessary when discussing segmental phonemes. /+/ occurs only at utterance-medial boundaries between grammatic words and utterance-finally, but never anywhere else. (The actual representation of this juncture is in the penultimate syllable of the word.)

¹ These utterances are made with joined transition, cf. /é'yámíkhòná+/ and /úmísómhlé+/.

/| ' / are found most commonly at utterance-medial word-boundaries, although they have never been found to occur together, i.e. they do not cluster. The description of these junctures in Chapter 8 has indicated that they may be found at certain morpheme-boundaries word-medially, but not at all such boundaries. It is possible that /| / may provide the interpretation of certain utterance-final long peak-vocoids (and thereby be cast in a somewhat wider role than we have assigned to it), in which case it occurs utterance-finally also. /' / does not occur initially or finally in utterances.

The point where the length component of /+ / is located is one where neither /| / or /' / can occur and for this reason /+ / does not cluster with /| / or /' /.

12.1.9. Unique clusters in slurred quick speech. Although

the scope of this thesis does not include an analysis of this type of speech, reference to normally non-permitted clusters associated with it, helps to explain how clusters of this type arise in borrowed words like /úm,áfrik'à / 'African'.

The elisions of quick speech reflected in Z [isha:mbi] /í'shámbi < ísihámbi+ / 'stranger'; Xh [kakɛ] /k'ák'h̄lé < k'ák'ùh̄lé / 'well, nicely', [um.lun̄ka:zi] /úmlùnk'ázi+ < úmlùngùk'ázi+ / 'mistress'; show how a syllable peak between a (phonetic) spirant and stop, stop and spirant and also, occasionally, sonorant and stop or stop and sonorant, is quite frequently subject to complete elision in slurred quick speech. This produces consonant clusters which cannot occur under normal circumstances. It would seem that this is the manner in which the unusual clusters of /úm,áfrik'à / and other forms like it are found acceptable.