

The Significance and Origin  
of the Use of Pitch  
in Sandawe

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Thesis submitted for the qualification of D Phil  
at the University of York  
in the Department of Language and Linguistic Science

August

1989

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## ACKNOWLEDGEMENTS

I acknowledge with gratitude the instrumentality of the late Professor Irvine Richardson in giving me an entry into Tanzania and into research on Tanzanian languages. I thank the University of Dar es Salaam for a grant which allowed me to undertake some of the field work on which this thesis is based. I thank the Universities of Dar es Salaam, York and London for the time to work on this thesis. I thank the School of Oriental and African Studies for the word processing and printing facilities which have been used to produce it. For their encouragement and confidence in me, I thank my former heads of department and colleagues, Dr J StC Higham, Professor H M Batibo, Professor D Nurse, Mr J Kelly, Dr J Maw and Mr M Mann. All of them would willingly recognise that my debt to them is small in comparison with that I owe to Nd Augustine Mathias, who was my main informant over a period of four years.

## DECLARATION

This thesis contains no material which I have submitted for a degree in this or in any other university. It contains material which I have previously had published; this is section VA and subsection VB2, (excluding the penultimate paragraph) which together formed the bulk of Elderkin 1986. I have also drawn on two unpublished papers Elderkin nd(1982) and 1983b, both of which were privately circulated to interested Khoisanists and which have also been used as supporting material for seminar presentations.

## ABSTRACT

Sandawe is a Khoisan language spoken in central Tanzania. It uses pitch in lexical items in such a way as allows it to be analysed as tone. The mora has a twofold function as a unit of length and a tone bearing unit. Each mora either has a high or a low tone. Downstep and downdrift occur. Each word is characterised by a range of pitch relative to the other words in an utterance. These ranges are analysed as tone levels. The use of tone levels is determined by syntactic structure and by the structure of the information.

The origin of the use of word tone levels syntactically, lies in the loss of a final low toned syllable in a noun phrase. The final position of a verb in the clause led it to be always realised on a lower tone level than any preceding noun phrase. The fronting of an noun phrase, for reasons of information structure, was associated with its pitch being raised to a higher level; this usage has become virtually syntacticised. Within a word, the use of downstep and downgliding was attributable to the loss of a low toned syllable. It is shown that the overall situation in Khoisan languages is that when tone is used lexically, that within a morph, tone is chosen for twice and that a two tone system, high and low, operates. There are correspondences, which are not superficial, between features of Sandawe morpheme structure and that of Northern Southern African Khoisan morph structure. This suggests that the lexical use of tone is a feature of Common Khoisan.

Syntactically and morphologically, Sandawe has strong connections with Central Southern African Khoisan with which it should probably be classified.



## ABBREVIATIONS

C	b, r, m and n
K	any consonant
V	vowel
X	any click consonant
Z	any non click consonant
m	mora
p gn	person gender and number

## INTRODUCTION

Previous work on the language of the Sandawe has not dealt in depth with pitch. Dempwolff 1916, van de Kimmenade 1954, and ten Raa 1967, the three works which deal most comprehensively with the language, were all aware of its significance, but none has treated it systematically. The lexical use of pitch in Sandawe is based on a two height tone system. A more difficult part of Sandawe phonetics and phonology is its use of nasality, a problem to which both ten Raa 1966 and Tucker, Bryan and Woodburn 1977, refer. The use of pitch syntactically, by allocating to each word a relative pitch level, is documented here for the first time.

The use of pitch lexically is common to the Khoisan speaking area. An examination of the data of Traill 1985 for !xóõ and of Snyman 1975 for Žhu/'hõasi, will show that historically the way in which they use tone is comparable to its use in Nama, (Beach 1938). An extended analysis of the Northern Khoisan lexicon, going considerably beyond the earlier treatment of it by Honken 1979, shows points of contact with Sandawe. The enquiry into the syntactic use of pitch shows that Sandawe and the Central Khoisan languages probably have a common origin. This will be discussed in relation to the historical classifications of Greenberg 1966, Köhler 1973-74 and Ehret 1986.

# Chapter I

## CONTEXTS

### A THE CONTEXT OF THE LANGUAGE

#### 1 The geographical context

The area in which the greatest concentration of Sandawe speakers is to be found, has as its centre a point about sixty miles NNE of Dodoma in central Tanzania. Map 1 shows the position of Sandawe and its present and immediate past neighbours. Maps 2 and 3 show the position of the other languages mentioned in the text.

It is difficult to put a number to the speakers of Sandawe. Dempwolff 1916 estimated 20,000, and it would probably not be far out to double that for the present day figure; however, emigration and marriage to non speakers of Sandawe means that increases in the population of Tanzania are not proportional to any rise in the number of Sandawe speakers. As one speaker said:

(1.1)        'híá?` ²t'èsé: 'wàgògá: ²hétékàj?` 'tétà 'lǒ:kó 'tétà  
                 ²táká?`wà:j

If they go on marrying foreigners, the children are  
completely lost

That is, your children would not live in Usandawe, you would not see them often and their children would not know Sandawe.

## 2 The historical context

As Sandawe is classified as a Khoisan language, efforts have been made to link the speakers of Sandawe with the speakers of other Khoisan languages by criteria other than linguistic. None of these is relevant in the present study, which is about language. What is relevant linguistically, merely as a short cut to tracing linguistic influences, is where the speakers of the states of language ancestral to Sandawe were geographically placed, and what languages were spoken by their neighbours during the course of their history. Bantu languages and Southern Cushitic languages were clearly in contact with Sandawe in the past as now; but the few resemblances quoted in Elderkin 1983 between Sandawe and Omotic and Kuliak are worth little without more supporting data. More research is needed to place earlier stages of languages relative to each other spatially with any confidence. The oral traditions of the Sandawe "do show beyond doubt that the Sandawe are indeed autochthonous to the region" (ten Raa 1969 p102).

To avoid prejudging any issue of genetic relationship, I define the Khoisan languages as languages (i) whose phonological systems include units which are (partially) realised by the use of a velaric ingressive airstream mechanism and (ii) which, according to the established canons of linguistic classification have not been classified as anything else. The question is not so much are these languages genetically related or are they not genetically related, but rather, is the relationship which these languages show best reflected by postulating a genetic relationship or by assuming an areal relationship.

Trombetti 1910, having only the Sandawe data in Baumann 1894 and Nigman 1909 available to him, tries to link Sandawe with Hottentot, (which I shall usually refer to as Nama), and so does

Dempwolff 1916, but Dempwolff is careful, and states: "Alle diese Zusammenstellungen sollen keine Beweise für einen etymologischen Zusammenhang der gegenüber gestellten Wörter sein, sondern nur auf die Möglichkeit eines solchen hinweisen, der dan, da an direkte Entlehnung nicht zu denken ist, eine organische Spracheverwandtschaft zwischen Sandawe und Nama über uns unbekannte Zwischenglieder bedeuten würde" (p66). The publication of Dempwolff allowed Trombetti to expand his documentation, (Trombetti 1922/3), and reaffirm the link with Nama. Drexel 1929 also placed Sandawe as coordinate with Nama. The division of the South African Khoisan languages, as Greenberg 1966 refers to them, into three parts is received doctrine and attributable to Bleek 1927. A synopsis of the classification she used, mentioning only languages mentioned in the text, is seen in (1.2).

(1.2) Hottentot: Nama, !ora

Bushman:

Northern: ǀu/'hōasi, !xũ

Central: Kxoe, //ani

Southern: !Xóõ, ≠hoã

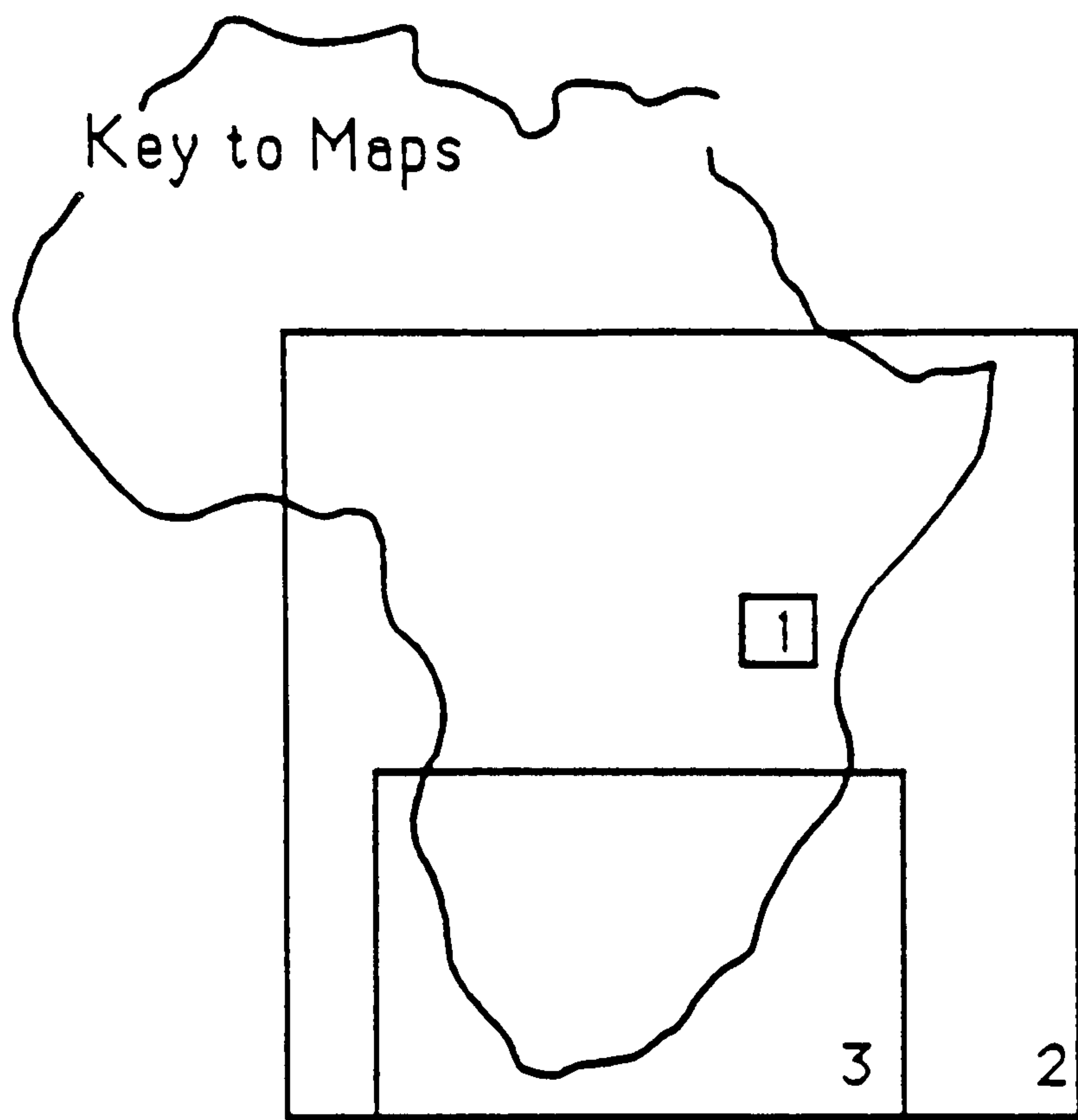
She does not include Hottentot as a member of her Central Group although she frequently displays data from Hottentot with that from the other Central Group languages. She writes: "it looks as if the languages of the Central Group and the Hottentot languages had their roots in common" ('roots' in the linguistic sense of reconstructable morphemes of the protolanguage). Later, she rhetorically suggests that the Hottentot languages might be included with her 'Bushman' languages: "Nama has been described as a Hamitic language with Bushman admixture; is it not perhaps

the other way round?" (Bleek 1929 p6). Westphal 1956 proposed a 'Sandawe-Hottentot' larger unit, but later rejected this classification. Greenberg 1966 classifies Sandawe as one of the three coordinate branches of Khoisan; the others are Hadza and the South African Khoisan languages; these latter in turn he divides into three parts, after Bleek, except that Hottentot (Nama and related dialects) are placed within Central Khoisan. Köhler links Sandawe more closely to Central Khoisan than to the other branches of Khoisan: "Nehmen wir aufgrund der Hypothese eines ehemaligen Zusammenhanges aller Präbantu-Schnalzsprachen eine Einwanderung der saniden Jäger und Sammler aus Nordost- bzw. Ostafrika an, ohne daß sich von sprachlicher Seite zunächst genügend Material zur Stützung dieser Annahme bietet, so steht die Hypothese der Herkunft der Khoe-Sprachgruppe aus dem Nordosten des Kontinents auf einer solideren Basis. Sie beruht weniger auf den überraschenden Ähnlichkeiten zwischen den Affixen"...(i.e. 3mSg -b and 3fSg -s)... "als vielmehr auf den nachweisbaren Beziehungen zwischen den Khoe-Sprachen und dem Sandawe, das eine lange Eigenentwicklung mit einem beträchtlichen Fremdeinfluß erfahren hat." (Köhler 1973-4 pp189-90). I have suggested that Central Khoisan and Sandawe might together be labelled Eastern Khoisan, (Elderkin 1986). Some factors which seem to support this grouping are discussed in section A and subsection B2 of Chapter V. The implication of this for Greenberg's classification is discussed in section E of Chapter V.

It is suspected that the languages of this Eastern Khoisan group owe, if not their origin, then at least their present form to contact with another language family, and that seems to have Afroasiatic characteristics. In a typological study of African languages, Heine 1976 finds that Central Khoisan and Sandawe both fall into his Type D (of the four types into which he divides African

languages). All Cushitic (including Omotic) and all Ethio-Semitic languages fall into this type, as do some Nilo-Saharan and a few other scattered languages. Cushitic is an 'areal nucleus'; "the farther one moves away from these areas, the more the number of recessive features tends to decrease." (Heine 1976 p57). When Central Khoisan and Sandawe are better documented, it will be possible to gauge the extent of the influence on them of Afroasiatic languages, and perhaps specify more exactly which Afroasiatic languages are involved. The question of classification is again taken up in section E of Chapter V.

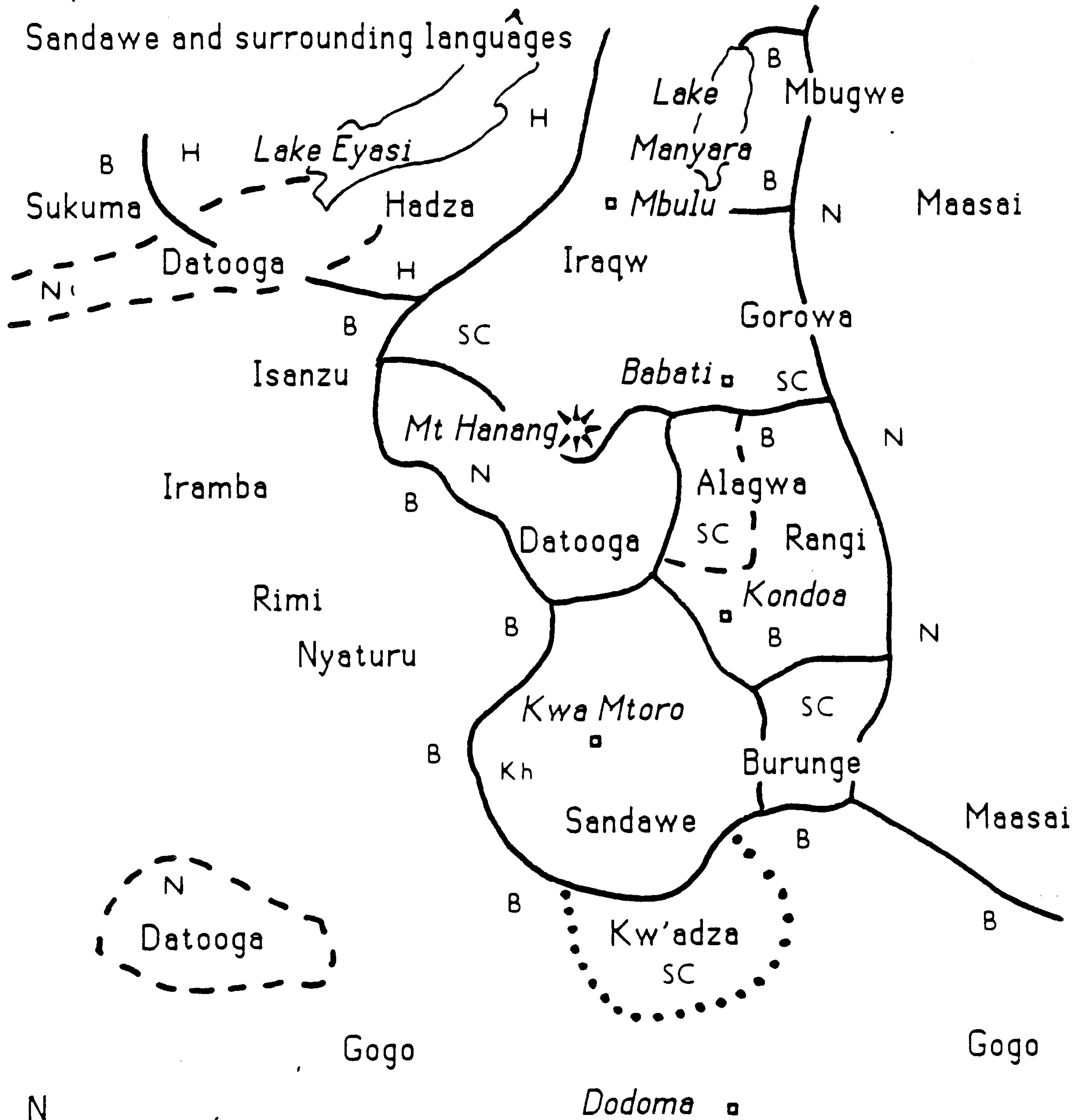
It seem very likely that at one time the whole of Eastern, Central and Southern Africa was populated by people who spoke languages which were characterised by their use of the velaric ingressive airstream mechanism as part of their phonological system. This is indicated by three factors. Firstly, there are loans with clicks in Dahalo, which is a Southern Cushitic language, in whose makeup no traces of a more southerly origin have been found. It is generally accepted too that the Southern Cushitic languages, and all Afroasiatic languages in Kenya and Tanzania, have their origin further north. Secondly, there are lexical items with clicks in Hadza, which is a language whose classification has not been finally provided with a generally accepted explanation. The volume of words with clicks has been perhaps too readily taken as demonstrating that it is Khosian genetically. As calculated in Elderkin 1978, there are fewer words with clicks (10.7%) in a basic noun list of 75 items extracted from the Swadesh 200 word list than there are in an extended list over six times that size (16.1%). Both Tucker 1967 and Elderkin 1982 would prefer an Afroasiatic affiliation for it. The third reason is the presence of an incontrovertably Khoisan language, Sandawe, in central Tanzania. The difficult question is what the autochthonous Khoisan languages



Khoisan	Kh
Hadza	H
Afroasiatic: Omotic	O
Southern Cushitic	SC
Other Cushitic	C
Nilotic	N
Bantu	B

Map 1

Sandawe and surrounding languages

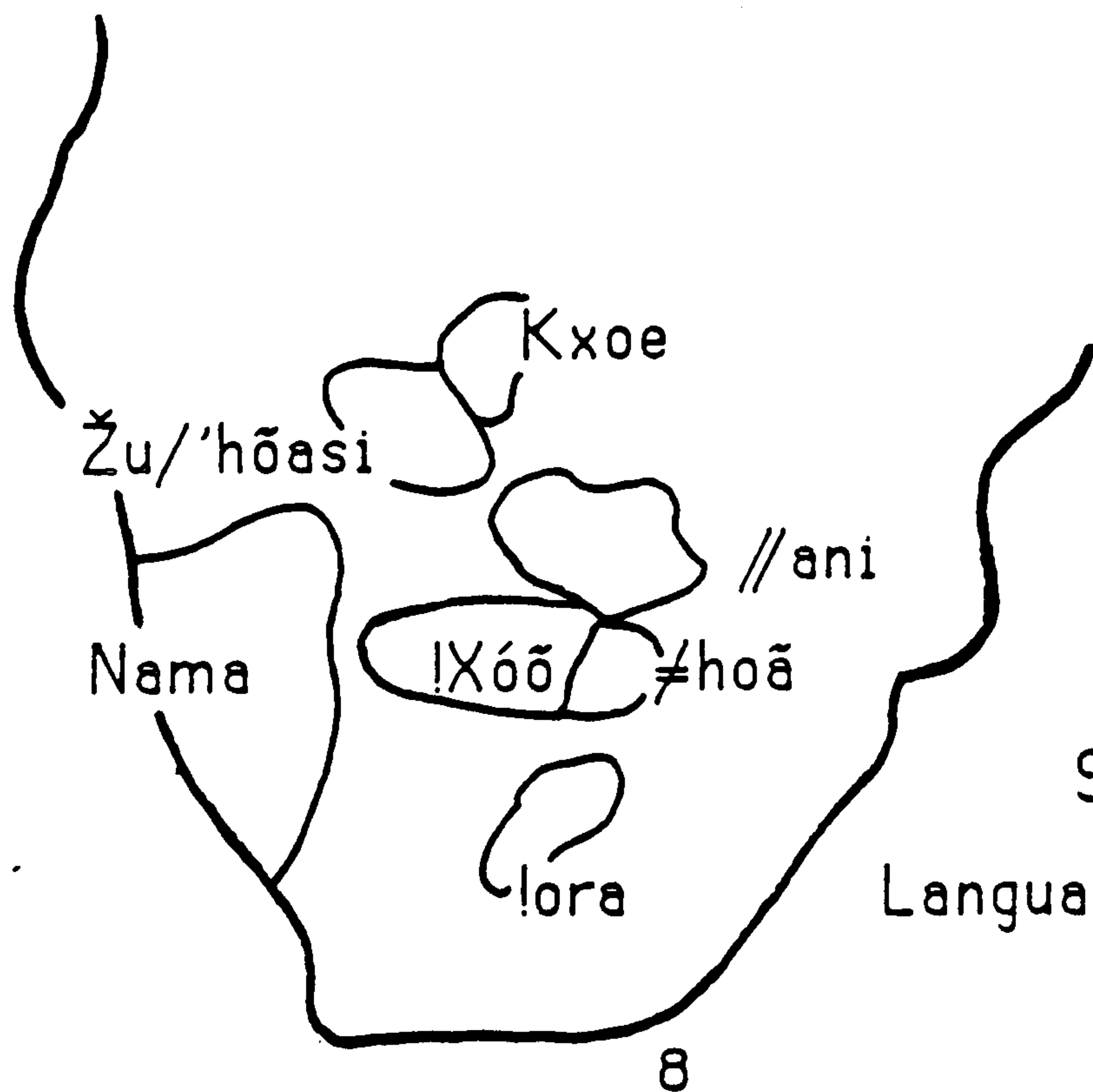
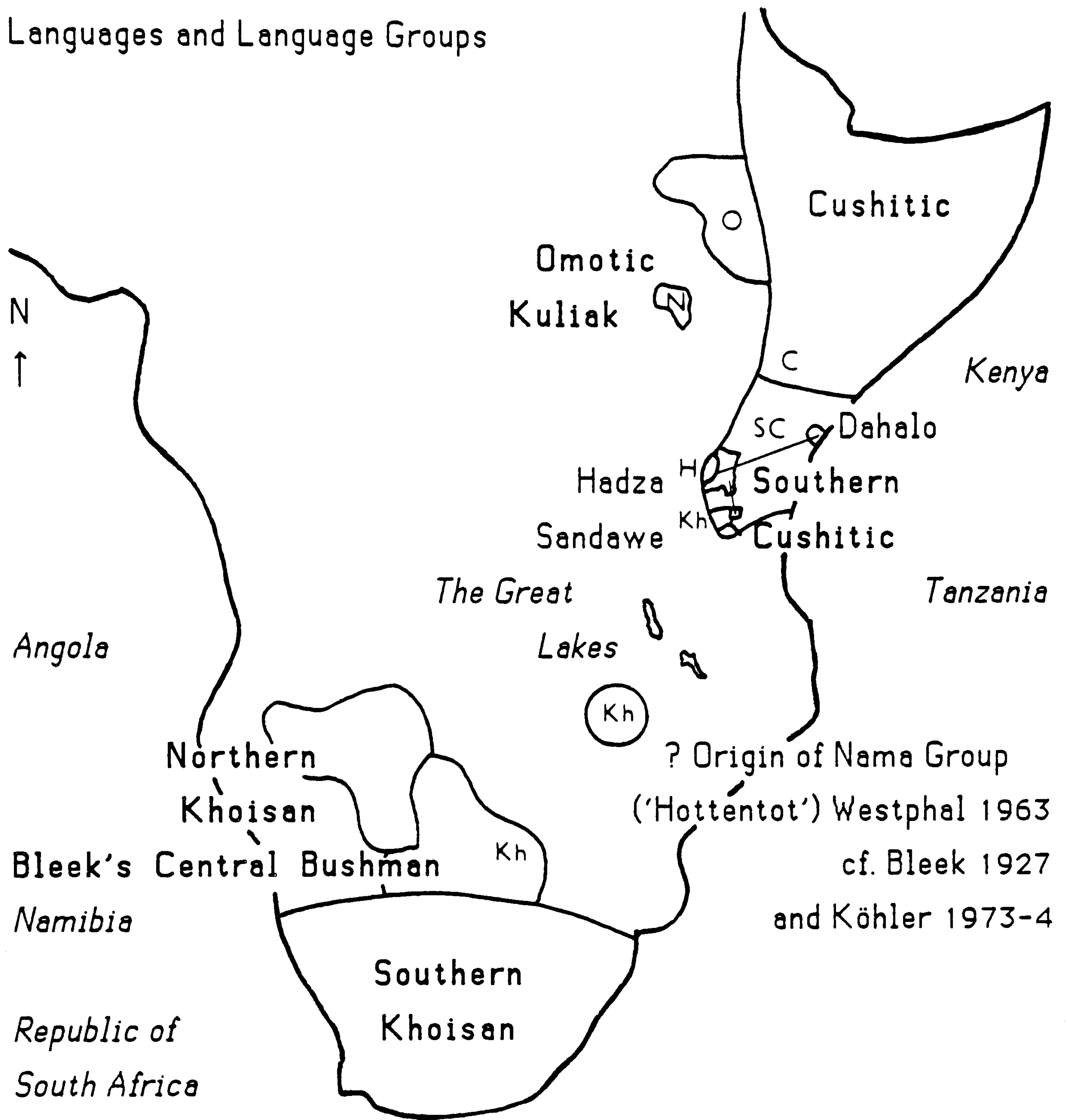


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Map 2 Eastern and Southern Africa  
Languages and Language Groups



Map 3  
South African Khoisan  
Languages mentioned in text

of Eastern Africa were like. Note that the assumption here is that languages which have a northerly origin entered their present day position, adopted clicks and moved no further; there is always the possibility that they were domiciled at one time further south, adopted clicks and then returned northwards. Likewise a second assumption here is that the Eastern Khoisan languages had Eastern Africa as their cradle and that all but Sandawe moved away. No writer has suggested that the first assumption is false; the second assumption is commonplace in the literature, even before Sandawe was associated with Central Khoisan, although Eastern Africa is a vague specification considering its large area. Dorothea Bleek writes: "I think it is likely that the territory of the Northern and Southern Groups joined right through the Kalahari, not only in the west as at present; that the Central Group occupied the land to the northeast of the Kalahari, probably extending to the Great Lakes and East thereof; that the original Hottentots were members of this group." (Bleek 1927 p63). Köhler 1973-4, (quoted above), sees the origin of his Kxoe group in northeast Africa.

The Southern Khoisan languages may be taken as well established in their known area and this is concluded from the linguistic distance which they are from each other, which is greater than the distance between the Central Khoisan languages. There has been no suggestion that they owe their present and recorded situation to a retreat before the pressure of languages introduced from the north, a reason which is often used to explain the present location of Central Khoisan languages. What is puzzling about the Northern Khoisan languages, or language, (the varieties of Northern Khoisan are stated to be very close by scholars who have worked on them), is that their homogeneity has as its geographical spread an area which is larger in extent than that of the more diverse languages of Bleek's Central Bushman

Group, and that their homogeneity is greater than that of the Southern Khoisan languages. There is a presumption that, in large areas inhabited by hunting and gathering populations, languages spoken by relatively small population units should exhibit an areal relationship in which the degree of similarity between them decreases rapidly with geographical distance. Either the Northern Khoisan situation is the result of a recent spread of hunters and gatherers, (and if so, the reasons for this should be sought), or the extent of their distribution is due to the former existence of a socio-economic basis, not hunting and gathering, which could support a wide flung community. If this socio-economic basis later floundered, it could have compelled the speakers of Northern Khoisan to adopt the hunting and gathering lifestyle of the bushdwellers with whom they coexisted. In this were so, the language may have as its autochthonous position, a location further away from where it is now, say either eastwards or northwards, or both eastwards and northwards.

On the areal cline of gradual differentiation of languages expected in a geographically immobile hunting and gathering situation, the autochthonous position of Northern Khoisan could then be nearer to East Africa, the present position of Dahalo, Hadza and Sandawe, and, if so, the expectation would be that the structure of the languages contributing to the Khoisan parts of Dahalo, Hadza and Sandawe would be more similar to Northern Khoisan than to Southern. It is relevant to mention here that although there is available a sizable corpus of vocabulary for Northern Khoisan as well as information about its structure, the Southern Khoisan languages have not been so comprehensively reported.

There is no clear study of the nature of linguistic relationships which obtain in a hunting and gathering situation. The major problem is the uncritical assumption that linguistic

relationships should be considered according to a genetic model in which the language is the unit of comparison rather than an areal model in which each individual feature, structure or morpheme is the basic datum. But the contradiction is that only by using the rigorous approach of genetic relationship can anything be 'proved'; in an areal model one is reduced to resemblances, which can only be subjective. There are areas of the world where hunters and gatherers have recently existed without the impact of social structures as pastoralism or agriculture which can maintain one language over a larger area and with a larger number of speakers than seems to be the case in a hunting and gathering society which typically relies on small bands of people and a low population density. These areas, which include the Paleosiberian languages, Australian languages and South American languages away from the ancient civilisations, will, with the Khoisan languages, be crucial in an understanding of language relationships. Australian languages are potentially the largest laboratory for such a study and the problems involved in their historical study can be glimpsed in Dixon 1980. In a historical linguistics which takes a genetic relationship of languages as a prime, areal relationships are exceptional; in a historical linguistics which takes individual features of language (structures, morphemes and so on) as prime, genetic relationships are not exceptional, but are a special case of areal relationship.

## B THE CONTEXT OF THE DESCRIPTION

### 1 Previous studies

There have been three students of the languages who were interested in it in its totality for various reasons and who have

written on it.

Otto Dempwolff's work was one of pioneering reportage: earlier travellers had noted "daß die Sandawe eine...Sprache besitzen, die merkwürdigerweise Schnalz bedient. Diese Tatsache ist von so großer und anerkannter Wichtigkeit für die Linguistik und Ethnologie Afrikas, daß sie allein die eingehende Beschäftigung gerade...rechtfertigen kann" (Dempwolff 1916 p1). His fieldwork was conducted in 1909 and 1910 and published in one volume in 1916.

At the time of Dempwolff's research visit to Usandawe in 1910, the Roman Catholic missionaries were "noch nicht so weit in der Erforschung der Sprache, daß sie...darin Unterricht erteilen oder in einzelnen Frage wesentlich helfen konnten." (Dempwolff 1916 p3). But the missionary tradition of Sandawe study blossomed in 1954 with the publication of Martin van de Kimmenade's *Essai de grammaire et vocabulaire de la langue Sandawe*, a microfilm of an untidy typescript, with manuscript, and sometimes illegible, alterations and additions.

It was in the early 1960s that the anthropologist Eric ten Raa conducted his main investigation of the Sandawe and acquired a competence in Sandawe and sensitivity to its semantic niceties which pervades his publications. He is even now preparing his grammar of the language and rich lexical data for publication.

These three strands, the pioneer linguistic, the missionary and the anthropological, form the core of Sandawe study.

Two other sources of linguistic information can be identified. The first is the collection of chiefly lexical data as a result of an interest other than primarily linguistic, the publications of early travellers, (Baumann 1894, Nigmann 1909), and of researchers in other disciplines (Swynnerton 1946, Newman 1970) belong here. The second is the work of students of language whose interest in

Sandawe has formed part of a larger area of research. Archie Tucker and Margaret Bryan visited Usandawe in 1965 as part of their work of recording basic data on Eastern African languages. The results were included in Tucker and Bryan, and Woodburn, 1977. B D Copland worked with an informant for a short time and published a brief note on the phonetics, (Copland 1938). This was the first attempt to adapt the IPA system of transcription to the language; it corrected Dempwolff's description in a few respects. Professor Guthrie found time to collect some data, which both Westphal and Tucker used in their early work. The phonetician, Trevor Hill, whilst teaching at Dar es Salaam, produced a handout which could be used with the help of a first speaker of Sandawe as informant, to give practice in the identification of consonant types at different places of articulation, (Hill nd). Gerald Dalgish during his two year contract at Dar es Salaam wrote an article which considered a syntactic point (Dalgish 1979).

Finally, it is appropriate to mention some of those scholars who, although they have never conducted primary research on Sandawe, have used available data to make diachronic statements. Trombetti 1910, which I have been unable to trace, (it is "una nota breve" according to Trombetti 1922/3), is based on the data of Nigman 1909; Trombetti 1922/3, Drexel 1938 and Honken 1977 rely on Dempwolff 1916 as a basis for their comparisons. Overviews of the whole Khoisan field are legion and are to be found in Köhler 1973-74 and 1976 (in German), 1981 (in French) and 1976 (in English), Westphal 1956 and 1971, and Winter 1981b. The classificatory work of Greenberg has been mentioned above.

No previous research on Sandawe has really done justice to tone and vowel length in the language. The two previous researchers, who, as phoneticians, could have probably most quickly have reached an adequate analysis of these factors, Tucker

and Hill, both spent too short a time on the language. I find that my own recordings of tone differ even from those of Tucker and ten Raa.

## 2 The field work

Missing from the above overview of Sandawe studies is the present writer. It would be appropriate that I should place myself among those students of the language whose interest in Sandawe has formed part of a larger area of research, which for me is the relationships between the East African click languages, Southern Cushitic and the Southern African Khoisan languages. Like Hill and Dalgish, I was a teacher in the Department of Foreign Languages and Linguistics at the University of Dar es Salaam. I have written papers for seminars in Dar es Salaam and conferences in Europe, some of which have been published, (Elderkin nd (1982), 1983a, 1983b, 1986). My field work was done between 1974 and 1983, when I was employed at Dar es Salaam

After arriving in Dar es Salaam in 1974, I worked for a very short time with John Songolo, who was then working at the university, but he left to take up a party job and soon moved on from there. I worked for but a little longer with his relative Marcel Songolo, who then found another job. I worked, also for only a few hours, with Rose Duma, then a student at the university, one of Dalgish's informants and the daughter of ten Raa's major assistant, and also with J D G Wagine who was a student in the Department of Foreign Languages and Linguistics, and who also worked with Dalgish. He persuaded his brother in law, Andrew Wenga, to come to Dar to work for me, but he, on a trip upcountry, started a course of treatment for malaria, ran away from the hospital and became mentally incapable. However, through Nd Wagine's good offices, I was introduced to Augustine Mathias Txlargà (tǎ:rìgà), with whom I

worked from November 1979 until September 1983. What is in this work, reflects his competence and his performance, and only those who have worked with an informant will realise to the full the debt I owe to him. During the course of our work, Christopher Paul, then a student at the university, contributed a couple of recorded texts to our work. Nd Augustine was also instrumental in getting stories told by Idi, a skilled narrator, and by Ibrahim Shabaan. I paid but one short visit to Usandawe with Nd Augustine, staying at his parents', in 1982, when recordings were also made.

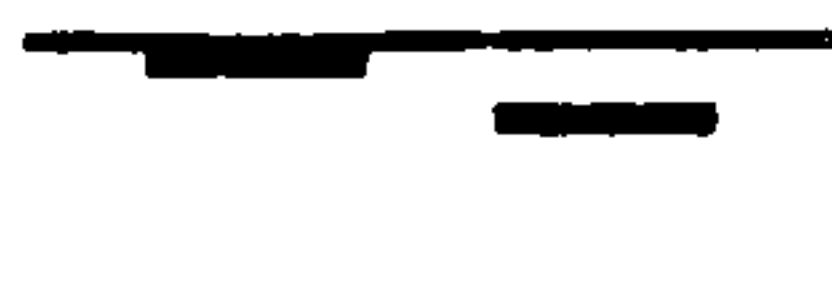
In the initial stages of the investigation, my ear was the main instrument for judging tone. As the investigation proceeded, it was possible to get my main assistant, Nd Augustine, to whistle the pitch on anything he said after he had uttered it; the use of the whistle facilitates judgement as to pitch movements. By then asking him to compare the whistles of different words and sequences of words, the investigator has the chance of tapping the assistant's knowledge of the workings of the pitch system of his language. Two points need to be made about this.

Firstly, the informant's judgement may be made on the basis of features other than identity of pitch. Although whistling precludes any articulatory activity of the lips and in the oral cavity, the glottis is not so restricted. For some time I was puzzled about the judgement that the whistle of  $\text{ḳ}^{\text{h}}\text{?i}$ : 'climbing pole' was different from the whistle for  $\text{ḳ}^{\text{h}}\text{s}^{\text{h}}$ : 'you (pl) will climb'. The whistle which included a ? is deemed to be different from one without it. Throughout the investigation the researcher should try to avoid prejudging the issue for the informant, and this is difficult. He may know what answer he wants and although in the language of elicitation there may be no formal marker of questions which expect the answer yes, and questions which expect the answer no, it is easy to let your informant know what you do expect.



There is another danger and this is the informant's emicising his knowledge. Nd Augustine has no linguistic training, he did not proceed to secondary school after finishing primary school for reasons which, to translate his words, were not preventable. In the early stages of the investigation a possibly prenasalised consonant, e.g. as in hũ̀bù 'cow', made the whistle distinct from that for e.g. bòbà 'mushroom', in his judgement; later these two types were agreed to have the same whistle. For anybody using this technique, I would say that it is necessary to resist the temptation to present to the informant a phonologisation of what he has given you; it would certainly be wrong to try to bully him into accepting your interpretation of his data and might even turn him into a hostile witness. There should also be a third category in addition to his judgement that two whistles are either the same or different, namely that the two are nearly the same or just a little bit different, which still puts on your shoulders the burden of deciding if the distinction is etic or emic.

Two further examples can be given. In the analysis of Sandawe which I use, there are three possible morphological sources for the following pitch pattern.

(1.3)   
KV:KV:

One is <sup>1</sup>KV̌:ǨV̌: with downdrift of the high on the second syllable and the raising of the low mora. The second is <sup>1</sup>KV̌: <sup>2</sup>KV̌:, and the third is <sup>1</sup>KV̌:!<sup>1</sup>KV̌:. When I asked him to judge the identity or dissimilarity of two whistles, Nd Augustine would usually make a decision and not be doubtful. When I first asked him to give a decision about the identity of <sup>1</sup>KV̌:ǨV̌: and either of the other two, his reaction was something like "Why, yes, that's funny, I suppose

they are the same, yes they are." And he has since maintained that decision. But on occasions when this contrast has not been brought into focus and he has whistled the sequence 'KÚ:KŮ: with a plosive as the medial consonant, I have heard

(1.4)



with a little upglide at the beginning. (The meaning of the superscript numerals will be explained in subsection A2 of Chapter III.)

The second example when he was puzzled by a decision was in the word *ç`èrèk'é* 'toothbrush'. I had heard the tone pattern llh on the syllables and for confirmation I chose the word *g`èrèsí* 'large hawk sp.' as a comparison. To his surprise, and to mine, the whistles were not the same. The difference lay in the treatment of the r in *ç`èrèk'é*; it was treated as a sonorant, and there was a continuous whistle from the beginning of the word to the end of the second e whereas *g`èrèsí* had three separate bursts of whistle. I do not know what the phonetic difference between the two occurrences of r was. To this, his reaction was something like "That's odd; I would have thought they would be the same but they're not. Now why should that be?" The last question shows his interest in the language, but it should be left unanswered by the investigator. I did not answer it, passively resisting any tendency to assist the informant in his emicising the data. The unification of the first two syllables of *ç`èrèk'é* into one pulse can I think be explained in several possible ways. Firstly it could be a synchronic reanalysis of *ç`èrèk'é* into two morphs, (*ç`èrè* and *k'é*, for neither of which, in isolation, I was able to find an independent meaning), the unity of *ç`èrè* being indicated by something in the r. *ç`èrè* conforms to the pattern that would be expected from a Central Khoisan

morpheme, as Beach 1938 has described it for Nama. Or a second interpretation could be that it is a rhythmic continuation from the time that the word was bimorphemic. Perhaps it may just have been that Nd Augustine was caught in a slightly different tempo of delivery for that one word. But with no other -VrV sequence did I have this effect before coming to this example and although I deliberately returned to ɕ̀èrèk'é several times at what seemed to be decent intervals, I never heard the same effect again. Nd Augustine had also, from his silence about it, forgotten his initial response to it.

A further instance of the informant's doubt about a decision is to be found in section C of Chapter III; ('ɕ̀í 'nêsi and 'tínêsi).

As well as examples of difficult decisions and of a never repeated decision, there were many times when on difference occasions the informant gave conflicting decisions. These all were when I was pursuing the difference between oral vowels followed by seemingly prenasalised consonants and nasalised vowels followed by consonants. I mention these when dealing with this problem in subsection E2 of Chapter II.

But does this mean that the informant is unreliable? Absolutely not. How do I know what happens when the rhythm speeds up even just slightly? Can I expect an accurate and clear cut decision when the informant is worrying whether the fruit he bought from the central market is going to go rotten before his kinsman in the local market has been able to sell them? Reliability is not the same as accuracy of analysis, any more than performance is the same as competence. And to what lengths of endurance have your questions (about whistles for heaven's sake) subjected even a patient and helpful man, questions even more outrageous than the "plainly idiotic questions" (Traill 1974 p44) which linguists usually ask. Whatever you think, your informant is not wrong, and

whatever you think, you should certainly never show your informant that you think that he is wrong. It's his language after all. You are not setting traps for him. As soon as you turn round and say, "But you didn't say that yesterday", you have set the informant's pride in his accuracy and reliability at risk and have injected another factor which could affect his decisions in the future. The best informants do not remember what they said yesterday; but they may remember what you said to them.

In my written work, I tried not to throw away any paper which was used during my work with an informant, in order to be able to refer back to it if and when necessary, but I fear that some papers are missing; specifically there are two things which are so important that they have been indelibly marked on my mind but for which the written testimony has not yet been unearthed.

The first was an example of ɥ. I had not elicited this sound and the gap had worried me for some time; (there is a gap in the lateral series in Žu/hõasi and in Kxoe). When Augustine Mathias, Christopher Paul and myself were once chatting in my office, I asked Christopher Paul about it. After some thought, he produced a word with an initial ɥ. I can't find where I wrote it down: as I remember it, it was something like ɥùrũbě: and meant something like a scar or a scab. As it is my memory which I rely on for this form, I quote it here rather than in the the next chapter, but I list ɥ in the consonant chart. The second missing evidence is of when I found a suffixed subject pgn, (person, gender and number marker) in a phrase which did not have the highest tone level; this was important in showing that the association of the suffixed subject pgn series and the highest tone was not absolute, and I discuss this in subsection B2 of Chapter III.

### 3 Texts

After the initial vocabulary elicitation, I worked both by syntactic elicitation and by elicitation based on texts. Lexical data was recorded on 5x3 cards and what I believed to be the most reliably recorded of this was also entered in a file which was arranged according to tonal pattern. The language of elicitation was always Swahili. Dalgish, who used English with informants competent in that language, found a present continuous tense in Sandawe which translated the 'be + -ing' of English. This construction seems to me to be merely a use of a common way of conjoining two verbs which happened to fit the 'continuous' tense in the translation process.

In the course of the study some of the recorded texts were transcribed. They were originally recorded, at various speeds, on Uher Report machines belonging to the University of Dar es Salaam, except for Text 4, when a cheap cassette recorder was used and the recording made at the house of Nd Augustine. All the tapes recorded in Dar were openly recorded with the participant's connivance. Some of the tapes made on the trip to Usandawe were, on Nd Augustine's advice, recorded what I have seen referred to elsewhere as semi-surreptitiously, with the Uher hidden in a basketwork pouch I carried and the microphone protruding from a hole in the basket but covered by a loin cloth. When this was used on the walk, as it was for the Regina text, the predominant aural impression is of the tramp of feet in sand. The quality of these recordings was accordingly poor, but they are real conversation.

Most texts were later re-recorded sentence by sentence with Nd Augustine repeating the words he heard on the tape followed by his whistled rendering of the text. Occasionally this process involved a little editing on his part, and he was not always able to recover all of the conversation when some of the participants were

at a distance.

(1.5)	Approx. length in mins	Title/Occasion
1		(Texts other than oral)
2	3½	The Hare and the Spider (Marcel Songolo)
3	6	The Hare and the Hyena (Augustine Mathias)
4	7½	The Hare and the Monitor Lizard (Idi)
5	44	Recordings made in Usandawe
6	9½	Conversations, Christopher Paul and Augustine Mathias
7	13½	Ibrahim Shaaban, story and conversation with Augustine Mathias

During the course of the field work a transcription was evolved which was used to write these texts.

#### 4 The transcription

It is really immaterial what symbols are used provided that they allow at least the phonetic data to be unambiguously represented. This may seem a truism, but there is one classic instance of ambiguity in Sandawe studies. In Tucker 1967, you will find, in the bold Roman which indicates the transcription of an approved authority, the future 1Sg form of a Sandawe verb

(1.6) meenas? 'I'll like it'

I listened to this many times from a Sandawe speaker, wondering at

the phonetic acuity which heard a glottal stop where I could perceive none, however hard I tried. Then I realised that there was no [ʔ]. In that article, Tucker acknowledges use of material on Sandawe supplied by ten Raa. Now, looking at ten Raa's work, you will find that he uses an apostrophe not only to mark the glottal efflux of a click, an ejective consonant and the glottal stop, but also in the English (and Dutch) usage to indicate a vowel that isn't there, or, more precisely, in a Sandawe context, a voiceless vowel; for example

(1.7) kolos' 'red laterite soil'

And so, in the word we are considering, the apostrophe which was intended to mark a vowel that wasn't there, was interpreted as a consonant that was there. I transcribe the word mə̀:nà̀sì. But there is a further irony in this example, because next to the future 1Sg suffix -sʔ, the subjunctive 1Sg suffix -e is listed; but this suffix is -eʔ̀, with a glottal stop!

I prefer to use the symbols of the IPA (IPA 1949 and 1979); in one instance I follow Beach 1938, and, unlike Beach or the IPA, I use, for tone marking, the accents of Africanist tradition, which derive from the tone markings given to Ancient Greek by the Alexandrian scholars; they have the advantage, when dealing with abstractions, of not being so iconic as the IPA. But IPA symbols do have the disadvantage of presupposing a linear analysis, despite the fact that some data is better handled using a framework in which linear sequence is not a prime, as the analysis of Žu/'hõasi morph structure in subsection C2 of Chapter V indicates.

Each unit of the transcription is represented by a symbol. A consonant unit is represented by a symbol which may be a symbol of the IPA or a ligature formed from such symbols, or any of these

with a diacritic. The transcription of consonants is put together from:

- (1.8) Symbols: f s t x h ʔ p t k b d g m n ŋ w r l j ɟ ɰ c ɓ  
Ligatures: ts tʃ tl dʒ  
Diacritics: ˈ ˆ . ˘ ˜

I follow Beach 1938 in physically joining the diacritic <sub>˘</sub> to the symbol with which it is associated, giving ɰ and ɓ.

The seemingly prenasalised consonants are written with small superscript and prefixed symbols for the appropriate place of articulation. I reserve a superscript <sup>ˠ</sup> for what I believe to be true prenasalised consonants (as in Elderkin 1976).

It was decided to use a diacritic for both the aspirated and the voiceless (unaspirated) series in order to avoid the situation in fieldwork where a symbol without a diacritic may have been thought to be an instance of a forgotten diacritic. (This precaution did not eliminate all mistakes.) With the click series, there is the additional consideration; I preferred to avoid the invidious, and I believe meaningless, decision of which was the unmarked click to leave diacriticless. There does not seem to be any good reason for saying that for example ɰ is the unmarked instance of the click ɰ in Sandawe any more than there is for saying that ṭ is the unmarked form of an alveolar plosive.

Nasalisation, length and voicelessness use the IPA symbols. As there are five vowels, the usual Roman symbols are used.

The IPA symbol for labialisation has been adapted and used for labiovelarisation. When drawing diagrams of the pitch patterns on syllables it was convenient to get all syllables of approximately the same written length and I therefore decided to write the initial labiovelarisation as a subscript: for example, both ɰ<sub>ɓ</sub> and khwà are



the same length phonetically, so the latter was written as k<sup>h</sup>à to give it less length in print. This transcription has been retained here.

In addition to IPA symbols and those described above, the following symbols are used:

- (1.9) [˘] denotes a segment of very short duration
- [˙] the preceding plosive has no audible release
- [ɔ̤] a period of voicing with the articulatory posture of the following consonant

An orthography is not an analysis, although it presupposes one. Such an analysis may not be ultimately valid, or the best, but may have been decided on as being the analysis which allows the most convenient orthography. The justification of any analysis relies not on the way in which it is arrived at, but on the way it relates to the data. An analysis presupposes a segmentation.

A working transcription such as that used here is a specialised orthography for linguistic purposes. It is only as phonetic as it need be. The phonetic data is assumed to be a consistent style. The structures of syntax have to relate to the phonetic data. Languages also have certain patterns in their use of sound which also have to relate to the phonetic data; within this type of structure there will be such things as a syllable type of unit, perhaps a phonological word, perhaps intonation patterns. In the process of relating the structures of syntax and the patterns of sound to the phonetic data, their derivations merge. I would prefer to call these two derivations the morphology and the phonology respectively, but the latter is more usually considered to be not the phonology but the structure of the phonetic syllable. The point of merger, which I have elsewhere called the pre-phonetic level,

(Elderkin 1976), is what a working transcription best relates to. The working transcription used here stands in an unambiguous relationship to the pre-phonetic level of representation. For any one consistent style, any further rules of phonetic detail which apply after this point do not alter the analysis in terms of phonological words, syllables or syllable components. When a phonetic transcription is used, I mark this with square brackets. Otherwise any quotation of forms in Sandawe can be assumed to be in the working transcription.

## 5 Morphology and Syntax

This work does not deal in detail with the morphology and syntax of Sandawe, but, of necessity, refers to this part of the language. Where reference to the syntax and morphology is required, there is an explanation in the text, especially in Chapters III and V. However, it will be useful at this point to have an outline of some of the relevant morphology and syntax, both to serve as a context for the phonetic and phonological study which follows, and for the reader's reference.

### Morphemes

Sandawe has two sets of bound morphemes which agree with nominals in person, gender and number; they can be referred to as pgn morphemes. They are bound in the sense that they must appear as part of a phonological word; they cannot appear as phonological words in isolation. In (1.10), two sets, here called the Suffixed Subject pgn and the Nominal pgn, are given. The suffixed subject pgn can be combined with the conjunction pu to form what ten Raa has called the narrative conjunction. The nominal pgn has slightly

different forms according to whether it appears with high tone or low tone. All these forms are given, together with the forms which serve as free standing pronouns.

(1.10)

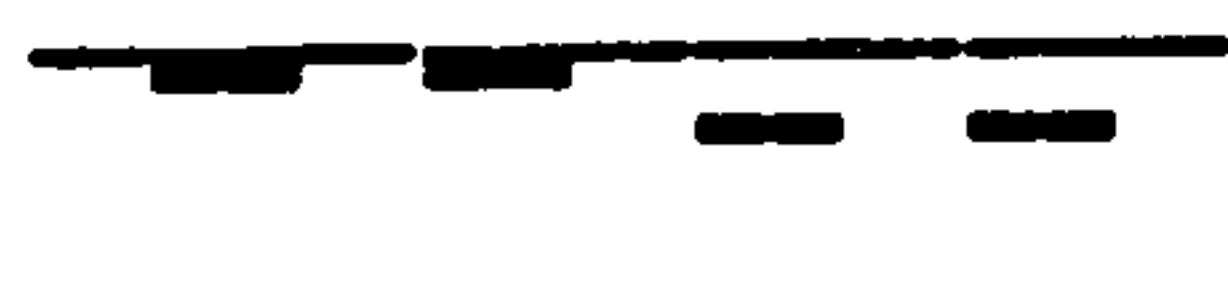
	Suffixed subject pgn	Narrative conjunction	Nominal pgn		Free standing pronoun
			high	low	
1Sg	sì	sí:	sé	sì	ṭí
2Sg	ì	pí	pó	pò	hàpú
3mSg	à	pá:/ká:	é:	Ø/m/ù/è	hèwé
3fSg	sà	sá:/sá:	é:sú/sú	sù	hèsú
1Pl	ò	pó:	sú:	sù:	sú:
2Pl	è	pé:	sí:	sì:	sí:
3Pl	ʔà	ʔá:	só	sò	hèsó

The imperative has a different pgn series.

(1.11) 2Sg kò  
2Pl kè

The noun phrase

Between coordinate words within a noun phrase there is no downdrift. When two nouns appear in the associative construction, the second noun is realised on a lower pitch than the first.

(1.12)   
sá'dá só'bá  
Sanda's fish

A NP can be suffixed by a morpheme which enters the phonological structure of the last word in that NP. Such a suffix helps specify its syntactic status. Among these morphemes are those in (1.13).

- (1.13)
- |    |           |
|----|-----------|
| nà | goal      |
| ṭà | locative  |
| ṭì | locative  |
| ṭì | privative |

### Clauses

There are two major classes of clause which are here called the basic clause and the nominal clause.

Within the basic clause, the favoured sequence of constituents is Temporal, Subject, Object, Verb, (TSOV). One of these constituents is marked in the sense that it has a morpheme suffixed to it; the marked constituent has some sort of semantic prominence as a point of information. If the subject is marked, the suffixed morpheme is the nominative morpheme -á: . If any other constituent is marked, the morpheme which is suffixed is of the suffixed subject pgn series, and it agrees with the subject.

(1.14) Marked subject

ʔúṭè	sáḏá:	sóḃá	tí:mé
ʔúṭè	sáḏá	á:	sóḃá tí:mé
yesterday	Sanda	NOM	fish catch

Marked object

ʔúṭè	sáḏá	sóḃá	sà	tí:mé
ʔúṭè	sáḏá	sóḃá	sà	tí:mé
yesterday	Sanda	fish	3fSg	catch

The nominal clause consists of two NPs in juxtaposition and has a copular function. As there is no verb, there is no subject; the NPs are labeled NP<sub>1</sub> and NP<sub>2</sub>. Typically, when possible, the NP<sub>2</sub> carries a pgn morpheme from the nominal series.

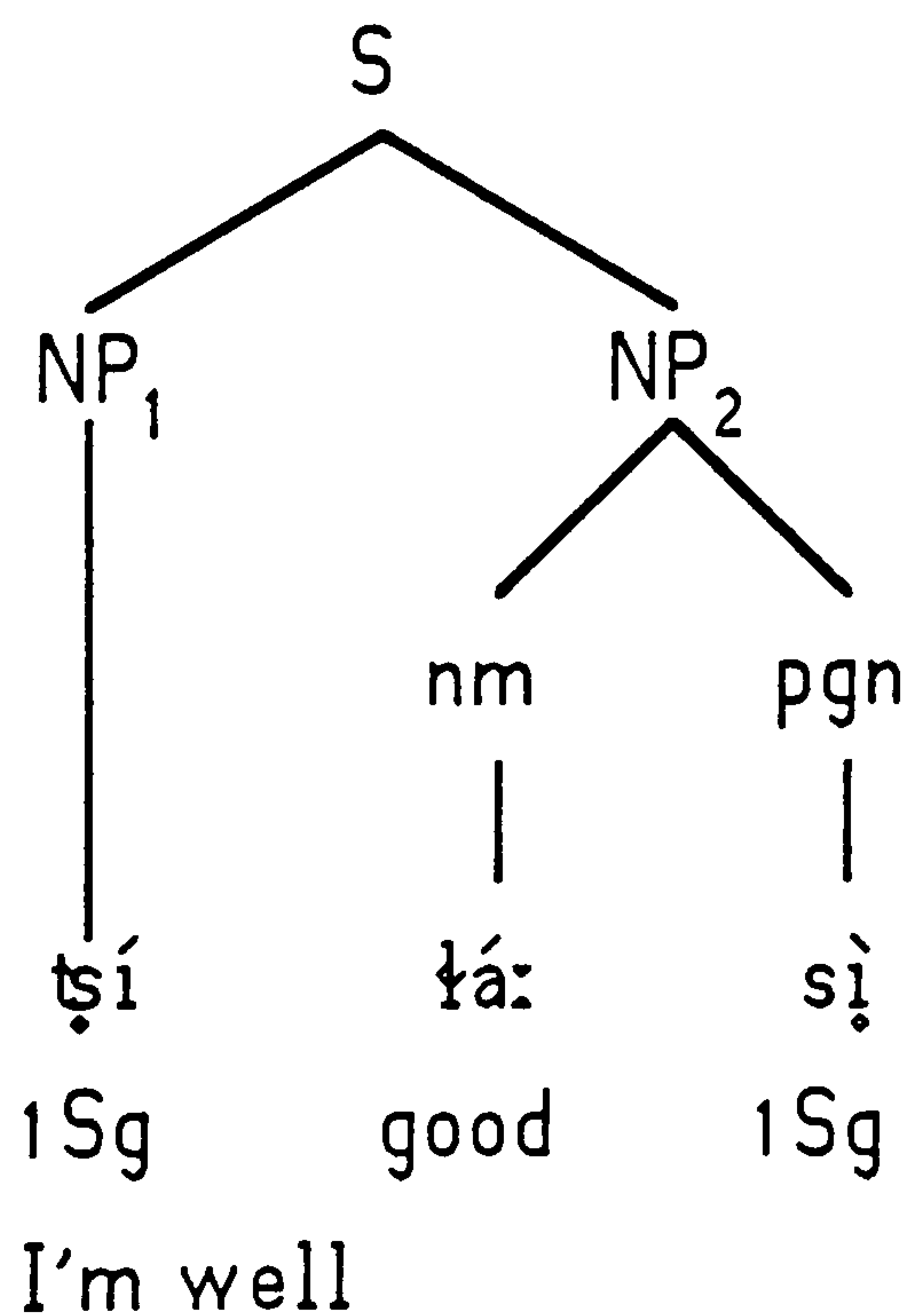
(1.15)      ɬí ɬá:sì  
                  NP<sub>1</sub> NP<sub>2</sub>  
                  ɬí ɬá: s̀ì  
                  1Sg good 1Sg  
                  I'm well

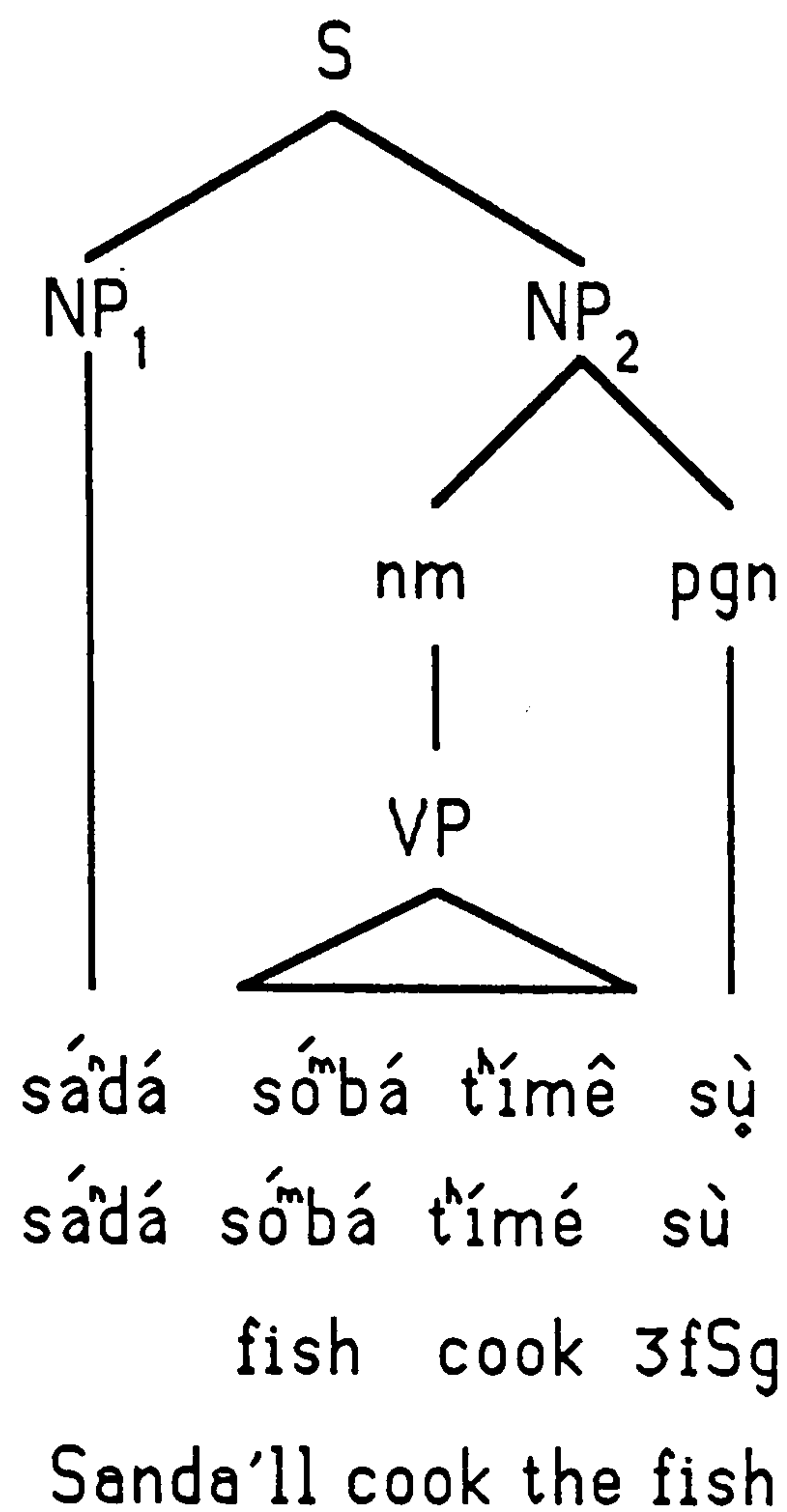
A nominal clause is negated by the suffixation of 'ts'é to the NP<sub>2</sub>.

The nominal clause is the basis for other clause types which include a verb. The way in which this is achieved is by having a VP in the place of the nominal morpheme (nm) in NP<sub>2</sub>.

The first of these clause types is here called the irrealis; it frequently serves as a future tense. A simplification of its structure is shown in (1.16), the structure of (1.15) is also given.

(1.16)





It is because of this structuring that the Nominal pgn, which properly only appears suffixed to nominals, appears to be suffixed to a verb. The irrealis clause uses the low toned Nominal pgn, which is here always preceded by a low toned mora.

The second clause type derived from the nominal clause uses the suffix -sí. sí is a nominalising morpheme found suffixed to nominals and to VPs. It is followed by the low toned Nominal pgn.

(1.17)      máṭósisì  
                  máṭó sí sì  
                  gourd sí 1Sg  
                  I've a gourd

                 gélé só'bá t'ímésè  
                  gélé só'bá t'ímé sí è  
                  Gele fish cook sí 3mSg  
                  Gele knows how to cook fish

The structure which serves as the negative of the basic clause is also a nominal sentence. The verb carries the privative suffix  $\text{t}^{\text{h}}\text{i}$  which is followed by a high toned nominal pgn.

(1.18)                     $\text{ɿi}^{\text{h}}\text{t}^{\text{h}}\text{i}^{\text{h}}\text{p}^{\text{h}}\text{o}$   
                              you didn't come

Further morphological and syntactic data is given, as the exposition of the phonetics and phonology demands, in Chapters II and III.

## 6 Intention

The previous section has indicated that neither morphology nor syntax is treated here in depth, this thesis considers phonetic and phonological phenomena. More specifically, it considers them in the intention of being a contribution to the study of Khoisan languages. It does not seek to compare the phenomena of Sandawe with similar or dissimilar phenomena outside of the Khoisan languages. Neither is it an attempt to take one set of theoretical assumptions and show how the data support, modify or refute these. Although it is impossible to embark upon a study of a language without any preconceptions or prejudices, I have tried to let the data, and not a theory, determine the analysis.

## Chapter II WORDS

### A THE SYLLABLE

This chapter deals with consonantal and vocalic phenomena and the pitch that is associated with them. The difference between consonants and vowels is derived from a functional distinction and not a phonetic one. This chapter assumes that the sound of any language has a structure in terms of sound without any reference to any structure in terms of meaning. The unit of structure which explains the cooccurrence of the ultimate constituents of the sound is the syllable. In this chapter, syllables are assumed to exist; the idea of the syllable is discussed in Chapter IV. "The syllable is usually the isolate in which shape is most clearly dominant." (Hill 1966 p208). The only place in Sandawe in which a consonant is found is initial in the syllable, and other phonetically consonantal things (all nasal) which are found other than in syllable initial position are differently analysed. A syllable in Sandawe must have a vowel, but there are some word initial nasal consonantal phenomena which seem to be extrasyllabic.



## B CONSONANTS

The label consonant is reserved for a segment whose major realisation is found in syllable initial position. A word initial syllable will begin with a consonant, but in other positions in a word, syllables without consonant may be found.

### 1 Consonants with a velaric airstream

The velaric airstream is used ingressively; it is used at three places of articulation.

c is apical and alveolar and has an instantaneous release. ɟ and ɓ have a closure on the inside of the teeth and adjacent gums, as well as on the back of, and immediately behind, the front teeth, are laminal and have an affricated release, ɟ at the centre of the closure and ɓ at the side; the release for ɓ is quite far back, as Tucker and Bryan 1977 also note, and this holds for all plosives with lateral release. Each of these places of articulation is found with five different accompaniments; (Traill 1985 introduces this term to replace the earlier 'efflux') These are differentiated by the state of the glottis, the timing of the onset of voicing and the position of the velum, as displayed in (2.1).

In none of the clicks is there any clear audible plosive release of the closure between the back of the tongue and the velum; ɕ is [ɕX]. I use [ɕ] (after Snyman 1975) to indicate the vibration of the vocal cords with the remainder of the vocal tract in the place of articulation for the following consonant. The glottal closure for ɕ' is made at the same time as the release of the closure made with the tongue and is therefore not auditorily prominent. Immediately

(2.1)	voice onset relative to click release	glottal state before beginning of vowel	velic passage
	X <sup>ʔ</sup> after	closed	?
	X <sup>h</sup> after	open	closed
	X̣ simultaneous	open	closed
	X̣ before	open	closed
	X̣ before	open	open

(2.2)	alveolar	central	lateral
	ɕě:	ɟě:	ɮě:
	laugh	cut	enter
	ɟ̥ě:	ɕ̥ó:	ɮ̥ó:
	narrow	get	pick up
	ɟ̥ě:	ɕ̥ó:	ɮ̥â
	dirt	fall (pl)	shake
	ɟ̥ě:	ɕâ	ɮâ
	eye	full moon	plant
	ɟ̥ě:	ɕék'é	
	slope	fruit sp	
	ɟâ	ɕúmé	ɮúmé
	tell lie	worry	stand

before the release of the closure made by the front part of the tongue, the velum is lowered and a short [ŋ] is heard if a vowel

precedes. When a vowel does not precede, I did not hear any escape of air through the nose, such as Traill and Ladefoged 1984 report for Nama; however on no occasion did I specifically set out to listen for it, and so the specification of the state of the velic passage for these glottalised clicks should remain queried. Such a [ŋ] is not heard with  $\text{X}^h$ ,  $\text{X}^h$ , or  $\text{X}^h$ . This [ŋ] is discussed in subsection C4 of Chapter V. These five types of click accompaniment are referred to as glottalised, aspirated, voiceless, voiced and nasal. The collocation 'nasal click' is shorthand for 'nasal plus click'.

The examples in (2.2) have illustrated the clicks.

## 2 Consonants with a glottalic airstream

The glottalic airstream is egressive and it is used at three places of articulation.

(2.3)	central	lateral	velar
	$\text{ts}^h\text{é}:$	$\text{tʃ}^h\text{é}:$	$\text{k}^h\text{é}:$
	drink	mourning	cry

The tongue positions and place of plosion for  $\text{ts}^h$  and  $\text{tʃ}^h$  are those for  $\text{t}$  and  $\text{ɟ}$  respectively; that for  $\text{k}^h$  is that for an unexceptional velar. Whereas the release of the oral closure of  $\text{ts}^h$  and  $\text{tʃ}^h$  is affricated, the release of  $\text{k}^h$  shows no trace of affrication. The release of the glottal closure always audibly follows the release of the oral closure. There are no other consonants produced involving a glottalic airstream, neither with prevoicing nor prenasalisation nor using an ingressive airstream.

### 3 Consonants with a pulmonic airstream

The pulmonic airstream is always egressive. These consonants will be treated in groups according to their phonetic characteristics, in the sequence plosives, fricatives, nasals, tap, and approximants.

Plosives have a stricture of complete closure in the oral cavity and a velic closure. The glottal stop is described before the other stops

A glottal stop is usually immediately followed by a vocalic segment which begins as soon as practicable after the plosion, (this segment may be either voiced or voiceless; see subsection C 1 of this Chapter). There is one exception to this and that is the clause final particle  $\text{ì?}$  which is usually heard as  $[\text{j}ʔ]$ , that is with no audible release. This last seems therefore best taken as phonologically anomalous.

The remaining stops are found at one of five places of articulation.

(2.4)	labial	alveolar	central	lateral	velar
	$\text{pě:}$	$\text{tê}$	$\text{ʈí}$	$\text{t}^{\text{h}}\text{â}$	$\text{kě:}$
	put	another	I	bark (n)	put

The labial plosives are bilabial. The alveolar plosives are apical. The places of articulation which have been labelled central and lateral both have a laminal closure against the alveolar ridge. Both have a fricative release making them affricates. For the central series this friction is between the front of the tongue and the hard palate and the tongue is a little humped giving friction over a wide area, but Ibrahim Shaaban used an articulation in which friction was more below than behind the alveolar ridge,  $[\text{ʈ}]$  with alveolar

and not denti-alveolar friction. For the lateral series I did not ascertain precisely either the position of the body of the tongue nor the position of the lateral release of the stop but I believe it to be quite far back. I do not think that from my informants I heard any velar plosion such as Copland 1938 reports hearing for  $\text{t}^{\text{v}}$ : "ðə pɔɪnt əv plouzn ɪz ðə vi:ləm, nɒt ðə tʌŋ saɪdz əz ɪn ən ɔ:dnrɪ lætərəl". The velar plosive has no affrication. Although, in principle, a  $k^{\text{h}}$  cannot avoid a fleeting [x], in practice only the general cavity friction is predominant.

Stops are always produced with a closed velic passage and one of the open states of the glottis. There are three distinctive voice onset times used with stops in the language and these correspond to those used with clicks which have an open glottis and a closed velic passage.

(2.5)	voice onset	glottal state	
	relative to	before beginning	
	plosive release	of vowel	velic passage
	$p^{\text{h}}$	after	open closed
	$p$	simultaneous	open closed
	$b$	before	open closed

The simultaneous voice onset begins only shortly after it does for an English initial voiced plosive. My English voiced plosives are interpreted by Nd Augustine as belonging to the Sandawe voiceless plosive series. The timing of the voice onset means that  $\text{t}^{\text{v}}$  is phonetically more like [tʒ]. The articulation of  $\text{d}^{\text{v}}$  has noticeably more friction than has  $\text{t}^{\text{v}}$  which rarely does have any, but all of the three stops in the central series have equal amounts of friction. Copland 1938 notes lack of affrication equally with  $\text{d}^{\text{v}}$  as well as

with t̥.

All fricatives are voiceless in Sandawe with the occasional exception of an unassimilated loan, for example, zòlí'zò 'shower', (for which there is the alternative form ɖòlí'ɖò, where the foreign z has been nativised to ɖ), and lîvù 'holiday'. The voiceless labiodental fricative is uncommon. s shares with ts' alone of the central series a grooved alveolar articulation. x is velar and rarely has any uvular scrape associated with it. h between vowels within a word has a good average value and initially can be little more than a slightly rough vowel onset, if anything.

There are two nasals functioning in syllable initial position, a bilabial and an alveolar, m and n. At other places in the syllable sounds with an open velic passage are heard and these are treated in subsection E2 of this chapter.

r is a voiced tap [ɾ] and is not lateralised at all.

There are three vocalic segments used as consonants, w, j and l.

These consonants are displayed in the following chart.

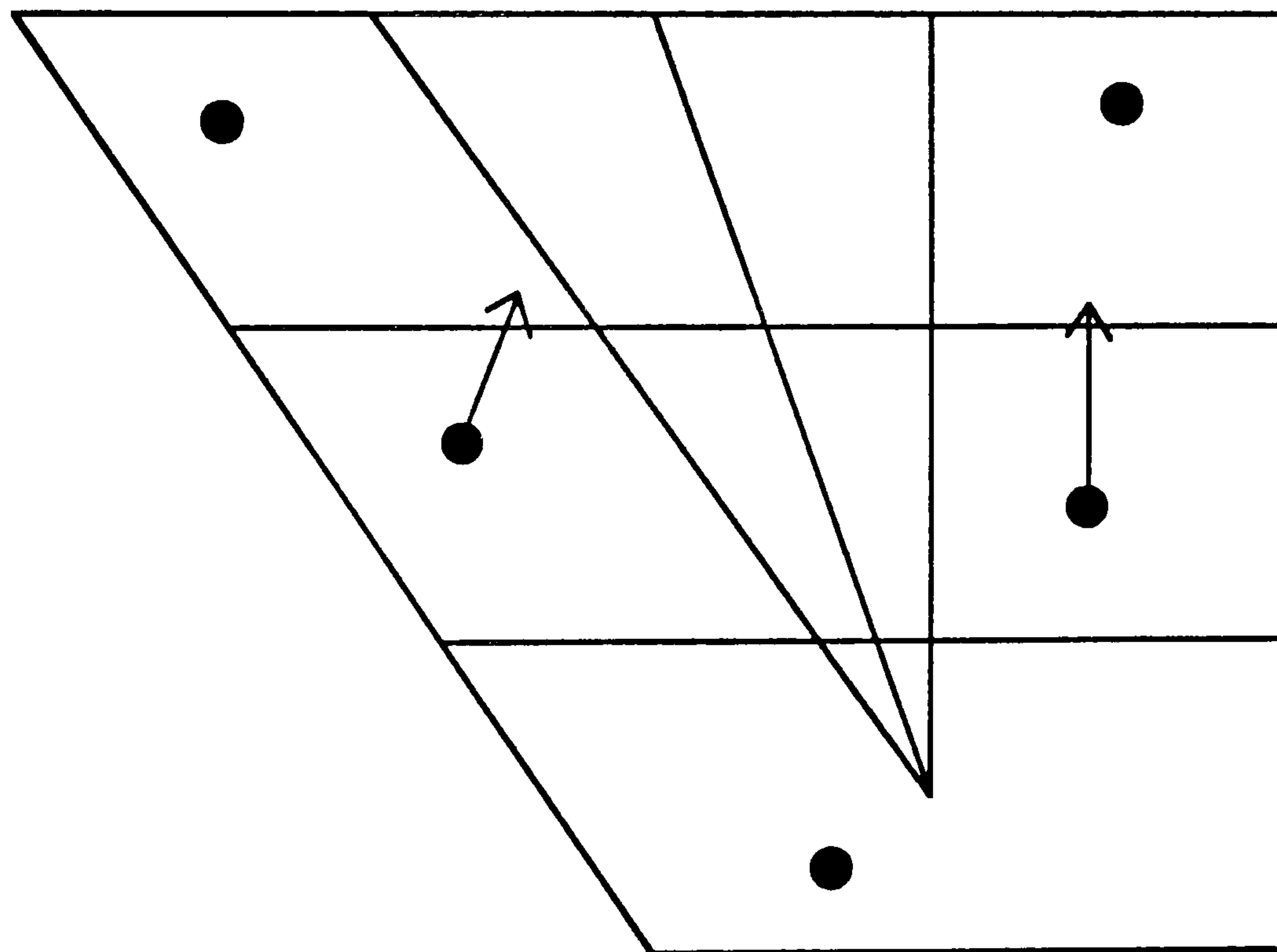
(2.6)	clicks			nonclicks					
fricative				f	s	ʃ	x	h	
glottalised	c̣'	ṭ'	ɖ'			ts'	tʃ'	k'	ʔ
aspirated	c <sup>h</sup>	t <sup>h</sup>	ɖ <sup>h</sup>	p <sup>h</sup>	t <sup>h</sup>	ts <sup>h</sup>		k <sup>h</sup>	
voiceless	ç	t̥	ɖ̥	p̥	t̥	tʃ̥	t̥ʃ̥	k̥	
voiced	ç	ṭ	ɖ̣	b	d	ɖ	ɖʒ	g	
nasal	ɱ	ɲ	ɳ	m	n				
sonorant				w	r	j	l		

## C VOCALIC SEGMENTS

### 1 Vowels

There are five distinctive vowel qualities, i, e, a, o and u. These appear either short or long; vowel length is symbolised by a following :. Copland 1938 places the vowels as displayed on the following vowel trapezium, and I agree with the approximate areas he has selected for the vowels. The arrows accompanying the mid vowels are not explained, and I assume it refers to variation. I hear realisations towards the closer position indicated by these arrows.

(2.7)



Some vowels are not accompanied by a vibration of the vocal cords. This has not been noted after all consonants, for example not after w or j, nor after h. These gaps are probably systemic. h is usually not found except in word initial position and a voiceless vowel must have been preceded by a syllable with a voiced vowel;

though there might be a loan in which h found itself initial in a syllable with a voiceless vowel, I prefer to doubt that it would occur. The absence of voiceless vowels after w and j is complemented by the use of w and j as syllable closures which is described below in subsection E1 of this chapter. Examples after clicks are rare, (I only have pícì 'turn'), but their rarity is probably a function of the distribution of clicks in morpheme structure (generally morpheme initial), and the typical position of the incidence of voiceless vowels, (generally morpheme final). After all consonants except ? there is a two way opposition between [ì] and [ù].

- (2.8)      ɿîsì 'I'll come'  
             ɿîsù 'she'll come'

These vowels are voiceless and not whispered; there is but minimal and accidental glottal friction and general cavity friction. After ?, the release takes the quality of the vowel preceding it, but it can also be affected by the quality of the following consonant, especially w; in the transcription a vowel quality symbol is not used, the release is implied from the tone mark and from the voiceless symbol below the line.

- (2.9)      ɿí?já:sì 'I'll do them'

Voiceless vowels have approximately the same duration as voiced vowels but of necessity no pitch; in pitch diagrams, such as are used later, their presence is therefore indicated by using the musical symbol for a quaver rest, (2.10).

- (2.10)       $\overline{\underset{-}{\gamma}}$



Phonetically, sometimes, a voiceless vowel is realised as a long consonant, so:

- (2.11)  $\frac{\text{ɥ} \text{ -}}{\text{[tʰa:s::a]}}$   
 tʰǎ:sìsà  
 she died
- $\frac{\text{ - } \gamma}{\text{[ts'ak:se]}}$   
 ts'àkùsé  
 scrape

A syllable with a voiceless vowel and an initial fricative is more likely to be realised by a long consonant than is one with an initial plosive. One one occasion, I have heard the sequence KɥV simplified to KV: this was in the the borrowed name, ʔìɲǎ:sìà, which was heard as ʔìɲǎ:sà. The palatal nasal clearly indicates its loan status.

## 2 Labiovelarisation

Some syllables which have i, e or a as a vowel also have their first part distinctively labiovelarised. This is symbolised by  $\omega$ . It is evident that both  $\omega$  and w could be united in a traditional phonemic analysis; in the present transcription w is a consonant. It is not practicable to take this labiovelarisation as a vowel, say as u or o, because there are cooccurrence restrictions between  $\omega$  and consonants which are not valid for u and consonants; specifically, labial consonants do not cooccur with  $\omega$ , but freely cooccur with back rounded vowels, as in hàpú 'you (Sg)'. To take  $\omega$  as a vowel

would introduce vowels of intrinsically one mora only. And a final reason against identifying  $\underset{\omega}{\text{w}}$  and  $\underset{\omega}{\text{w}}$ , is that  $\underset{\omega}{\text{w}}$  entails some predictive power over the consonant in the next syllable, but  $\underset{\omega}{\text{w}}$  never has this.

- (2.12)       $\underset{\omega}{\text{ɔ}}\check{\text{e}}:$  'break off'  
               $\underset{\omega}{\text{ɔ}}\check{\text{e}}:$  'enter'  
               $\underset{\omega}{\text{ɔ}}\check{\text{e}}:$  'skin (v)'  
               $\underset{\omega}{\text{ɔ}}\check{\text{e}}:$  'try'  
               $\underset{\omega}{\text{t}}\check{\text{a}}:$  'gather'  
               $\underset{\omega}{\text{t}}\check{\text{a}}:$  'open'

## D THE MORA

### 1 Oral vowels

It is not possible to consider the remainder of the phenomena which occur within a syllable without referring to tonal properties. The exposition will only treat of syllables with oral vowels; the situation with nasalised vowels and syllable closures will be considered when these are treated.

Monosyllabic monomorphemic forms in isolation show the following pitch patterns. All the examples are verbs.

(2.13)											
	<hr style="border: 0.5px solid black;"/>										
	<table style="margin: auto; border: none;"> <tr> <td style="text-align: center; padding: 0 1em;">ʔi</td> <td style="text-align: center; padding: 0 1em;">ʔi</td> <td style="text-align: center; padding: 0 1em;">kʰa</td> <td style="text-align: center; padding: 0 1em;">kʰe:</td> <td style="text-align: center; padding: 0 1em;">ɔe:</td> </tr> <tr> <td style="text-align: center; padding: 0 1em;">come</td> <td style="text-align: center; padding: 0 1em;">delay</td> <td style="text-align: center; padding: 0 1em;">return</td> <td style="text-align: center; padding: 0 1em;">cry</td> <td style="text-align: center; padding: 0 1em;">enter</td> </tr> </table>	ʔi	ʔi	kʰa	kʰe:	ɔe:	come	delay	return	cry	enter
ʔi	ʔi	kʰa	kʰe:	ɔe:							
come	delay	return	cry	enter							

These pitches are not unanalysable contour tones; this can be demonstrated by suffixing -sa which indicates a 3fSg subject to a basic clause. It is found either on a lowish level pitch or on a pitch which starts quite high and then falls. The level pitch is found after the two pitches in (2.14).

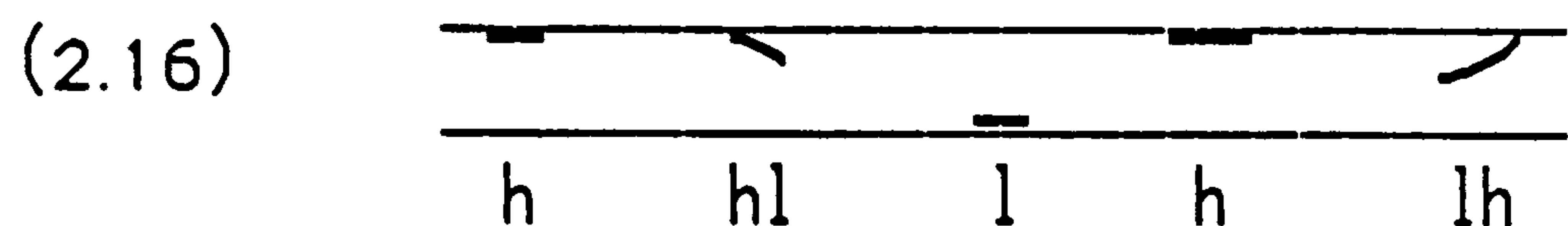
(2.14)	
	<hr style="border: 0.5px solid black;"/>

and the falling pitch is found after those pitches in (2.15).

(2.15)	
	<hr style="border: 0.5px solid black;"/>

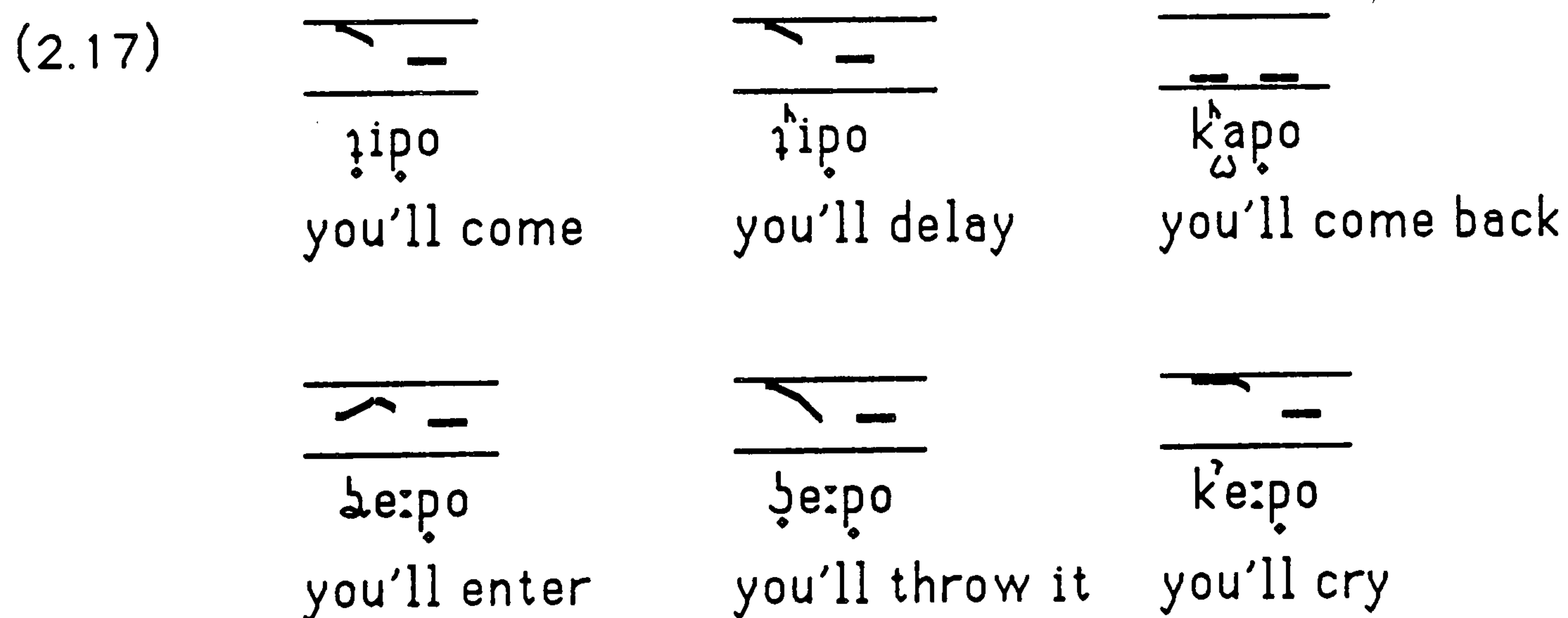
The second set of pitches finishes high and the first set finishes

lower. An analysis should incorporate this generalisation. How many tones are involved? What is the relationship between tone and length? Two tones levels, high and low, would be enough to explain the pitch pattern above in the following way.



The first three are associated with a short vowel and the remainder with a long vowel. Length correlates with pitch (falling and low level have a short vowel and rising a high one) except in the case of high level pitches which occur both with short and with long vowels.




But if another set of forms is added, it will be seen that it is not enough merely to associate a sequence of a h and a l with a long syllable: there are two falling pitches possible on a long syllable. The forms are those created by the suffixation of the morpheme -po to these verbs. -po marks the 2Sg form of the verb in the irrealis form, which also serves as a future.



A high tone is not permitted in front of this -po, ɿipo, 'you'll come', and ɿipo, 'you'll delay', both have the same pitch pattern. I therefore take the short vowel of ɿi as having two tone bearing

units, two morae, as does ɿi. In isolation, ɿi has two high toned morae, ɿi has a high toned mora followed by a low toned mora. The suffixation of -po in the irrealis has the property of replacing the immediately preceding high toned morae by a low toned one.

The fall on k'e:po is not identical to that on ɿe:po (where the stem is ɿe- and the length expresses the presence of an object: there is no unanalysable stem with an oral vowel and with this pitch pattern, but there are unanalysable nasalised stems, for example, ɿã:po, 'you'll see', which has the same pitch pattern as ɿe:po). If a short vowel has two morae, a long vowel might well have more. Three would be enough to differentiate the two falling pitches.

(2.18)			
	ɿe:po	k'e:po	ɿe:po
	hll	hhl	lhl
	you'll throw	you'll cry	you'll go in

This is quite pleasing as the duration of a long vowel is about half as much again as a short vowel. This analysis is adopted here.

## 2 Transcription

Up to this point pitch has been indicated by a diagram above the word. Now that tones have been analysed into the language, they can be written. On each vowel, long or short, each mora has to be specified. To avoid visually specifying each mora, the following convention is used. The first mora of a syllable is given a tone mark; subsequent morae in the syllable are marked only if they carry a tone other than one identical to the tone carried by the immediately preceding mora. This is shown in (2.19).

(2.19)	ɿ́	implies	ɿ́
	k'è:		k'è:
	ɿ̂		ɿ̂
	ɿ̂:		ɿ̂:
	k'è:		k'è:

With this basic information on tone within a word, it is possible to consider the analysis of vowels and nasality.

## E THE END OF THE SYLLABLE

The main part of this section will be devoted to a consideration of nasality in Sandawe; but first the idea of a syllable final component, which follows the vowel, is substantiated.

### 1 Closures

At the present moment only *j* and *w* will be considered.

A long falling pitch is found when  $\dot{\text{ɔ}}\text{í}$  and  $\dot{\text{ɔ}}\hat{\text{ɪ}}$  are suffixed in the basic clause with a 2Sg suffixed subject morpheme  $|\text{i}|$ :



(2.20)       $\frac{\text{---}}{\dot{\text{ɔ}}\text{i}:\text{:}}$        $\frac{\text{---}}{\dot{\text{ɔ}}\hat{\text{i}}\text{:}}$   
                  you came      you delayed

These have the same duration as the falling pitches found in:


(2.21)       $\frac{\text{---}}{\text{k}'\text{e}:\text{p}\text{ò}}$        $\frac{\text{---}}{\text{ɔ}\hat{\text{e}}:\text{p}\text{ò}}$

and have the pitch contour of the second. The lengthening of the vowel, with a low mora on the extra length has the same influence as  $\text{p}\text{ò}$ : a preceding high mora is lowered; and so both of the examples given,  $\dot{\text{ɔ}}\text{i}:\text{:}$  and  $\dot{\text{ɔ}}\hat{\text{i}}\text{:}$ , have the same pitch pattern although the stems ( $\dot{\text{ɔ}}\text{í}$  and  $\dot{\text{ɔ}}\hat{\text{ɪ}}$ ) have different patterns.

These 2Sg forms have long vowels. When the same suffix is added to a falling short vowel other than *i* the result is a diphthong which has a pitch pattern identical to that on a hll long vowel.


(2.22)    
 t'uj xâj  
 you came out you...badly

I have found no example of a short monosyllabic stem with two high mora and a vowel other than i, so I cannot say what the pitch pattern would be, but the situation with longer morphemes would suggest that hll would be expected. ʔisá, for example, gives:


(2.23)   
 ʔisaj  
 ʔisâj  
 you stole

When a suffixed j gives a pitch pattern identical to that on a long vowel, I consider that a diphthong has been formed.

When j is added to a long high toned vowel, the following pitch pattern results:

(2.24)   
 k'ej



This is longer than the first syllable of k'é:ɸò. But it is not as long as the sequence in (2.25).



(2.25)   
 k'era  
 he cried

In this word, the a has the characteristics of a syllable: the pitch pattern is, with the exception of the absence of the consonant s,



that for k'é:sà; e and o are also found under the same conditions as a, as is shown in (2.26).

(2.26)   
  
 k'e:o  
 we cried

  
  
 k'o:ze  
 you (pl) sucked



The earlier examples show that j can follow a short vowel to produce a diphthong which has a pitch pattern that is identical to the pattern of a long vowel. After a long vowel in, for example, k'é:j, the j is a syllable final phenomenon. This analysis has of course already been presupposed by the use of j rather than i in the transcription.

(2.27) k'é:j is one syllable with hhhl;  
 k'é:à is two syllables.

As a syllable closure, j is usually one of two very common grammatical morphemes on a low tone; it has the duration of one mora.

In ɬòj, 'noise', (where the pitch pattern is that of ɬèw, discussed below in the next section,) the j does not seem to be a separate morpheme. The only example with a diphthong on a rising tone is ɬǎjʔ.tè 'on the other side of', where the occurrence of nasalisation and a diphthong is a hapax legomenon in a single morpheme. It is discussed in subsection B2 of Chapter IV. I now return to considering closures.



w is found in syllable final position, but rarely.

(2.28)   
  
lá:w  
good



(2.29) has the same pitch pattern as (2.28).

(2.29) k'é:j  
you cried



In lá:w, the w is a grammatical morpheme, (3mSg), as in

(2.30)   
  
hě:w  
he

which has the same tones as

(2.31)   
  
lə:j  
you (Sg) went in


Other occurrences of w as a syllable closure are within a morpheme.

(2.32)   
  
kêwɬò  
wild pig

seems to have the same pitch pattern as

(2.33)     ɿâ:pò  
               you'll see

although there is some doubt about this. If so, it is only in this word that I have recorded w closing a syllable with this pitch pattern, and therefore forming a diphthong.

(2.34)       
               ɿew  
               buffalo

seems to be llh and again is one of two words in which I have recorded w closing a syllable with that pitch pattern. The pitch pattern is neither that for pùé 'pound' nor that for ɿě: 'enter'. The suffixation of á: gives ɿèwá: and of à gives ɿèwâ: ; in neither of these two forms does the syllable ɿè carry any rising pitch.


ɿów 'finish' seems to be hhl, but Nd Augustine's reaction shows that the pitch pattern is not exactly identical to that of k'è:pò. This I would attribute to the different analysis, the w here seems to have, after a short vowel, an effect similar to that of j and w after a long vowel, that is, of what I am here calling a syllable closure; but k'è: is a long vowel.

## 2 Nasal consonants and nasalisation.


In this section the sounds of Sandawe which are produced with an opening of the velic passage are reviewed. The situation is complex and constitutes the most difficult part of a phonological analysis of Sandawe. The phonetic difference between nasalisation and a nasal consonant is clear. A nasal consonant implies a complete closure in the oral tract, air escaping only through the nose. Nasalisation

has air being released through the nose and mouth simultaneously. In practice the timing of the moment of the opening of the velic passage is variable, or rather not often exactly synchronised with other things that it might be expected, or piously hoped, to be synchronised with. The occasions on which the velic passage is open in Sandawe are discussed below.

Accidental nasality has been mentioned above and it is as well to dismiss this first. Any vowel followed by a glottalised click has a short period of nasalisation towards the end which finishes as the velar nasal [ŋ].

(2.35)   
 [maãŋɿ'a]  
 louse

Many earlier transcriptions of Sandawe record this as a nasal consonant. There is still a distinction between an oral vowel preceding a glottalised click and a nasalised vowel in the same environment.

(2.36)   
 ɿã:ɿã:  
 'hatch'

When Nd Augustine separated ʃòʃá 'baboon' into syllables, admittedly a potentially unnatural thing to ask him to do, the first vowel was given as oral.

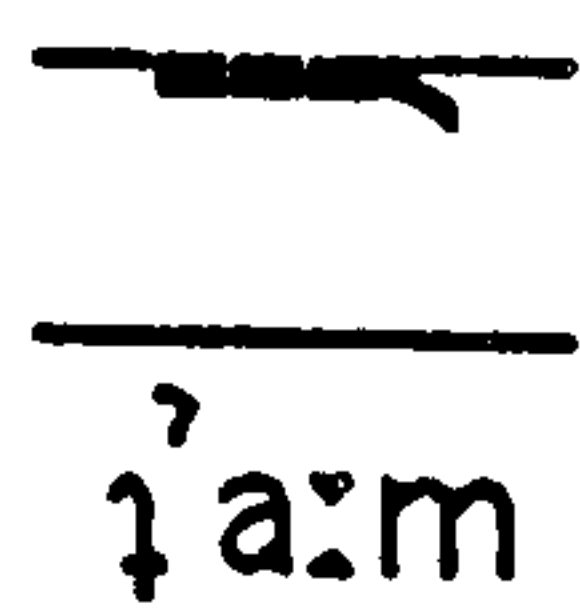
This accidental nasality also appears in other click languages in Eastern and Southern Africa and it will be treated in the context of a historical interpretation in Chapter V.

As for nasals in syllable initial position, there are only two

of these, m and n, as has been mentioned above in subsection B3 above. m is not found with labiovelarisation, but this is because no labial cooccurs with labiovelarisation; n also does not cooccur with labiovelarisation, but it is a relatively infrequent consonant and I do not know if that is an accidental gap or the result of a systematic prohibition of nasal consonants and labiovelarisation.

Nasal click is a convenient label for an influx preceded and accompanied, (but not followed), by an [ŋ] which, before the release of the click influx, is coarticulated with a nasal homorganic to the place of articulation of the click. In the systematisation of consonants given above in B4 above, they pattern with nasal consonants, but this should not obscure the differences. The nasal pulmonic consonants are not plosives; but the nasal clicks are plosives. As are pulmonic plosives and fricatives, the nasal clicks are able to appear with  $\omega$ . It would not be appropriate to consider them as prenasalised segments because they are very frequent in word initial position: the incidence of segments which seem to be prenasalised in word initial position is extremely limited indeed. It is in medial position, where clicks are rare, that most segments which seem to be prenasalised occur. It is also not appropriate to consider them as prenasalised because phonetically they are not prenasalised. Khoisan languages do not have prenasalised clicks; prenasalised clicks are exoticisms which have arisen when Bantu languages attempt to make clicks conform to their phonological structure.  $^{\text{N}}\text{ɰ}$  has a period of unnasalised voicelessness and  $^{\text{N}}\text{ɰ}$  has a period of unnasalised voicing during the release of the influx. Rycroft 1981 describes prenasalisation in Swazi. Prenasalisation is discussed further below later in this subsection.

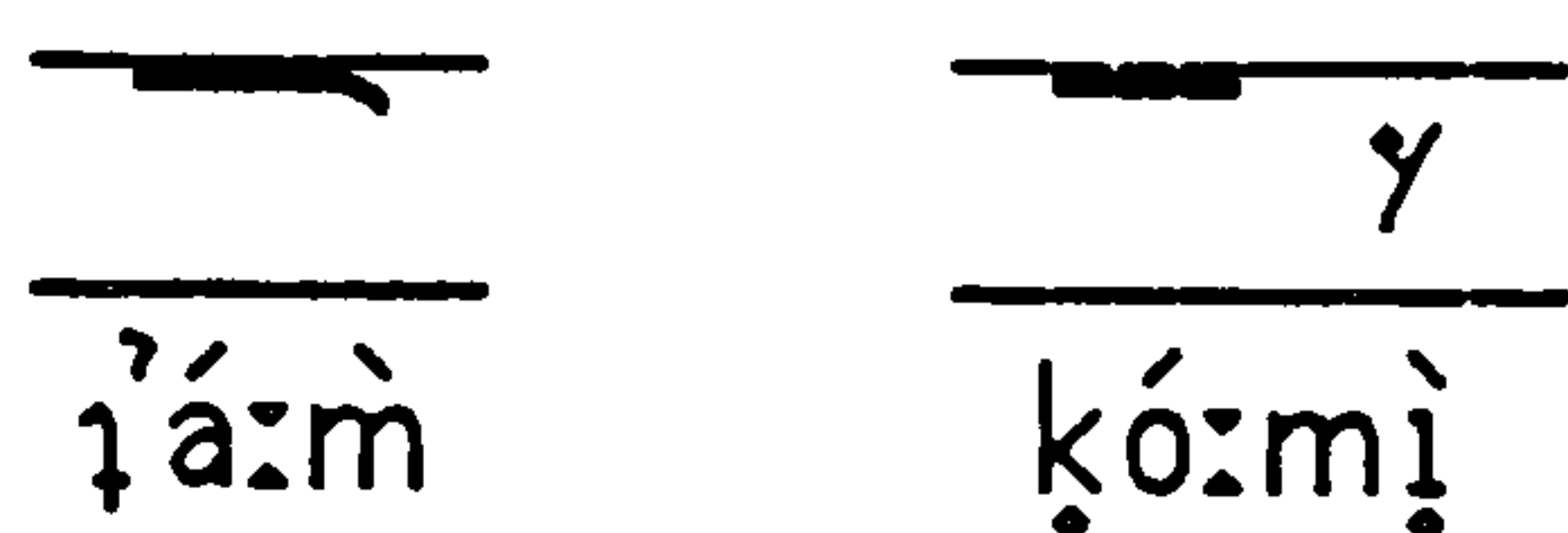
Nasals can also be used as closures to the syllable. The pitch pattern on (2.37) is the same as that on (2.38).

(2.37)   
 ɨ́á:m  
 old, tatty (3mSg)

(2.38) ɨ́á:w̃  
 good (3mSg)

Therefore m has to be taken as a third possible type of closure to a syllable.

It is important to note that as a syllable closure, m̃ is associated with no audible release of the closure. This is clear when the pair:

(2.39)   
 ɨ́á:m̃      kó:m̃  
 old      ten

is considered. With kó:m̃ there is hardly any fall in pitch at the end, (none has been shown on the pitch diagram), and the voiced section of m is shorter than the duration of m̃ in ɨ́á:m̃.

The fall in pitch with ɨ́á:m̃ is amply marked to justify its analysis as a mora, even if it were not for the parallel with j and w. With kó:m̃, the lips part after the m and the air escapes from the mouth with the tongue and lips in the position for i, but without the vocal cords vibrating; there is no audible or significant release in ɨ́á:m̃. m̃ in ɨ́á:m̃ has a partly suffixal nature. m̃ can also be found as an initial part of a suffix, in -m̃sé, 'have in mind'.

(2.40) k̃ám̃sé:s̃ì 'I want to go back'

ʒ̃ám̃sé:s̃ì 'I thought it was a warthog'

But the  $m̐$  is part of a lexical morpheme in both words in (2.41).

- (2.41)      $k̐el̐em̐ta$   
              type of dance  
               $t̐ims̐a$   
              she swallowed

$t̐ims̐a$  has the same pitch pattern as  $t̐ow̐sa$ , 'she finished'.

Voiceless vowels can be found following nasals. An example of  $m̐$  has been given in the previous section. No example has been found of  $n$  being used as a closure.  $n̐$  has been found in positions similar to those in which  $m̐$  occurs.

- (2.42)      $\overline{\gamma}$   
               $\overline{t̐un̐is̐a}$   
              she's matured  
               $\overline{\gamma}$   
               $\overline{t̐un̐ip̐o}$   
              you haven't matured  
               $\overline{\gamma}$   
               $\overline{ʔaʔan̐i}$   
              monitor lizard

The preference is for a release of the closure although sometimes it has been heard as an  $[ŋ]$ .

- (2.43)      $[t̐un̐is̐a]$   
              she's matured

There is probably a progression:

- (2.44) \*mù > \*mụ̀ > \*mṃ > ṃ  
 \*nì > \*nị̀ > [ṇ]  
 \*mì > \*mị̀  
 nù

The two which have progressed farthest towards becoming closures have done so because the relatedness between their vowels and their consonants have fostered the fusion.

Up to this point, I have discussed accidental nasality, the use of nasals and nasal clicks as consonants and of nasals as syllable closures. It is next necessary to discuss vowels followed by [ŋ], and then to discuss what look like prenasalised consonants.

In isolation, the following pitches are found with monosyllabic monomorphemic forms ending in [ŋ].

- (2.45)
- |       |     |            |            |       |
|-------|-----|------------|------------|-------|
|       |     |            |            |       |
| [ɿẽŋ] | ɿãŋ | ts'õŋ      | dõŋ        | ɿãŋ   |
| slope | see | rhinoceros | mkola tree | ahead |

The vowels are usually nasalised from the beginning. The first four forms have pitches identical to the following sequences of high and low mora as they appear with oral vowels:

- (2.46)
- |       |          |       |             |
|-------|----------|-------|-------------|
|       |          |       |             |
| hhh   | hll      | lhh   | lll         |
| ts'á: | ɿî:      | ɕě:   | k'â:        |
| pot   | you came | laugh | he returned |

The monosyllabic monomorphemic word forms with [ŋ] are only found with long, trimoric syllables. In composition with other morphemes, it is possible to find grammatical morphemes of this



form, for example, [sũŋ], '2Pl', (which, as a nominal pgn suffix, can appear either with all high or all low morae), of a short duration in a more rapid speech delivery. When this happens, nasalisation alone, without the velar nasal, is the auditory impression gained. When the forms heard in isolation with a final [ŋ] are followed by a suffix, the nasalisation is present but any nasal consonant present is homorganic to the suffix initial consonant and shorter than the duration of [ŋ] is the isolated forms.

- (2.47)      [hã:m̃po                      ɿã:ñsa]  
                  'you will gape'      'you will see'  
                  ( ~ is used to indicate a very short consonant.)

I specifically listened to these forms to see if any velar coarticulation could be detected with the epenthetic nasal, but I did not think I could hear any. Furthermore, although in isolation these forms with [ŋ] can be heard, so too are forms with merely a nasalised vowel as other researchers have noted. Tucker and Bryan in their Part I (Sandawe) of Tucker, Bryan and Woodburn 1977 write that "vowels in the neighbourhood of nasal consonants and h are often nasalised ... but there are enough unexplained cases to warrant recognition". There they quote both ɿ'ũ and ɿ'ũŋ 'arm', and on p306 some further examples, but for two of his three "unexplained cases" I had also recorded phonetically forms with [ŋ] final. The only example they give (p302) of nasalisation near h is hí|á 'to fasten', but this is híɿá where any nasality is due entirely to the presence of a glottalised click, (accidental nasality).

I recognise these vowels (in 2.45) as phonologically nasalised and transcribe them so.

- (2.48)      ɿé:                      ɿâ:                      ɿ'õ:                      dõ:

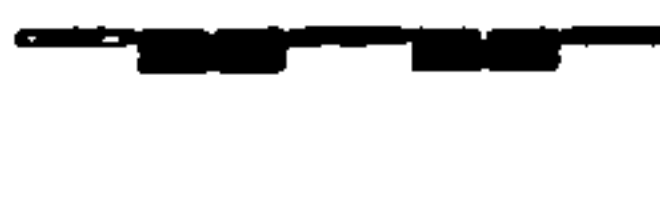

The fifth member of the set, [t̥ãŋ], is dealt with below. The analysis as nasalised vowels does not associate the nasality with the velarity which is seen not only in the forms in isolation with [ŋ], but also in the fact that if a suffix with an initial vowel is added, an epenthetic g is inserted.

(2.49)      [t̥ã:ŋgì]  
               he will see

A rule would produce a nasal at the end of such forms, homorganic to a following consonant, or a velar nasal before silence, a word boundary or a vowel. A further rule would produce [ŋg] from such an ŋ before a vowel.

Before the end of this subsection, I shall discuss the tonal properties of [t̥ãŋ], but the route to it is a long one and involves the matter of prenasalised consonants. I will start by considering their occurrences after short vowels.

Prenasalised consonants are familiar from a large number of languages both within Africa and beyond. In many Bantu languages they can be taken as unitary phonological units appearing both medially and initially. Sandawe has borrowed lexical items from Bantu language which have prenasalised consonants, and from other languages, (Southern Cushitic is identifiable as one), which allow sequences of nasal plus plosive. There are many examples in Sandawe after short vowels:

(2.50)		
	<u>[soŋba]</u>	<u>[haŋbe]</u>
	fish	formerly

Within a morpheme any nasal segment, other than a closure,

preceding an obstruent is always homorganic to it if the obstruent is physically capable of allowing this. Are these to be considered prenasalised consonants in Sandawe or are they best considered sequences of two units?

If there is a series of prenasalised consonants in Sandawe, it has a restricted distribution. In Swahili, for example, prenasalised consonants can appear at any position within a word, initially or medially; in Sandawe their appearance in word initial position is so infrequent as to be suspect. They appear in  ${}^m\text{b}\hat{o}$ , 'speech, say', which has the alternative  ${}^n\text{b}\hat{o}$ , although this fuller form is rarely found in the transcribed corpus. Once, for  $\text{ɕ}\grave{\text{a}}\text{ɕ}\acute{\text{u}}\text{k}\grave{\text{u}}$ , 'to carry a child on the back' in elicitation I recorded  ${}^n\text{ɕ}\grave{\text{a}}\text{ɕ}\acute{\text{u}}\text{k}\grave{\text{u}}$ . But despite this numerical infrequency,  ${}^m\text{b}\hat{o}$  is an extremely common word in texts.

Nor can one necessarily plead defective distribution as an argument against prenasalised plosives. Prenasalised consonants appear in Sinhalese, but they are never found at the beginning of words, and medially they are in that language clearly distinct from heterosyllabic sequences of nasal and plosive. Khoisan languages have clicks in morpheme initial position, but not morpheme internal position, and such examples of defective distribution can be multiplied.

What seem to be prenasalised consonants appear also after long vowels. It is here that the problem arises. Does Sandawe distinguish between  $\check{V}:C$  and  $V^N:C$ ? In the field, working with Nd Augustine, I tried several times to answer this question. I always failed. Although I thought I detected differences in Nd Augustine's pronunciation, I did not get a consistent response to  $\check{V}:C$  and  $V^N:C$  as I thought I was distinguishing them. For example both  $[\text{k}\check{\text{u}}:\text{g}\grave{\text{u}}]$  and  $[\text{k}\check{\text{u}}^N:\text{g}\grave{\text{u}}]$  'small pot' were equally accepted by Nd Augustine when I produced them, and he was usually very demanding in the standards he expected from me when we focused on such detailed phonetic

investigation. I was often not confident enough in my hearing to make a decision from his pronunciation.

In one sense, there ought to be a difference; that is, in an etymological sense. Assuming that we know what the word genetic means as used to refer to language relationships and then assuming both that Sandawe is genetically a Khoisan language and that clicks are only to be attributed to Khoisan languages, we are not surprised, because of what we know about Khoisan languages, that the first vowel in:

(2.51)      çú:çè  
                 kidney

is nasalised throughout; there is sometimes, but not always, a short period of prenasalisation before the second ç.

But Sandawe has borrowed from languages which have sequences of vowel plus nasal obstruent.

(2.52)	tò'gò 'deserted house site'	cf Swahili <i>kitongoji</i> 'small settlement'
	dá:da 'different'	cf Common Bantu *-dànd- (*-dàànd-) 'follow' (Guthrie 1971)
	k'ábà 'male'	cf Southern Cushitic forms and Hadza

Specific sources are not identified for Bantu forms as I do not yet know from which languages Sandawe has borrowed these roots.

It is clear that Sandawe likes to nativise loan words: take for example those in (2.53).

(2.53)	ɣî: 'snot'	cf Proto Southern Cushitic (Ehret 1980) *ɣimp- 'to have a runny nose'
	gõ: 'circumcision drum'	cf Common Bantu (Guthrie 1967-71) *-gòmà 'drum'
	rô: 'voice' and	cf Common Bantu (Guthrie 1967-71)
	dô: 'lip'	*-dòmò 'lip, mouth'

As has been shown above, Sandawe has long nasalised vowels which will end before a consonant in a following syllable in a short nasal consonant homorganic to that consonant. Historically, Sandawe did not have prenasalised consonants. It does not seem to be a great leap to imagine that a sequence of a long vowel and a prenasalised consonant should be interpreted as a nasalised vowel followed by a consonant.

Looking at a language from a historical viewpoint and attempting an internal reconstruction is imperative before embarking on a comparative study. But as language can be seen as moving from one state of complete regularity to another, there is always the possibility that that reconstruction of the former stage of complete regularity turns out to be a projection towards the future state. In my analysis of the Žu/'hõasi data of Snyman 1975 given in Chapter V I am aware of the possibility that subsuming many realisations under the label 'narrowing' might be just such a projection. Here, I now believe that the transcription of Sandawe which I used in Elderkin 1982 which equated  $\tilde{V}:C$  and  $V^N:C$ , and wrote both with a tilde was just such a projection and wrong. It was an admission of defeat.

A further point of relevance is in the structure of Sandawe

itself. There are two suffixes ,  $\acute{\text{ɛ}}$  (connective) and  $\grave{\text{ɛ}}$  (deictic). When either of these is suffixed to an oral vowel, the whole vowel is nasalised; whatever the origin of these suffixes, (and they seem to be Khoisan), they are well established in the language. They show how synchronically what might be taken as a suffix involving nasality, nasalises a preceding vowel:

(2.54)       $\text{t}'\hat{\text{a}}$                $\text{t}'\hat{\text{a}}:$  (also [ $\text{t}'\hat{\text{a}}\eta$ ])  
                  water              the water

Away from the field, I considered the evidence of tape recordings which has been made. Among them were a short list of about a dozen forms which included  $\check{\text{V}}:\text{C}$  and  $\check{\text{V}}^{\text{N}}:\text{C}$ , and a longer set of 36 sentences which Nd Augustine had requested me to record for him and to transcribe. These recordings alone seemed to be of an adequate quality to use. However, my impressions were such that no definite decision could be made. It appeared that the nasality which is associated with  $\text{X}$  and with  $\text{X}'$  did not spread so readily into the previous vowel. On the other hand, before  $\text{m}$  and  $\text{n}$  it seemed to me that there was nasalisation of the previous vowel; this despite the fact that there is the possibility of choosing either a nasal or an oral vowel in some places, before a  $\text{m}$ . However, the only example of  $\text{m}$  was  $\text{ɔ}'\text{um}\text{s}\acute{\text{u}}$  with an initial nasal click. With the suffixes  $\acute{\text{ɛ}}$  and  $\grave{\text{ɛ}}$ , there was nasalisation at the beginning of the whole vowel in the majority of cases. A short vowel with nasality usually seemed to be quite oral at the beginning, though not always: with the obviously foreign name,  $\text{s}\hat{\text{i}}\text{z}\grave{\text{a}}$ , I heard, on different occasions, both an oral and a nasal beginning to the  $\text{i}$ . But in  $\text{s}\hat{\text{i}}\text{z}\grave{\text{a}}\text{s}\acute{\text{i}}\text{g}\grave{\text{a}}?$ , 'you (pl) and Sinza, declarative' where  $\text{s}\hat{\text{i}}$  is shortened from  $\text{s}\hat{\text{i}}:$ , its vowel was nasalised throughout. The majority of long vowels with nasality were nasal throughout, but not all; the most

annoying impression was that on the two occasions the stem ɿâ: 'see' appeared, I heard it starting off as oral. This stem usually, in my observation, has a nasalised vowel.

Suffice it to say that I am not the only researcher to have this problem in deciding whether nasalised vowels or sequences of oral vowel plus nasal consonant are to be recorded. Ten Raa 1966 p393 quotes both "tã or taŋ" for the surface form of the morpheme considered in section j below. Tucker and Bryan, in Tucker, Bryan and Woodburn 1977, were also none too sure what was happening, as the quotation above indicates.

I think the best statement that can be given at the present state of my knowledge is this. Vowels can be nasalised or oral. Oral vowels exist which are followed by a short period of homorganic nasality before the following consonant. Nasalised vowels will usually, but not significantly, have a short period of homorganic nasality before a following consonant. Nasalised vowels are here written with a tilde and the significant short period of homorganic nasality is written with a superscript symbol.

But within the language there is a tendency for an oral vowel and the short period of significant homorganic nasality to fall together with a nasalised vowel; this I interpret as a process in the nativisation of loanwords. This tendency is operative in long vowels, because the native part of Sandawe only has long nasalised vowels (except where shortened vowels occur in word formation); it may be relevant that the stem ɿâ:, 'see', when shortened before the ʔ̀wà suffix, then loses its nasality: ɿâʔ̀wá: 'see them'; other, less common verbs retain nasalisation when word composition requires a short vowel. For long vowels, I shall write a nasal vowel or an oral vowel followed by a short period of significant homorganic nasality according to the way in which my impressions in the field led me to record them; I am aware that some of the

decisions may be infelicitous, and that some may have been influenced by etymological considerations. For short vowels I would only write a nasalised vowel when they are reductions from a long nasalised vowel; at all other times I would use a superscript nasal symbol on an oral vowel.

I have now written about nasalised vowels and prenasalised consonants. I have admitted that I was baffled by what I heard. I allowed a distinction between a nasalised vowel and an oral vowel followed by a short nasal which is homorganic to a following plosive. Assuming that this distinction is paralleled by a different analysis in terms of syllable structure, the question arises whether the short period of significant homorganic nasality after an oral vowel belongs to the same syllable as that vowel, or whether it belongs to the following syllable. If it belongs to the following syllable, an analysis as part of a syllable initial prenasalised consonant is possible. Before answering this question, there are two other types of nasality which have to be investigated. These are nasality on a short vowel before  $\text{ʔ}$  and the nasality found in  $[\text{t}^{\text{h}}\text{ãŋ}]$ . It is at the point when  $[\text{t}^{\text{h}}\text{ãŋ}]$  is discussed that our attention can revert to pitch phenomena.

$\text{ʔ}$  and  $h$  are the only consonants in Sandawe to which a nasal cannot be homorganic. Within a word, nasality is never found before  $h$ , which is very rare in non initial position. When some sort of nasality is associated with a short vowel followed by  $\text{ʔ}$ , two things are possible, as is shown in (2.55). The voiced part of each of the syllables before  $\text{ʔ}$  is of the same duration and is short. The first example shows that nasalisation is contrastive. If the nasal segment  $[m]$  is a syllable closure of the same nature as that described in the previous section as a syllable closure, then the vowel is of one mora duration. The only other place where a vowel of one mora duration might be posited is in those short syllables



- (2.55)  $\frac{\text{--- } \gamma \text{ ---}}{\text{ʔ'óʔ`mà}}$   
 lower part of face
- $\frac{\text{--- } \gamma \text{ ---}}{[\text{ʔ'õʔ`se:}]}$   
 talk nonsense
- $[\text{ʔ'om̃ʔ`se:}]$   
 talk a lot of nonsense

with labiovelarisation where the labiovelarisation might be taken as one segment of one mora duration and the following vowel be taken of one mora duration. But there are good reasons why this should not be done; they are stated in subsection B2 of Chapter IV. Even if it were possible to have a vowel specification of only one mora duration, to extend the existence of such vowels to account for  $[\text{ʔ'om̃ʔ`se:}]$  might be rendered suspect by the very narrowness of the environment in which it occurs, specifically before  $\text{ʔ`}$ . And there are other examples of a syllable final nasality, not homorganic to the initial consonant in the following syllable, for which another analysis seems preferable and possible. My impression in the field was that this nasal was shorter than that in say  $\text{xòmésé}$  'sip', and I wrote it with a superscript  $\text{̃}$ , as I do now. Where this  $\text{̃}$  appears between a vowel and a  $\text{ʔ}$ , the morphological analysis usually shows that the vowel and the m are heteromorphemic; where no synchronic analysis seems possible, the form nevertheless seems likely to be historically complex. For example, related to the form

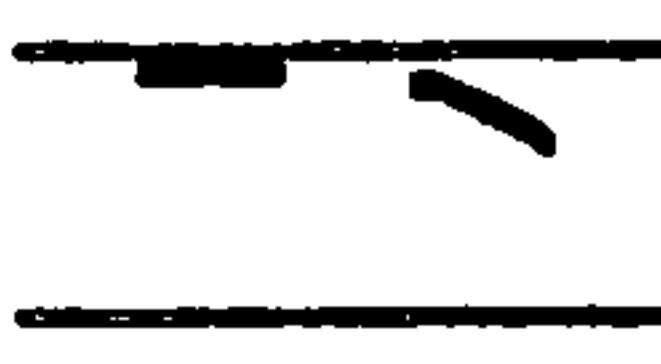

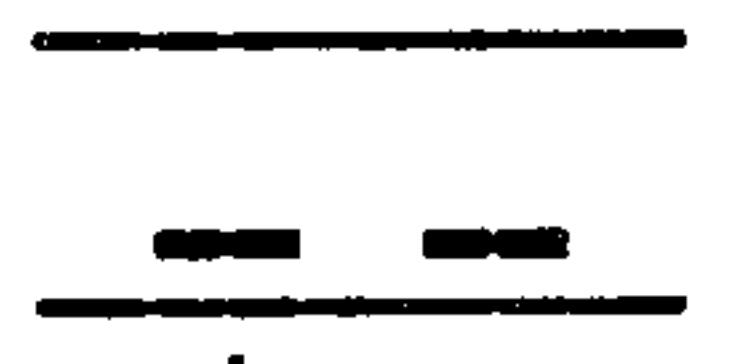

- (2.56)  $\text{ʔ'õʔ`sé}$  'to talk nonsense'


in (2.56), there is no morpheme  $\text{*ʔ'o}$ , or anything similar, which

could serve as the stem. But nasalisation of the vowel before ? is not so constrained: kũ?á 'hollow in tree' is unanalysable; regrettably, this word is the only example of V? other than the seemingly analysable verb forms. Long vowels appear nasalised before ? and there has been no example yet of the nasalised vowel and the ? belonging to the same morpheme. ʔ has not been found following a long vowel.

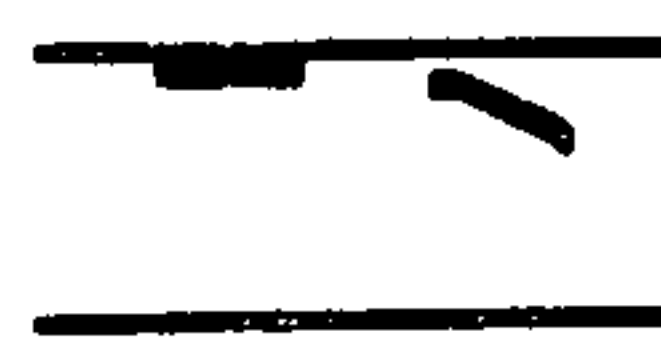

ʔ is the first example so far of syllable final nasality which is not homorganic with the initial consonant of the following syllable. There are other examples, but before they can be given, a further interlude on tone is needed, concentrating on the low toned syllable.

The 3fSg suffix, agreeing with the subject, or the only indication of its person gender and number, is found on two pitch patterns, a falling pitch or a level pitch.


(2.57)				
	ʔisa	ʔe:sa	kʰasa	ʔã:sa
	she came	she arrived	she returned	she saw

Either  is an allotone of two low morae after a high mora, or it is a high falling tone, hl. If it is the latter, it means that -sa is associated with two tonal patterns depending of the preceding mora.

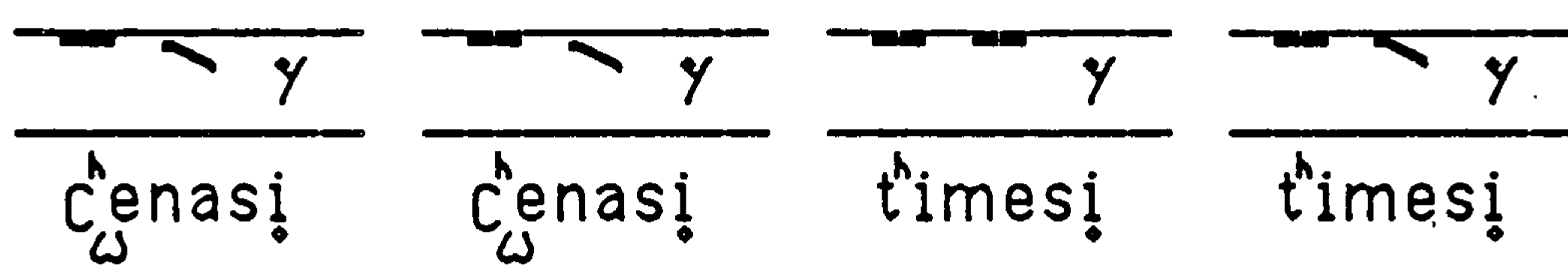
It can be shown that this phonetically falling tone cannot be a phonological high falling tone. The verbs:

(2.58)		
	ʔena	tʰime
	snore	cook

have the pitch pattern shown. In subsection D1 of this chapter, the irrealis 2Sg was shown to be formed by the suffixation of -po and the replacement of a high on the preceding mora by a low. There was no change if the preceding mora is low.

(2.59)   
 k'apo  
 you'll return

The 1Sg irrealis suffix is si and the same rules apply. si is also the suffix for 1Sg in the basic clause pattern. The following forms result:

(2.60)   
 c'enası c'enası t'imesı t'imesı  
 you snored you'll snore you cooked you'll cook

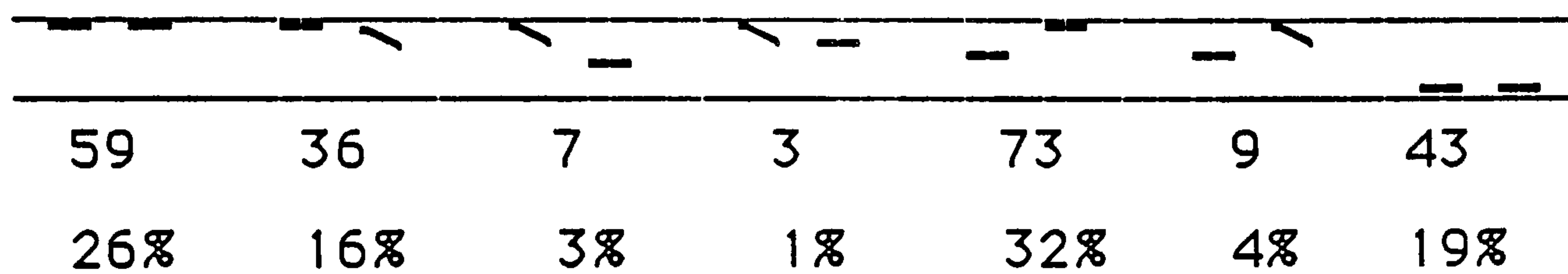
The last syllable of the last word in (2.60) is clearly phonologically a high falling tone, two morae, hl. The second syllable of both words with the stem c'ena is low phonologically. At this point it is as well to mention that, although hl and ll are here clearly distinct phonetically, there is a connection historically between the low tone raised after a high and the high falling tone giving for example the allomorphy of sê and sè; this is treated at section I of this chapter.

For another type of demonstration that this high fall starting just below the pitch level of a preceding high mora is well taken as a sequence of low tones, lexical distribution can be used.

It would be pleasant if, despite the ultimate and necessary association of a tone with a mora, words of the form KVKV could be associated with but two choices for tone, that is, that they should

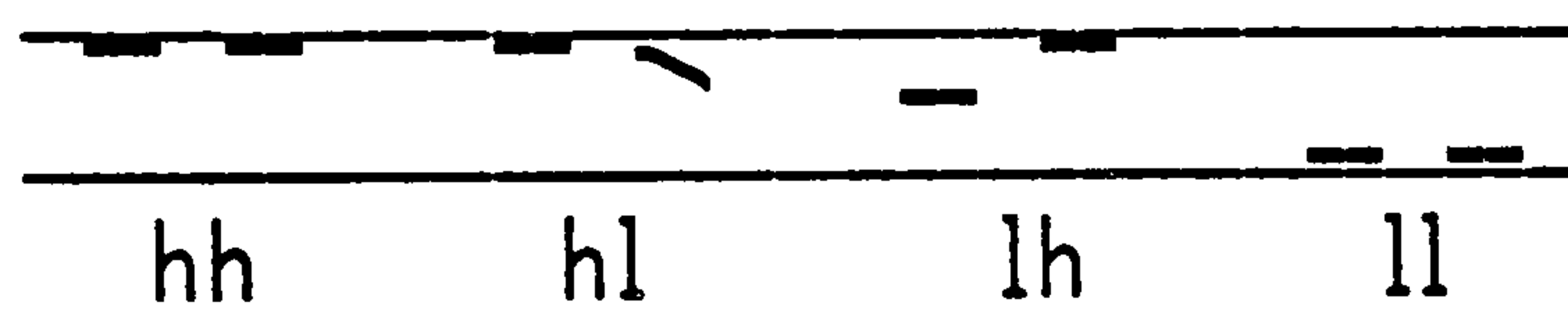
conform to a pattern where tone is chosen for only once in a syllable. Of a total of 228 nouns of KVKV shape entered at one time in my tonal categorisation of nouns file, the distribution among pitch patterns was as follows:

(2.61)



This gives the correlations

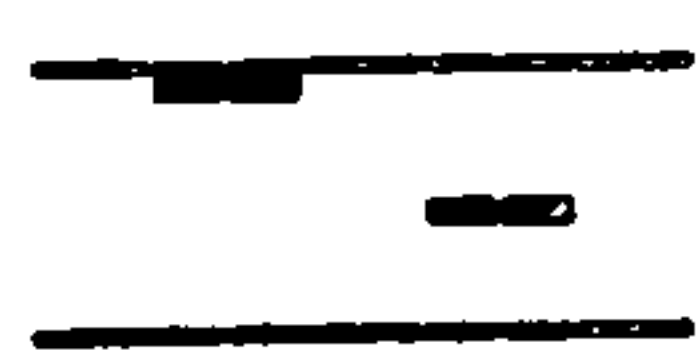
(2.62)



accounting for 93% of the data and suggesting again a confirmation of the analysis of the phonetically high falling pitch as the realisation of low tones.

An important observation is that in noun stems of the form KVKV, the pitch pattern of (2.63) never occurs. This holds for verb stems too. That interval never occurs within a stem, whether the preceding and following level pitches are long or short. It is rare between morphemes. Apart from the two instances to be mentioned below, I have only found it in the word quoted in (2.64), which I assume is a shortening from that quoted in (2.65).

(2.63)



(2.64)



[ʔiʔwa:sə]

she gave them them

(2.65) \*ʔíʔ`wà:sà

The low toned morae on the voiceless vowel carry the fall and wà:s can be quite happily three low morae all realised on a low level pitch. It seems probable that the frequency of such a verb allowed the voiceless vowel to disappear giving:

(2.66)   
ʔiʔa:sa<sub>ω</sub>

This is odd in two ways. Firstly, ʔ does not cooccur with <sub>ω</sub> in the same syllable; it is not one of the consonants that seem to be allowed to do so. But the second oddity is the pitch pattern. ʔ`wà is a very common collocation of morphemes which does not usually contract, but has done so here. The loss of an intermediate low tone is a typical environment for downstep and this, (2.67), is the analysis here.

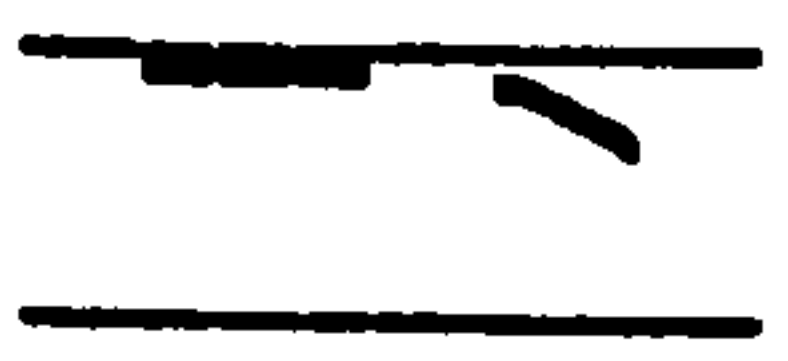
(2.67) ʔíʔ`à:sì<sub>ω</sub>

Now that the presence of downstep between a high tone and a low tone have been demonstrated, the status of nasality in [tãŋ] can, at last, be considered.


In all the monomorphemic monosyllables which have been considered, despite the necessity for the analysis of a long vowel into three morae, only the first and the second mora need be specified; the third is always identical to the second.

But [tãŋ] would break this pattern. It worried me for a long time because it was the only one of its kind; in isolation there was no parallel for the pitch pattern; it seemed a succession of three morae, hhl.

The suffixation of -ì, 2Sg suffixed subject in the basic clause pattern, gave:


(2.68)   
 [tãŋgi:]  
 you...ahead

with hhh in the first syllable. The g is, seemingly, inserted quite regularly, but the long final vowel was not expected. The suffixation of -sé gave (2.69),


(2.69)   
 [tãŋse]  
 I'm in front

where the tone in isolation is maintained.

The pitch pattern on [tãŋ] in isolation is the same as that on :

(2.70)   
 pe:ʔgu  
 carved ritual shields

although Nd Augustine did not allow this equation, I believe because of the effect of the gu; (see the discussion of techniques of elicitation in subsection B2 of Chapter I). Suffixation of -ì to this word gives:

(2.71)   
 pe:ʔgi:

where the starting point of the pitch on the last syllable shows

that its first mora is low, and allows the stem to be analysed:

(2.72) pé:ḡù

The suffixation of -sà 3fSg suffixed subject marker of the basic clause structure gives:

(2.73)  $\frac{\frac{\text{—}}{\text{—}}}{\text{—}}$   
[ṭãḡsa]

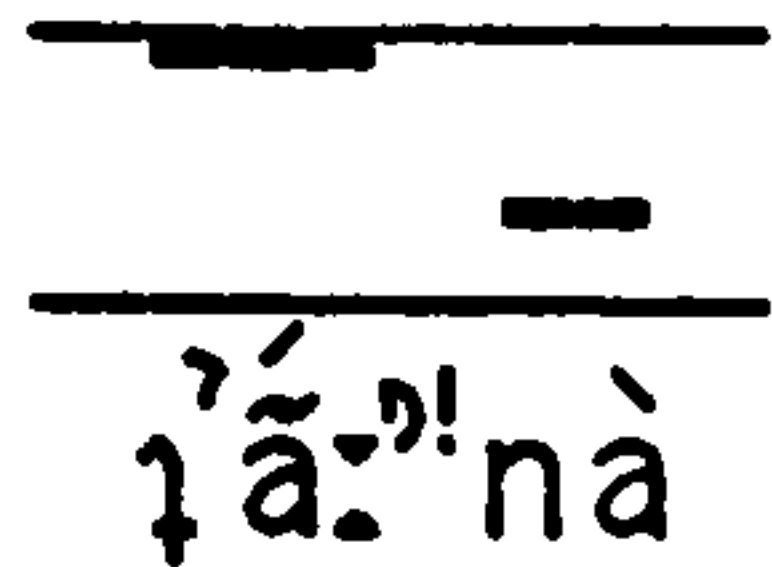
This is doubly aberrant. It has the tone pattern which has the characteristic of a downstep, (see the treatment of ʔí'ʔà:sì in the previous section), and the final nasality of the first syllable is not homorganic to the following syllable initial consonant; these two facts are connected. If we take as our starting point:

(2.74) |ṭá:ḡìsà|

and eliminate the medial ḡì, the persistence of the syllable final nasal in [ṭãḡ] and the generation of the downstep tone pattern is explained.


It is not that the g in this form of the stem is to be attributed to insertion when a suffix beginning with a vowel is added, as happens after underlyingly nasalised vowels (see above); rather it is retained from the underlying form. I have no other word like [ṭãḡ]; I have no word ending in 'ḡì, nor 'dì, nor 'ḗì, nor 'bì, (nor, to complete the series, 'ḗḡì). Nor have I any sort of nasalisation before a final voiceless consonant (K, K<sup>h</sup> or K<sup>ʔ</sup>) and a voiceless vowel except for probable (now fossilised) suffixation of a k<sup>h</sup>ì/k<sup>ʔ</sup>ì where synchronically the different nature of the plosive and historically the former presence of a morpheme boundary might in any case

render a parallel invalid. It therefore seems difficult to say if the difference in the treatment of ɬá:ᵑgì and pé:ᵑgù is because of the difference of final vowel, or if ɬá:ᵑgì is an earlier borrowing and further on its way to assimilation, or because it is a more frequent word. (pé:ᵑgù only came to my attention from looking at ten Raa's work.) There is one further example, the only one I have. ɬǎ:kì, means 'above'; the suffixation of -nà gives (2.75).

(2.75)   
 ɬǎ:kì-nà  
 to above

This again shows absence of homorganicity across the syllable boundary as something linked to downstep.

The next word to consider is:

(2.76)   
 [nanse]  
 rat sp

This is judged to have the same pitch pattern as xòmésé. In [nanse] I did not hear much nasalisation during the vowel a and neither [nã:se] nor [nã:se] was accepted. Lack of homorganicity has been attributed to loss of a syllable and evidence from beyond my field work shows this. Newman 1975, in his list of animal names, gives nangisé and the word is probably a Southern Cushitic borrowing. The fact that Newman has recorded a form with i tips the balance in favour of allowing [ŋ] to be the realisation of [ᵑgì] in [ɬá:ᵑgì]. Where the lost low toned syllable in word final position has a voiceless consonant (prenasalised or otherwise) the devoicing of a final syllable has no tonal effect on the previous syllable with a voiced



“prenasalised” consonant the devoicing alters the specification of the last mora in the previous syllable to low.

(2.77)     |ṭá:ḡì| → ṭǎ̀:

The evidence of:

(2.78)                 
                               
                   [ṭǎ̀ŋse]  
                   |ṭá:ḡì sé|  
                            1Sg  
                   I’m in front

suggests that the incorporation of -sé (1Sg) and suffixes of the same series into the structure of a word is more recent than the incorporation of the suffixed subject series into one word with the form it follows.

With [naŋse] it is my impression that we are dealing with a nasal of longer duration than that which I have called short period of homorganic nasality before the following consonant; and it is not homorganic. Moreover, Nd Augustine’s insistence of the oral nature of the first vowel seems to indicate a closure rather than anything else. Wherever there is a fall on the final mora of [ṭǎ̀ŋ] or [ṭaŋ], I think that the nasality also is of the same length; where there is not a fall, I do not think that there is any difference between the degree of nasality there and what I heard on ṭǎ̀:ḡ̀nà, ‘to above’. If a rule is to be made, then it could be ventured that a closure is preferred where there is no other indication of a consonant and vowel sequence which has been lost. Where downstep proclaims this loss, the change from a short period of homorganic nasality before the following consonant to a closure is not made. But Nd

Augustine's preference not to identify the whistles of [t̥ãŋ] or [t̥aŋ] and of t̥im̄ is a stumbling block as is the conflicting evidence for [t̥ãŋse]. It is clearly an area of flux and any inability to fix on a firm analysis reflects this. It is also the only area where there is a relationship between a short period of homorganic nasality (as in seemingly prenasalised consonants) and a nasal closure, (using closure as the label for an element of syllable structure); usually the short period of homorganic nasality is related to nasalisation of the vowel.

[t̥á:ʔgì] is clearly from Common Bantu \*-táng- 'go ahead' which has a synonymous \*-tángid-. The correlation of the tone pattern ' ` and the KV:KV skeleton also marks it out as anomalous from a historical perspective as will become clear during Chapter IV.

The source of syllable final nasality is often to be found in prenasalised consonants borrowed from other languages. But in Sandawe it becomes a syllable final phenomenon. Several considerations show that the nasality and the details of the obstruent are separate. Firstly, the tendency for it to be finally absorbed into the language as nasalisation on the preceding vowel. Secondly, the fact that in any case, Sandawe needs as a component of syllable structure a short period of heterorganic nasality before the following consonant to account for ʔ before ʔ, as well as t̥á:ʔnà 'to above', and t̥á:ʔsà 'she...in front'. Thirdly, it appears before so many consonants that a whole new and large set of prenasalised consonants would have to be created by the introduction of a feature to be realised as prenasalisation. An alternative would be to postulate a syllable initial cluster, which does not really amount to anything less complex. Fourthly, the evidence from the cooccurrence of consonants classes in morpheme structure (to be stated in subsection A1 of Chapter IV) suggests that this



nasalisation is best separated from the obstruent segment. The first two reasons are those which make me prefer the analysis of this nasality as a syllable final phenomenon.



If Sandawe had had a fleeting contact with languages having exotic (in Khoisan terms) syllable initial sequences of nasal and obstruent, (that is, prenasalised consonants), had borrowed a few words, and then lost the contact for ever, I would predict that a nasalised vowel followed by obstruent would have resulted medially and that the prenasalisation would have been lost initially. But Sandawe has been under the influence of such languages for a long time and heavily, and will never escape the domination of Swahili, the national language. Nd Augustine's grandfather, Manadi, had no problem with the sequence, although other Bantu exoticisms like the palatal series of consonants had to be Sandawicised: he used what I heard as sìnâqà for the place name Shinyanga, řiŋãga in Swahili.

## F LENGTH



Until this point only syllables with two or three morae in the vowel have been considered. In isolation, morphemes only have these two possibilities. However, certain suffixes begin with a vowel, and when the vowel is identical to that in the syllable which precedes and there is no closure to that syllable, the pitch patterns are not directly comparable to sequences of dissimilar vowels. It is here that the question of what is a syllable arises.

$\grave{\text{e}}$  is suffixed to nominals as a specifier. When suffixed to a short syllable with hl, the result is hll, as in (2.79). Its nature is clearer when added to a form ending in a long high syllable, (2.80).

(2.79)              
              $\grave{\text{c}}\hat{\text{i}}$                        $\grave{\text{c}}\hat{\text{i}}\grave{\text{e}}$   
             bone                      the bone

(2.80)              
              $\grave{\text{c}}\grave{\text{a}}\grave{\text{e}}$                        $\grave{\text{c}}\grave{\text{a}}\grave{\text{e}}\grave{\text{e}}$   
             pigeon                      the pigeon

$\grave{\text{e}}$  has the effect of adding another low toned mora to the nominal and, if the nominal ends with a high toned mora, substituting a low mora for it. An example with a rising pitch:

(2.81)              
              $\grave{\text{c}}\grave{\text{a}}\grave{\text{e}}$                        $\grave{\text{c}}\grave{\text{a}}\grave{\text{e}}\grave{\text{e}}$   
             opportunity                      the opportunity

è appears not to have any realisation when suffixed to a nominal which has a final long nasalised vowel with the tone pattern hll, not even merely some extra length.

I take such forms as being one syllable. The nasalisation extends over all four morae; if these forms were taken as sequences of two syllables, the restriction that where two successive syllables have the same vowel quality, they will both have the same specification for nasalisation, would have to be written into the description. The notion of the syllable is discussed again in Chapter IV, with respect both to the mora and morpheme structure.

Where a diphthong in -j is followed by è the extra mora is probably best treated as a closure:

(2.82) hèwé?`wǎjj

This analysis is better than:

(2.83) hèwé?`wǎĩ

because of the nature of j as well as the potential of phonetically shortening the sequence ǎjj. This phonetic shortening seems to be more tolerated within one syllable than over more than one syllable. I have, here and earlier, deliberately used the word diphthong in referring to a sequence of a short vowel and j. Of all the closures, it is the one which is most integrated into the vowel part of the syllable. Whereas Vw is short vowel followed by the closure w, the suffixation of j to a short high toned vowel results in Vj; the pitch pattern is not that of a short vowel followed by a closure, but of a long vowel. When è is suffixed to Vj, the effect is

that of the addition of one mora; when ẽ̀ is suffixed to w̃̀, the result is wũ̀.

When a suffix with an oral vowel and no consonant is added to a form with a final vowel identical to that of the suffix, as I often hear it, a form with four morae results, even if in isolation, the form which carries the suffix is a long vowel. However, the full form, with the expected length, can be heard in a slower delivery.

- (2.84)      tʃé:è → tʃé:: 'you drank'  
              ɔ̃é:è → ɔ̃é:: 'you went in'

There seems to be a tendency then not to allow more than four morae carrying one vowel quality, and this I see as a potential limit on syllable length by restricting the length of the vowel.

## G SYLLABLE STRUCTURE

It is now possible to give a list of the components of syllable structure in Sandawe as they have been described in this chapter. The statement is raw, in that, without qualification, it generates impossible structures. Its imperfections are discussed in section B of Chapter IV.

- (2.85)
- 1 Consonant
  - 2 Labiovelarisation
  - 3 Vowel, with a minimum of two and a maximum of four morae
  - 4 A tonal value, high or low, on each mora
  - 5 Nasalisation
  - 6 Final nasality
  - 7 Up to two closures, each one mora long

Before moving on to a discussion of how pitch is used in utterances, how in clauses and sentence structure pitch is an indispensable part of the structure, in the next two sections I firstly review what has been stated about tone within the word and then note a few places where tonal alternations appear in the morphology.

## H TONE WITHIN THE WORD

In considering the consonantal and vocalic components of syllable structure in this chapter, it was necessary to intersperse it with some account of the tonal system of the language; it is clear that segmentals and tone are interdependent, but as the main interest of the present work is tone, it is useful to have all the tonal information together. The last section of this chapter gives as full a description of tonal phenomena within a word as is possible in my present state of knowledge.

It is appreciated that the word has not yet been defined. This is only practicable after the discussion of pitch phenomena beyond the word, which are considered in Chapter III. A definition of the word is given in section C of Chapter III. Lexical items whose pitch patterns are characterised by phenomena which show them to be more than one word are treated in that section. It is also appreciated that the syllable has not yet been defined; it will be discussed in Chapter IV.

### 1 The mora

It has been suggested in this chapter, in section D1, that the most consistent treatment of the situation in Sandawe was to consider that the tone bearing unit was the mora and that the choice made in each mora was a simple one between a high tone and a low tone. The mora moreover was a unit which had syntagmatic relevance in as much as a short vowel corresponded to two morae and a long vowel to three morae. The diachronic position of tone and the mora will be discussed in Chapter V.



## 2 Realisation of tone

A succession of two high toned morae in a short syllable and of three high toned morae in a long syllable, gives a level pitch. The first high mora is at the top of the register for normal speech as are all subsequent high toned morae unless one or more low toned morae intervene.

(2.86)  $\frac{\text{---} \quad \text{---}}{\text{---}}$   
 $\frac{\gamma \quad \gamma}{\text{---}}$   
 $\frac{\text{---}}{\text{---}}$   
 k'é:ʔ'wá:sì  
 I really cried about it

The interpretation of ʔ' as having a high tone in this example, in contrast to the low tone which it more frequently has, is due entirely to the level of the pitch realisation of the syllable wá:.

A succession of two low toned morae on a short syllable or three low toned morae on a long syllable has various realisations.



Preceding a syllable with an initial high morae where no other high has occurred in the word, the realisation is level and about a third lower than that high.

(2.87)  $\frac{\text{---} \quad \text{---}}{\text{---}}$        $\frac{\text{---} \quad \text{---}}{\text{---}}$        $\frac{\text{---} \quad \text{---}}{\text{---}}$   
 $\frac{\text{---}}{\text{---}}$        $\frac{\text{---}}{\text{---}}$        $\frac{\text{---}}{\text{---}}$   
 bóbá      dʒòʔî      c'èrèk'é:  
 millet stalks    behind      toothbrush





The third example shows that previous low toned syllables in the same word have the same pitch realisation as the syllable immediately preceding the first high.

Immediately following a high mora in the previous syllable, a syllable with all low morae begins about a semitone or less below


the high and falls for about a whole tone, if short, or a third or more if long.

- (2.88)    
 ðìgídà                      ðìgídà:  
 heart                              he...heart



Following a low toned mora when there has been a previous high in the word, the realisation is level, about a fourth or more below the previous high mora.

- (2.89)     
 ðìgídàsà                      ɣátìsà                      t'ímêpò  
 she...heart                      she...nose                      you'll cook  
  
 ɣâ:gè:  
 see him

When there is no high tone in the word, the low tones will depend for their realisation on high morae in other words in the utterance; this is described in subsection B2 of Chapter III. If there are no high tones in the utterance, it will be low pitched, getting on for a fifth or more below the top of the register for normal speech.

- (2.90)   
 kàsà  
 she came back

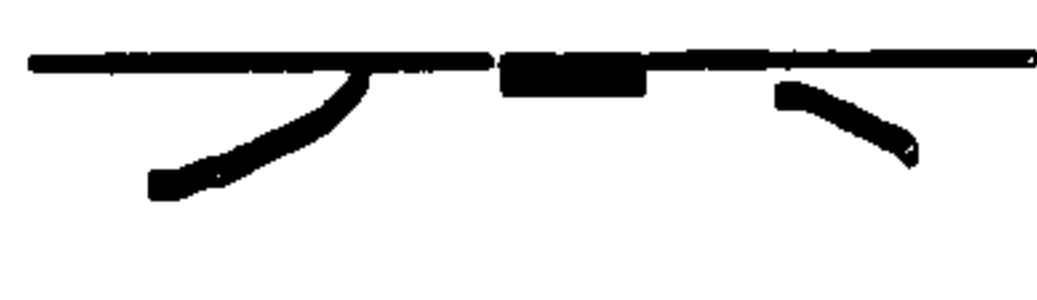
A single low toned mora final in a syllable containing only highs previously creates a short downward glide.

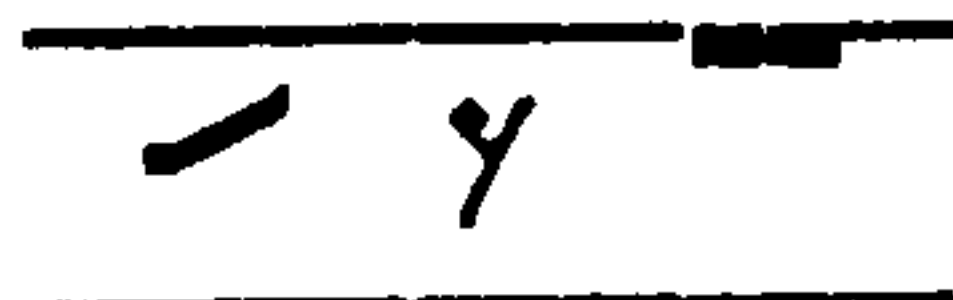
- (2.91)    
 t'imêpò                      k'é:pò  
 you'll cook                      you'll cry

This has only been noted in the irrealis verb form and in a small number of words with a underlyingly voiceless final vowel. It only occurs with these latter when the consonant of the syllable with the voiceless vowel is one which allows a leftward movement of pitch, that is one which is neither a nasal, which appears as a closure, nor an obstruent. This means that only a few, borrowed, items, where the consonant is r or l can show this and the limited nature of the examples does not allow a comparison with an undisputed sequence of hl in such forms to be sure that a phonological, and not a phonetic distinction is concerned. The two forms t'á: and pé:gù alone indicate that this phenomenon applies through a consonant whose historical source is probably Ʒ.

Sequences of lh within the same syllable are now discussed, firstly when lh are the first two morae preceding the first high.

Preceding a syllable with an initial high morae where no other high has occurred in the word, the realisation starts about a third lower than that high. In a long vowel, as in (2.92), the pitch reaches almost to the high mora following. Short rising pitches have been found but rarely and then always preceding a ?, (2.93).

- (2.92)   
 ɔě:sípò  
 you managed to arrive

- (2.93)   
 mǎ?lé  
 something

However, I have also recorded this as:

(2.94)  $\frac{\text{— } \gamma \text{ —}}{\text{mà?`lé}}$   
 something

There is no motivation in this last form to write the voiceless vowel as low, it could equally well be high. It seems as if, generally speaking, a rising tone must be long in order to preserve enough auditory data to serve as a clue to its nature; any shorter, and it could be recognised as a level pitch.

Following a high, on occasions I have noted an initial up glide.


(2.95)  $\frac{\text{— } \text{—}}{\text{t} \underset{\omega}{\text{ó}} \underset{\omega}{\text{k}} \underset{\omega}{\text{ě}} \text{:s} \underset{\omega}{\text{i}}}$   
 I poured it

(2.96)  $\frac{\text{— } \text{—}}{\text{—}}$


This pitch pattern has only occurred where a high toned suffix with an initial vowel has been added to a short low toned syllable which follows a high toned mora; it seems to be freely interchangeable with (2.96), as has been stated in subsection B2 of Chapter I.

There is no occasion on which a short syllable with a lh appears after a high toned mora as far as my knowledge of the language goes.


A down glide occurs in the irrealis construction, where a final high mora is replaced by a low, as has just been mentioned. When such a down glide follows a lh sequence of morae, the high does not have the time to reach the endpoint of the pitch movement in lhh, but this does not affect the startingpoint.

(2.97)   
 lě̀: pò  
 you (Pl) went in


With extra long vowels the fall is longer.

(2.98)   
 lě̀:  
 you (pl) went in



It seems that this pitch pattern can be shortened to:

(2.99)   
 lě̀:  
 you (pl) went in


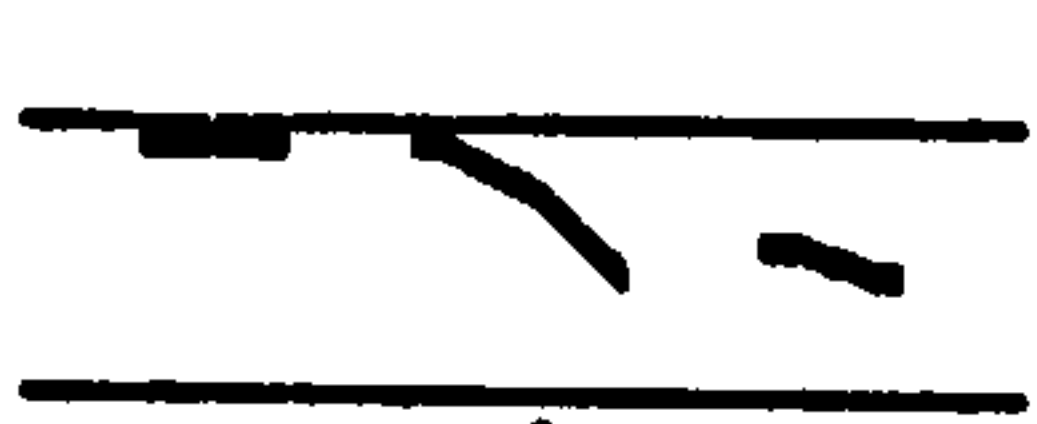
but such shortening is not so favoured, but still possible, when the vowel is nasalised.

(2.100)   
 tã̀:  
 that opportunity

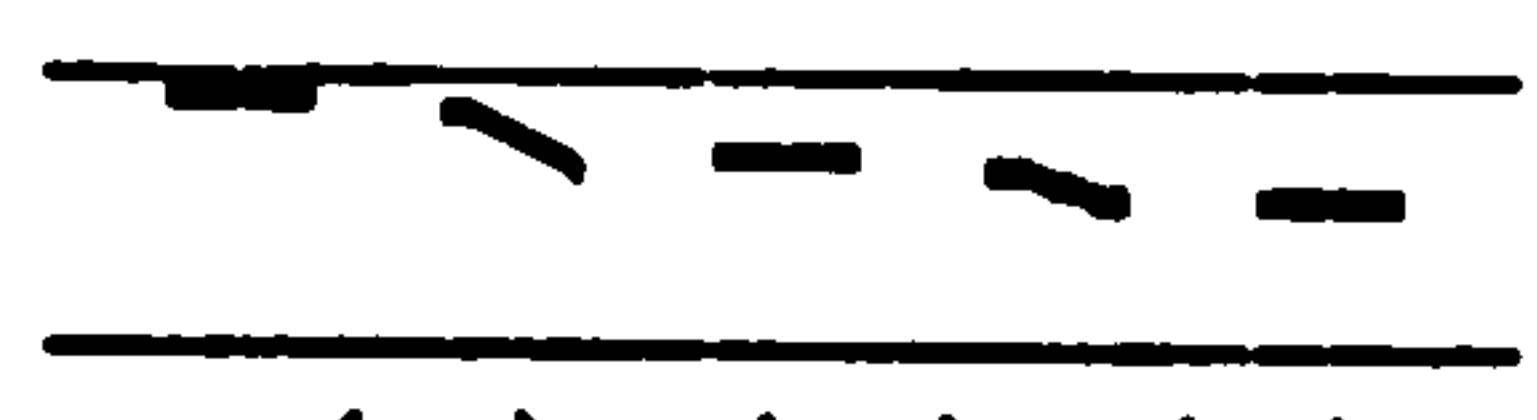
Where a syllable initial high toned mora is separated from a preceding high toned mora by one syllable final low toned mora or by two low toned morae both in the one short syllable, it is realised about a whole tone below the previous high toned mora.

(2.101)		
	ts'ámàsú	tã̀: sé
	giraffe	I'm in front

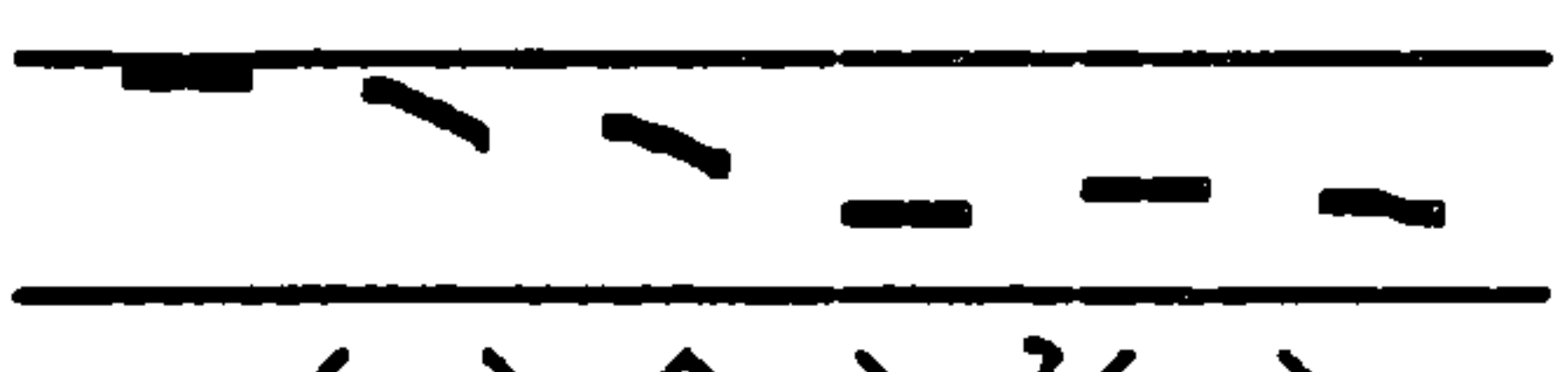
If two low toned morae in the same syllable or if more than two low toned morae intervene, the second high tone mora is even lower than the pitch level of the high described in the preceding examples.


(2.102)    
 ɥî:gá?`      ɥát<sup>M</sup>î:sê  
 he will come      he has a nose

I take this pitch level to be doubly downdrifted; it is about the same pitchlevel as a second downdrifted high. Compare the gá?` in ɥî:gá?` above and in:

(2.103)   
 ɥáràsésàgá?`  
 she did carry me

The same rules apply between subsequent high toned morae except that the pitch intervals between high toned morae separated by low toned morae successively decrease. Example (2.104) shows one downdrifted high on sê and one doubly downdrifted high on ts'è. Just as successive highs with low toned morae in between are successively lower, so are successive low toned morae with intervening highs. The following schema (2.105) illustrates this.


(2.104)   
 ɥáràsêpòts'énè  
 you'll carry me, won't you

(2.105)   
 à á à à á à à á à à

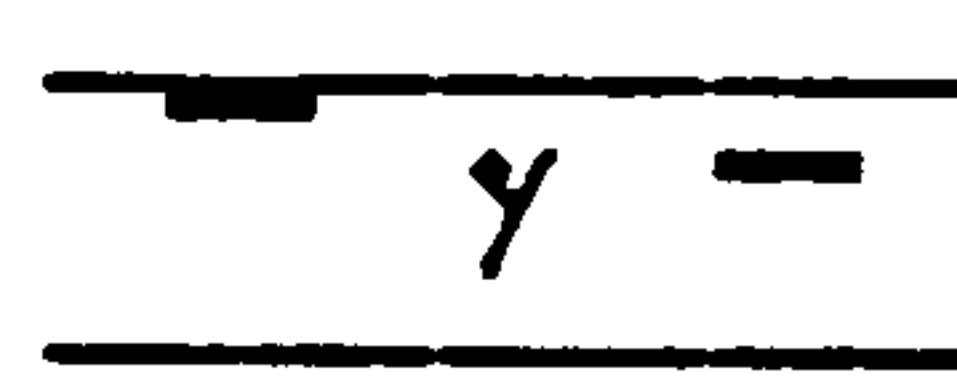
Downstep can now be described.

Its existence between a high and a low toned syllable has been illustrated above. It also occurs between two high toned syllables.

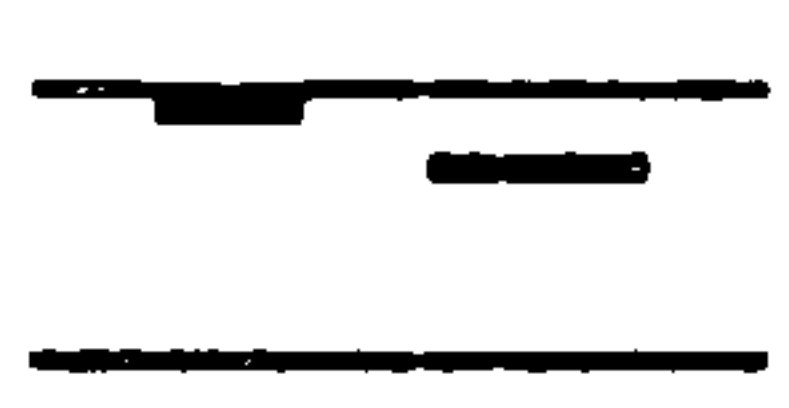
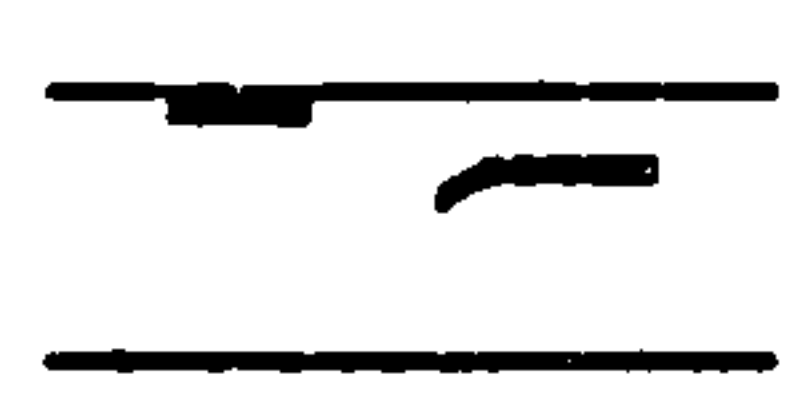
The second of two successive high toned syllables can be found on a lower pitch realisation than the first.

(2.106)   
 ɣípó  
 you didn't come

The fuller form of this word, occasionally met with, shows that this lowering is the result of the loss of a low toned syllable.



(2.107)   
 ɣíts'ipó  
 you didn't come

That the voiceless syllable in this example is low toned is to be inferred also from:

(2.108)  or   
 ɣí'ts'é:      ɣíts'ě:  
 he didn't come    he didn't come

where the alternation between the level pitch and the level pitch with an initial upglide is as mentioned earlier in this section. The form of the 3mSg with downstep can also be considered a generalisation from all other forms of this negative tense, which have a suffix with an initial consonant and a clear downstep, when ts'ì is not present.

The downstepped low tone has been adequately described in section E2 of this chapter. The point to be made is that a downstepped low toned syllable is realised on the same pitch level as a low toned syllable which follows a syllable with at least a final low toned mora after a previous high toned mora in it or the syllable preceding it.

(2.109)		
	<u>ɕìgídàsà</u>	<u>ʔá'nà</u>
	she...heart	to above

The final syllables of both these words have the same pitch level.

This concludes the statement of the way in which pitch is used within words. When first working on the language, it seemed as if tone was the most complex part of the phonology; it proved not to be so. That area that I am least happy about is the question of nasalisation, and I did not reach a firm conclusion about the situation even after I had realised its importance. But with the groundwork of this chapter behind us, it is now possible to examine the way in which pitch is used in utterances.



## I TONE IN MORPHOLOGY

The intrinsic tone of a morpheme or syllable is rarely changed. The effects of the low mora which appears immediately before the pgn suffix which is used in the irrealis has been demonstrated above. It is this phenomenon which has created a high falling tone which is distinct from the falling tone which low toned syllables have when immediately following a high mora. But it can be supposed that before the high falling tone in the irrealis was created, a high falling tone and a raised low tone after a high mora were identical. The high fall on the morpheme gâ is heard when a low mora precedes, but after a high mora the high fall which is heard is judged to be identical to a raised low and distinct from the high low found in irrealis forms. The first two words in (2.110) have identical pitch patterns, the second two words differ.

- (2.110)    k`àgâsì 'I did return'  
          hàbâsì 'I'll give birth'  
          ɣígàsì 'I did come'  
          k'é?êsi 'I'll hear'

The other common item which demonstrates this is sê, consisting of the morpheme sí 'having' and a 3mSg morpheme with low tone.

- (2.111)    máɔsè 'he has a gourd'  
          bòbàsê 'he has a mushroom'

After a high tone, any low toned syllable has the first mora raised nearly to a phonetically high pitch and its second mora is

raised to a lesser extent, giving a phonetically falling pitch. Where a glottal stop and a voiceless vowel follow, such a low tone becomes high.

(2.112)	ká:káʔ̀	but	hũ̀bàʔ̀
	ká:kà ʔ̀		hũ̀bà ʔ̀
	dog 3Pl		cow 3Pl
	'they...a dog'		'they...a cow'

There is a construction in which a sentence is enclosed by hí...jʔ̀; it means 'when' or 'if'. Where the last vowel of the enclosed sentence ends in a nasalised vowel on a high tone, one would expect the j to appear as the vowel i after an epenthetic g. If it appeared as i the rule stated above would apply and it would have a high tone. But it seems that it is important for the suffix to end on a low pitch, and for that reason the j appears as a long vowel, ì:

(2.113) 'híáʔ̀.ná ²pê 'sèrìkâîlîsá: ²jàtî:²áʔ̀.wàsígì:ʔ̀

híáʔ̀.ná            pê            sèrìkâîlîsá:  
 hí they then tomorrow the government people

jàtî:    áʔ̀.wàsígì:ʔ̀  
 come get hold of 2Pl jʔ̀

So if the government comes along and arrests you

There are two suffixes, which have alternating tonal realisations. One is é:, which implies a third person object. The other is ʔ̀.wà, which implies a multiple object; plural and multiple have to be distinguished in the use of nouns, anything can be

multiple, but only animates, as far as I know at present, can be used in the plural. Both of these suffixes indicate a perfective verb. The perfective/imperfective distinction seems only technically possible with transitive verbs; the description of //ani in Voßen 1985 shows how there the object marker and the tense/aspect markers in the verb are adjacent, and it seems as if they and their functions have been fused in Sandawe. In Swahili spoken by a first speaker of Sandawe, I have heard the object prefix in a verb used in just this perfective sense. Their underlying tones are as given, but both have been found to have the opposite tones on occasion. I think that the motivation for this is an attempt to avoid a falling-rising phonetic profile in a word. Two regular forms, one of which I have not attested, are given first in (2.114) followed by three forms which have also been heard. All of these latter eliminate the falling-rising profile.

- (2.114)    ɿâ:gé: 'see it'  
              \*k'é:ʔ.wàts'é 'I didn't cry about it'  
              ɿâgé: 'see it'  
              ɿâ:gè: 'see it'  
              k'é:ʔ.wá'ts'é 'I didn't cry about it'

The same phenomenon appears with other morphemes

- (2.115)    hík'ìk'ó:  
              hík'ì            kò            é  
              go 2Sg imperative é (and)  
              go and ...

For the same reason, there is a tendency to realise K'VK'Ŷ: as K'V'K'V':, a tendency which seems to be more realised than not; this

has been noted at (2.95).

A few morphological processes bring about a change in tone.

Some verb suffixes have a high tone and cause the earlier tones in the stem to appear with a low tone. Examples are given in (2.116) of the causative sé and of the suffix mé, which seems to assist in a perfectivizing function, and to indicate multiple action. Just as in the Bantu languages, the verbal extensions as they are called there, have a very complex set of meaning correlates, some regular and some fossilised, so also in Sandawe, and I have not sorted out those in Sandawe to my satisfaction.

- (2.116) ɟùpʰá 'blow, smoke (e.g. a cigarette)'  
ɟùpʰámé: 'to smoke right to the end'  
ɔ́tʰà 'to be scratched'  
ɔ́tʰàsé 'to graze, bruise'

There are two places in the morphology where there are tonal alternations that I have as yet been unable to codify. The first are those verbal forms which show reduplication of a type which is not a straightforward reproduction of the tones of the stem in isolation. Examples are given in (2.117). Secondly, in one or two words, clearly loans, there are alternations of tone that I am not able to account for.

- (2.117) ʒóʒò cf. ʒô 'sleep'  
tǎ:tǎ cf tǎ: 'open'

- (2.118) wàgó 'strangers'  
wàgògá: (wàgo + gâ + á: (NOM)) 'strangers'

### Chapter III UTTERANCES

In this chapter I deal with the way in which pitch is used in the structure of stretches longer than one word in length. It is not my intention, nor is it possible, to go into the details of the syntax of Sandawe. When I give a sublinear gloss as well as a translation, it is not necessarily my intention to give a complete morpheme by morpheme gloss, but rather give an idea of what each whole word is doing. It will however help to give here a statement of the markers of person gender and number (abbreviated to pgn). These are suffixes. The free standing pronouns are also quoted.

(3.1)	Suffixes	Nominal pgn		Free standing
	subject pgn	high	low	pronoun
	1Sg s̀̀	sé	s̀̀	ʈ́í
	2Sg ì	pó	pò	hàpú
	3mSg à	é:	Ø/m̀/̀̀/è	hèwé
	3fSg sà	é:sú/sú	s̀̀	hèsú
	1Pl ò	sũ:	sũ:	sũ:
	2Pl è	sĩ:	sĩ:	sĩ:
	3Pl ʔà	só	sò	hèsó

When in this chapter the words 'focus' and 'emphasis' are used, they have the meaning as defined by the formal phenomena to which they refer. In this chapter the word 'clause' is used, 'sentence' is restricted to a structure which contains a main clause and at least one subordinate clause. I use the word utterance to

mean a section of text over which there is a potential of a 'steady fall' in the pitch movement, (see the final paragraphs of subsection B2 below). The structure of language is seen as being of two types, syntactic and informational. In this way I approach the much more complex analysis of language structuring used, for example, in Halliday 1970 and 1985. These two types of structuring are always interacting diachronically. For example, Maw 1976 draws attention to the use of the object marker in Swahili as a position of focus, and in its informational use, the object marker became syntactised to allow passive structures to be related to it. The choice of some of these terms has been deliberately vague and defined by their realisation to avoid using more loaded terms such as topic or theme.




## A THE PRINCIPLE OF WORD LEVELS

In this section, a limited set of data is used to establish the principle of tone levels for words. Most of the examples use a small set of lexical items.


### 1 Downstep between words?

All the examples which have been given in Chapter II to illustrate tones have been words, both single lexical morphemes and sequences of lexical morpheme and affix.

In isolation, the following words have the pitches indicated:


(3.2)	 <hr style="width: 80%; margin: 0 auto;"/>	 <hr style="width: 80%; margin: 0 auto;"/>	 <hr style="width: 80%; margin: 0 auto;"/>
	Pútè	sóbá	tí:mé
	yesterday	fish	cooked it

Using these three items and suffixing -sà, the suffixed subject morpheme indicating, or agreeing with, a 3fSg subject, a clause is formed which has the following pitch pattern:


(3.3)	 <hr style="width: 80%; margin: 0 auto;"/>
	Pútèsà sóbá tí:mé
	yesterday she cooked the fish

It is clear that a high tone does not always have its realisation on the same pitch level. It looks as if downstep is involved in the composition of clauses. But it does not seem possible to associate the presence of this seeming downstep with any constituent,


whether a preceding constituent or a following one. In the clause above, there is lowering between the object and the verb. The object is not always followed by this lowering:

(3.4)   
 Pútèsà sóbá gélétà tí:mé  
 yesterday she cooked the fish at the baobab


Nor is the verb always lower than what precedes it:

(3.5)   
 sóbásà sá'dá Pútè tí:mé  
 the fish, Sanda cooked yesterday

Even if the preceding constituent is the object, it is not necessarily downstepped from the object.

(3.6)   
 Pútèsà t'ámàsú ǰâ:  
 yesterday she saw a giraffe

Every example of the lowering of a high tone so far considered has occurred after a previous high. But a clause like:


(3.7)   
 Pútè sóbásà tí:mé  
 yesterday it was the fish that she cooked

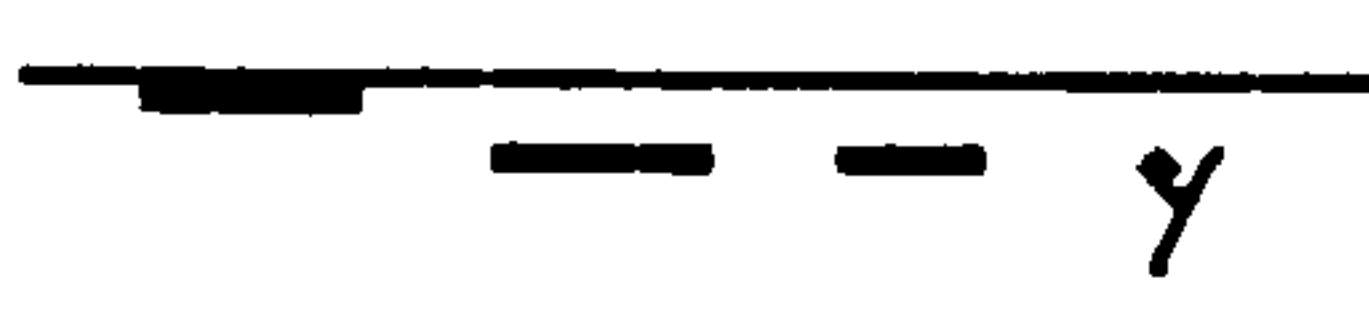
shows that an initial high can be lowered. A previous unlowered high is not a prerequisite for the occurrence of a lowered high.

In clauses without a suffixed subject, but with the nominative




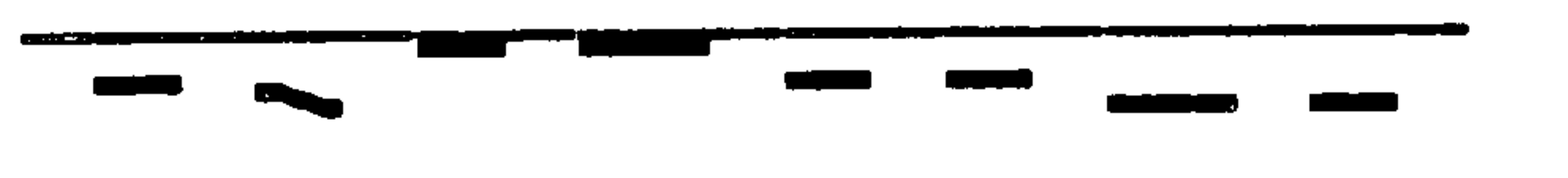


suffix -á:, for example (3.8), it does not seem possible to correlate the occurrence of -á: with a following lowering because of clauses like (3.9)

(3.8)   
 gélá: sóbá tí:mé  
 it was Gele who cooked the fish

(3.9)   
 ká:kă: híkì  
 it was the dog that went

The nominative suffix has the same semantic effect of bringing the constituent which it follows into focus as does the suffixed subject.

The above examples have shown that to attempt to correlate the incidence of this seeming downstep with the junction of two grammatical categories does not succeed. Grammatical categories are involved, but it is wrong to look for a correlate of the seeming downstep. The above examples have also shown different word orders, demonstrating that 'Sandawe can be considered a 'largely' free word order language' (Dalgish 1979). The clauses in (3.10) keep the sequence constant but differ in which constituent is

(3.10)   
 Pútèsà sáda sóbá tí:mé  
  
 Pútè sáda: sóbá tí:mé  
  
 Pútè sáda sóbásà tí:mé  
  
 Pútè sáda sóbá tí:mésà

marked by the suffixed subject or the nominative suffix. It is clear from these examples that the constituent with the subject suffix (here -sà) or the nominative suffix (-á:) contains the highest high tone in the clause. Every constituent preceding the constituent suffixed with the subject suffix or the nominative suffix also contains the highest high tone, except ʔúṭè, which never has the highest high tone except when it is itself suffixed with the subject suffix. Two more examples follow, each with a locative.

- (3.11)
- |   |
|---|
|   |
| gélétà sómbàsà tí:mé<br>the fish, she cooked at the baobab            |
|   |
| sómbàsà gélétà tí:mé<br>the fish it was that she cooked at the baobab |

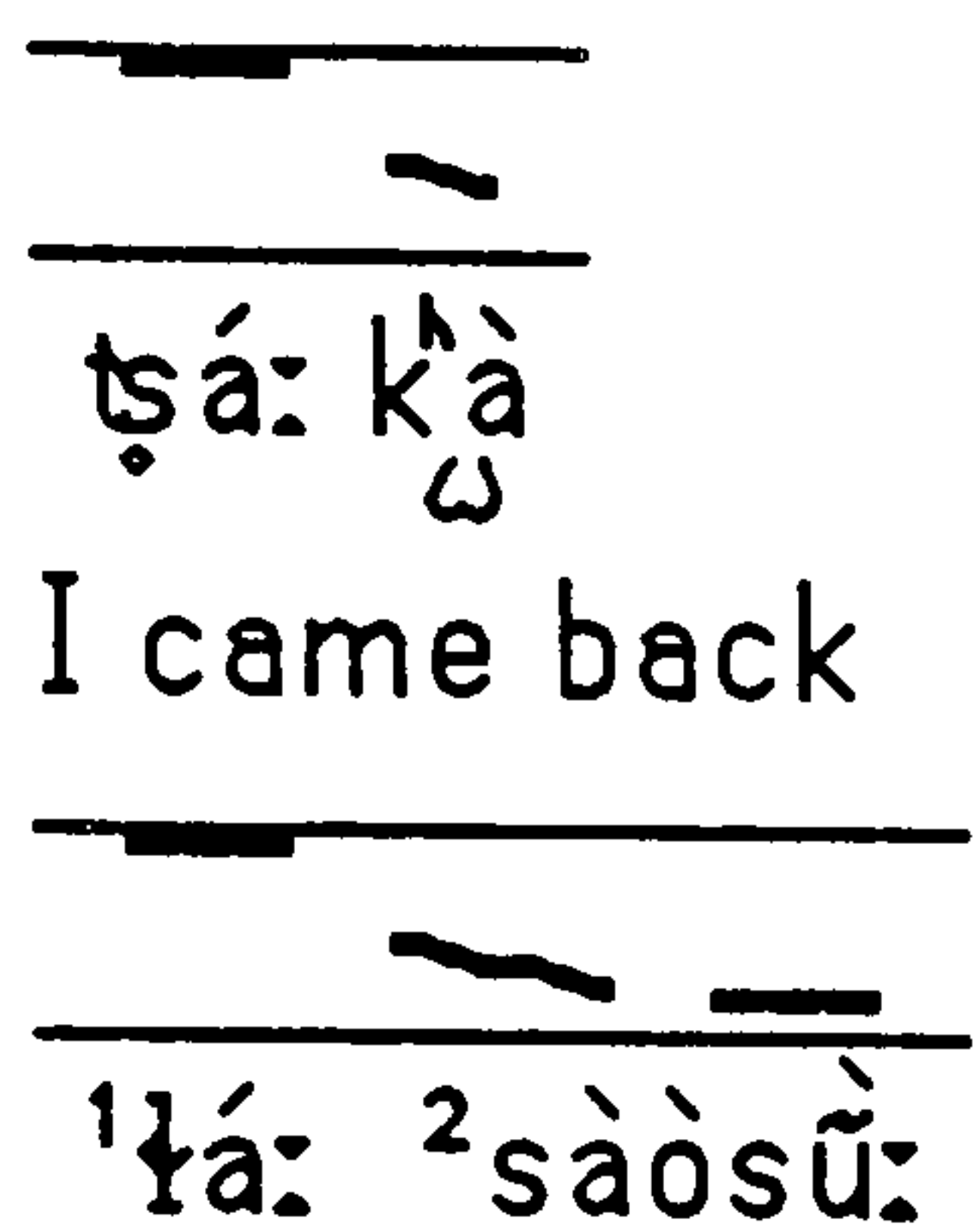
Looking at subjects, objects and indeed locatives in the above clauses, it can be seen that they all submit to one rule. Their highs are at the level of the highest high when they appear before the constituent marked with either the suffixed subject or the nominative suffix; when they come after it, they are one step down from the level of the highest high.

## 2 Tone Levels

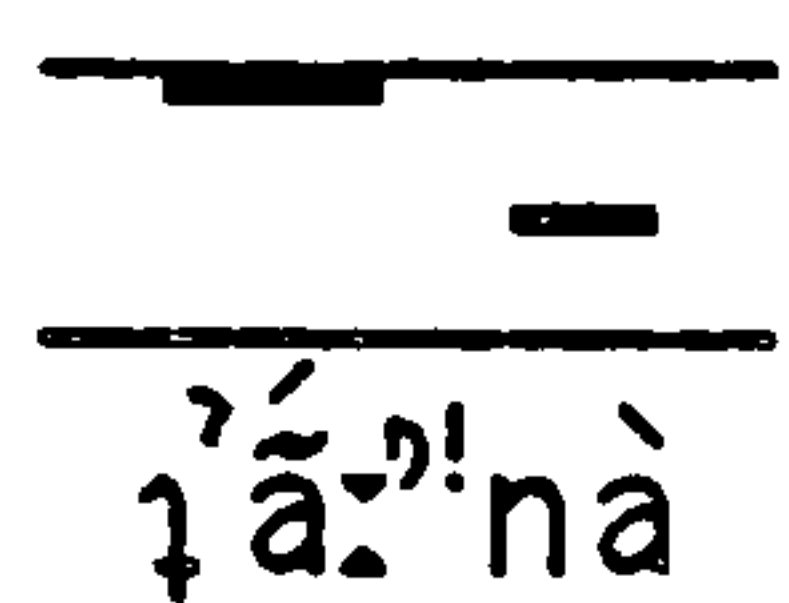
It is necessary to decide what this phenomenon is.

- (3.12)
- |                              |                   |
|------------------------------|-------------------|
|                              |                   |
| t'é: p'ó<br>you didn't count | t'sá: ɿ<br>I came |

The interval between the highest high level to that of the next high down is identical to the relationship that downstep gives. This can be seen in (3.12). But what is important is what happens if, in the second of these two examples, instead of the high toned  $\dot{\text{ɔ}}\text{í}$ , the verb is low toned throughout:

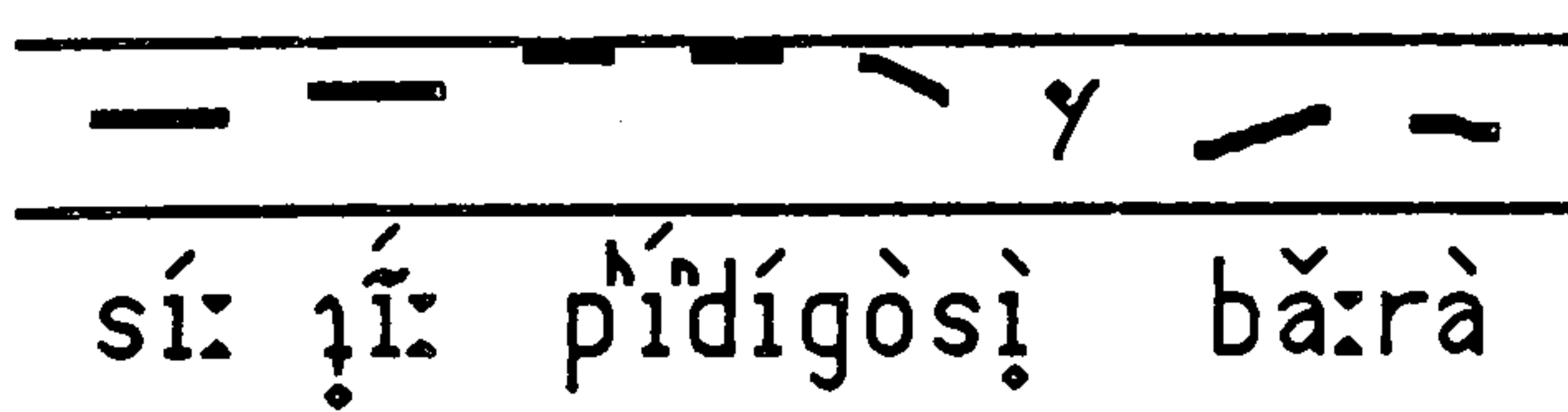
- (3.13)
- 
- tʂá: kʷà  
I came back
- ¹tʂá: ²sàòsǔ:  
we will talk well

This is different from downstep:

- (3.14)
- 
- ɔ̣á: ɔ̣nà  
to above

It is true that there is the presence and the absence of a word boundary which could be invoked in order to explain this difference, but there are clearly other reasons for not wanting to identify what goes on between words and what goes on within words.


The first is that the idea of upstep would have to be introduced.

- (3.15)
- 
- sí: ɔ̣í: pʰídígòsì bǎ:rà  
so I came and started to get on with it

The first three words begin on a successively higher high tone.


Secondly, this would also necessitate some means of identifying the pitch level of the first high tone from which the two upsteps rise.

And thirdly, as well as downstep and upstep, some word boundaries would have to be marked for 'no change', as that between  $\text{ḱìḱíḱĩ}$  and  $\text{hèwétà}$  in the next example, if these tonal phenomena were to be described by downstep and upstep.

(3.16)    
 $\text{ts'exìts'á?}$   $\text{ně:}$   $\text{ḱìḱíḱĩ}$   $\text{hèwétà}$   
 they lived together in this village

What goes on within a word is clearly not the same as what goes on outside it even though there is a certain similarity to downstep and, as will be seen later, a certain similarity in the incidence of downdrift.

A certain pitch level is the property of a clause constituent. It is not the presence of a seeming downstep which is important; the relative pitch level on each word is the crucial factor.

(3.17)    
 $\text{gélá: hík'ì}$   $\text{ḱá:ḱǎ: hík'ì}$   
 Gele went the dog went

The fact that downdrift has operated within the word  $\text{ḱá:ḱǎ:}$  does not affect the realisation of the pitch level of  $\text{hík'ì}$  which is one level down from the pitch on the first syllable of  $\text{ḱá:ḱǎ:}$ . Coordinate members of the same constituent have their realisation on identical pitch levels. Thus, in (3.18),  $\text{méz}$  and  $\text{łáz}$ , and  $\text{ḱí}$  and  $\text{wé}$ , share the same pitch because they are the first high tones in two words which are coordinate to each other in the same constituent

- (3.18)
- |                                      |
|--------------------------------------|
| — γ — — γ — γ — —                    |
| tʰàkʰimé tʰá:ʔ.wàsì ʔíʔà:            |
| shoes good 1Sg gave                  |
| I gave him some good shoes           |
| γ — γ — — — — — — —                  |
| tʰéxìtʰáʔ. nə: kʰíʔíʔí: hèwétà       |
| together 3Pl live village ʔ this loc |
| they lived together in this village  |

Most examples have deliberately used words with high tones. Low tones are also affected.

- (3.19)
- |                     |
|---------------------|
| — — — — —           |
| tʰùmá: dìʔá ʔísá:   |
| Tsuma stole the egg |

Each constituent has a range within which its lows and highs can be realised.

- (3.20)
- |  |           |           |           |
|--|-----------|-----------|-----------|
| <table style="border-collapse: collapse; width: 100%;"> <tr> <td style="border: 1px solid black; padding: 2px 10px;">— — — — —</td> <td style="border: 1px solid black; padding: 2px 10px;">— — — — —</td> <td style="border: 1px solid black; padding: 2px 10px;">— — — — —</td> </tr> </table> | — — — — — | — — — — — | — — — — — |
| — — — — —  | — — — — — | — — — — — |           |
| tʰùmá: dìʔá ʔísá:  |           |           |           |

These ranges, the vertical dimensions of each box in the above diagram, I refer to as levels. This is not a satisfactory term; 'level' is already overused in linguistics. The nearest musical analogy is that of a key. I retain the name level and I number these levels from the highest to the lowest, prefixing each word with a superscript number showing the level at which it is realised.

- (3.21) ʔúʔèsà <sup>2</sup>sáďá <sup>2</sup>sómbá <sup>3</sup>tʰímé

### 3 Rules for allocation of tone level

At this point I will give the rules which govern the allocation of surface pitch level in the clauses which have been given above using the four words ʔúṭè, sáḋá, sóḋá and t'ízmé, in order to show how the system works. The rules also illustrate two basic rules of promotion, the first to avoid a downward skipping of levels and the second raising all constituents in front of the marked constituent. The rules apply to the basic clause structure which will be dealt with more fully in subsection B2 below; in the fuller treatment which is given there, one important modification will be made to these rules.

ʔúṭè, 'yesterday', is one of a small number of time adverbials which behave alike; these I call temporals.

Both the verb and the temporal have been found on level 3. When marked, by the suffixed subject, they have level 1. Their appearance at level 2 is also predictable. When the temporal or the verb immediately follows a constituent which is marked, they have a realisation at level 2. I consider that temporals and verbs have as their underlying level, level 3, and that they are promoted to level 2 in order to avoid a downward jump from a level 1 to a level 3. No example of a downward skipping of levels has been recorded, although it is permissible in a upwards direction by moving from level 3 to level 1.

Both subject and object and locatives have an underlying level 2. When they appear before the marked constituent, they are promoted by one level to level 1. The verb may never appear before the marked constituent, but a temporal may; it is similarly promoted by one level from its underlying level 3 to reach level 2.

(3.22) summarises this.

(3.22) Underlying levels:  
 subjects, objects, locatives: level 2  
 temporals and verbs: level 3  
 Markedness:  
 a marked constituent: level 1 (irrespective  
 of its underlying  
 level)

Rules:

- 1 Any constituent preceding the marked constituent is raised one level.
- 2 A level 3 constituent which immediately follows a level 1 constituent is raised one level.

A sample derivation can now be given; in it, the object is chosen for marking; V is usually final, the Temp prefers a position near the beginning and S prefers to precede O.

(3.23)	ʔúṭè	sáḏá	sóḃá	tʰí:mé	
	Temp	Subj	Obj	Verb	
Underlying	3	2	2	3	
Mark object:	-	-	1 sà	-	(3fSg Subj.)
Rule 1	2	1	-	-	
Rule 2	-	-	-	2	
Output	<sup>2</sup> ʔúṭè	<sup>1</sup> sáḏa	<sup>1</sup> sóḃásà	<sup>2</sup> tʰí:mé	
	yesterday Sanda cooked the fish				

## B APPLICATION OF THE PRINCIPLE

Now that the principle of tone levels has been established, this section will describe how it is used, within NPs, within different clause types and within sentences.

### 1 Within the NP

Coordinate items in a NP share the same level as has been illustrated above in (3.18).

- (3.24)
- |   |
|---|
| $\gamma$ — $\gamma$ / — — \ — — \                     |
| tʰéxìtʰáʔ. nǎ: kìdǐdǐ: hèwétà                         |
| they lived together in this village                   |
| / — $\gamma$ \ — — \ — $\gamma$ —                     |
| hǎ:w láʔ.mũ: k'ùdésè:gàʔ. ʔí:é                        |
| that goat who butted 3Pl gave him                     |
| and they gave him the goat which butted (the chicken) |

Adjectives and demonstratives are coordinated in this way to the noun with which they agree in an NP.

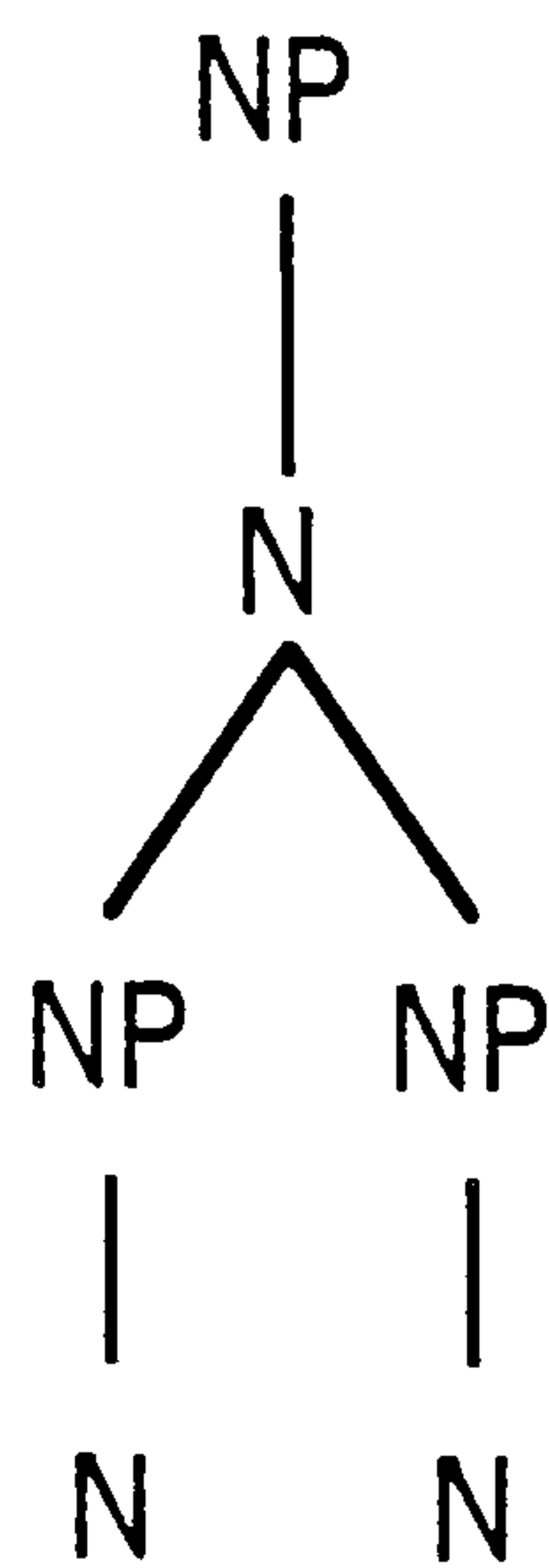
Two nouns in an associative construction use a difference of level to indicate that construction. The second noun in the sequence is the head noun and the first is an item with which the head has some relationship, often one of possession.

- (3.25)
- |              |
|--------------|
| — — — —      |
| sáda sóbá    |
| Sanda's fish |



The first noun has the level which is appropriate to the NP; the second noun, the head noun, has a level one below that of the first noun. It is clear that the structure is something like:

(3.26)



This is indicated by the tone level on the  $\text{tê}$  in:

(3.27)

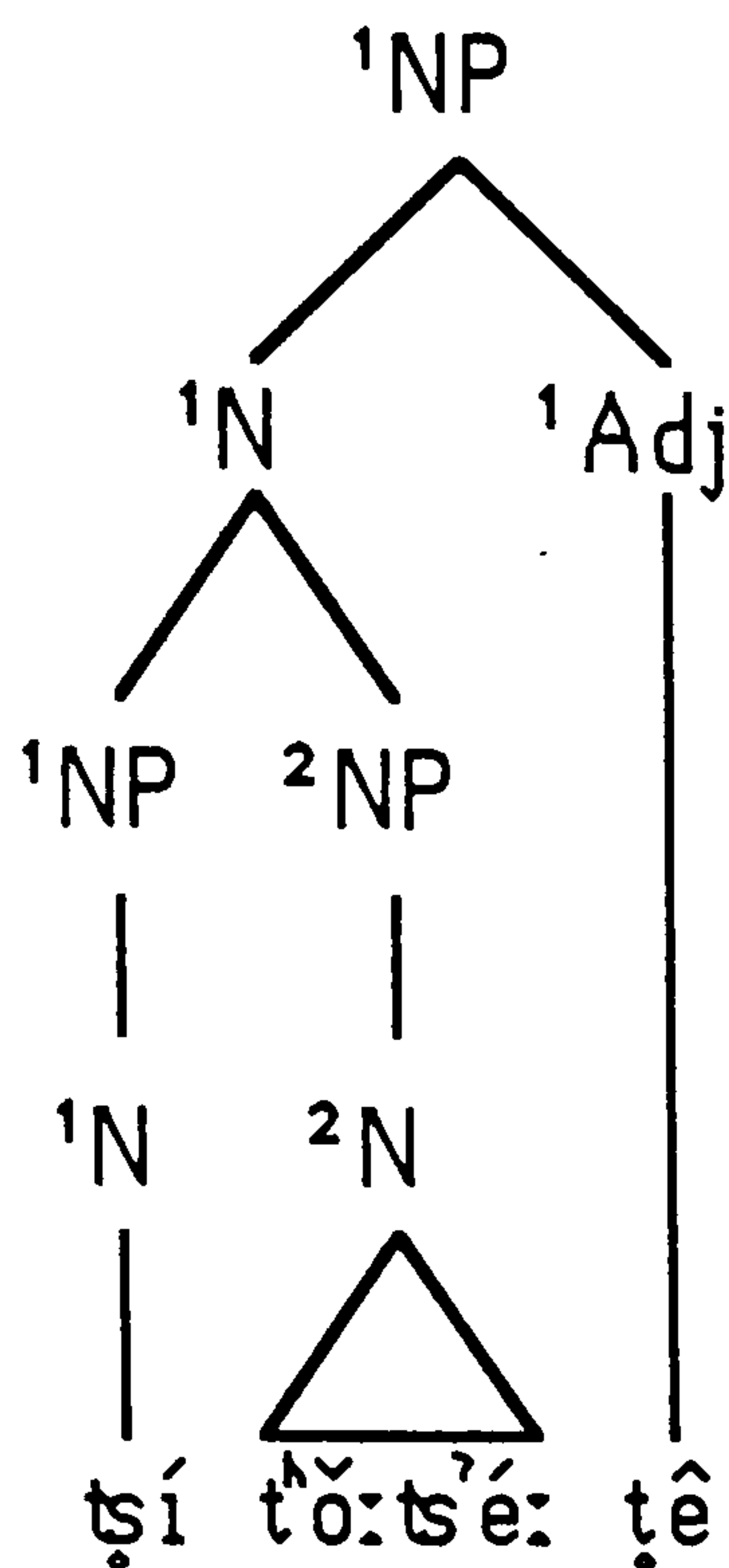
$\text{t}^1\text{í} \text{t}^2\text{ó}:\text{t}^3\text{é}:\text{t}^4\text{êgá}:\text{í}$   
 $^1\text{t}^2\text{í} \text{ } ^2\text{t}^3\text{ó}:\text{t}^4\text{é}:\text{ } ^1\text{t}^2\text{êgá}:\text{ } ^2\text{í}$   
 another brother of mine came

The tone level on  $\text{tê}$  is explained if the structure is taken as being that shown in the tree in (3.28). (It is not yet clear to me whether a syntactic distinction between Nouns and Adjectives is appropriate.)

It is important to know that the immediate reaction to a pair of nominals in a  $^1\text{ }^2$  (or  $^2\text{ }^3$ ,  $^3\text{ }^4$  and so on) relationship is to take them as being in an associative construction; it is for this reason that some things which might have been expected, do not occur: they produce a relationship between two nominals which would be perceived as an associative relationship.

Before leaving the NP, I should state that there is one place

(3.28)



where I am not able to explain the use of the tone levels of the associative construction. In (3.29),  $\text{ts}^{\text{h}}\text{é}::$  (from  $\text{ts}^{\text{h}}\text{é}$  'absent') and  $\text{lé:bà}$  seem to be coordinate, but their tones must be as marked. The answer may lie in the use of the specifier  $\text{t}^{\text{h}}$ , which is found after the last nominal in an NP, after both (or more) nominals in an NP, but not, as here, after only the first. I have no proof of this.

(3.29)  $\text{t}^{\text{h}}\text{é}:\text{w} \text{t}^{\text{h}}\text{lé:bà} \text{t}^{\text{h}}\text{ts}^{\text{h}}\text{é}:: \text{t}^{\text{h}}\text{lé:bà}\text{ts}^{\text{h}}\text{égá?}$   
This Leeba, not the one who's dead

I will return to tone within the NP when writing about firstly clauses with  $\text{sí}$  and secondly nominalisations of clauses, in the subsection that follows

## 2 Within clauses and sentences

The rules that regulate the use of syntactic tone are here stated for simple clauses which have one verb, that is, show neither coordination nor subordination. I shall deal first with basic

clauses and those clauses which are variants of, or are based on basic clauses before describing other types of clause.

A basic clause is an independent clause in which the suffixed subject morpheme (the subject pgn) and/or the Nominative áz are used. A basic clause is often be found with the conjunction p̄-. This is treated as a narrative clause (borrowing ten Raa's term) and discussed after the basic clause.

Constituents of a clause include the verb (V), a subject NP (S), an object NP (O), other NPs whose function in the clause is often indicated by a postposition, and a temporal (T).

Constituents with either the nominative morpheme or a suffixed subject morpheme are referred to as marked constituents.

When the nominative morpheme is used, it is suffixed to the subject NP.

When a suffixed subject morpheme is used, it can be suffixed to any clause constituent except the subject NP. More than one clause constituent may be suffixed with the suffixed subject morpheme, except that if the verb is so marked, no other constituent may be marked. Suffixed subject morphemes agree with the subject of the clause in person, gender and number. Where there is no overt subject NP, the suffixed subject morpheme is an indication of the person, gender and number of the subject of the clause.

The usual sequence of constituents in a basic clause is TSOV. In principle, any sequence of constituents is possible, as information structure demands. There is one restriction; an unmarked verb may not precede the first marked constituent in the clause. Where there is more than one marked constituent, each constituent belongs to a different information unit. Thus a narrative clause as (3.30) consists of two information units, the first being (3.31) and the second being (3.32).

(3.30)

'ḥóʔ̣ ²ʔá: 'ḥá:ʔ̣ ²k'àribíʃàʔ̣í: 'bàʔáwàsisõ:sá:  
ḥóʔ̣ p ʔa: ḥá: ʔà k'àribíʃà ʔ̣í: bàʔá wà sí sò ʔ̣ sò á:  
already & 3Pl good 3Pl welcome 3Pl the elders 3Pl nom  
And the elders welcomed them well

(3.31) 'ḥóʔ̣ ²ʔá: 'ḥá:ʔ̣ ²k'àribíʃàʔ̣í:

(3.32) 'bàʔáwàsisõ:sá:

An information unit establishes a new level 1 after lower levels belonging to a preceding information unit. Both S and O can appear together as unmarked constituents, and on the same tone level. Where either could equally well be taken as either subject or object, it is the sense or the sequence which will indicate the value; if sequence is to be used, the first of the two NPs will be the subject.

No one constituent apart from the suffixed subject morpheme (the subject pgn) and/or the Nominative á: is obligatory. The verb is not obligatory. For example in example (3.33),

(3.33) 'hèsó ²tʃ'ǎ:nà: ³ʔ̣í ¹jùm̀súḱíá:  
hèsó tʃ'ǎ: nà à ʔ̣í jùm̀sú ḱí á:  
3Pl home to 3Sg come wife too nom  
He come to their home, and his wife did too

there is no NP subject to ʔ̣í, though information as to its person, number and gender is given in the suffixed subject morpheme. ʔ̣í is a verb which can only take a singular subject. jùm̀súḱíá: cannot be the subject because it is feminine and would require the pgn to be sà, and it is appropriate to consider that jùm̀súḱí is the only lexical

constituent of a verbless clause.

Each constituent in a clause is allocated a syntagmatic tone level; temporals and verbs have level 3 and NPs have level 2. It is usual for any constituent which is marked to have some sort of prominence in the information structure of the clause. As such, it will be promoted to level 1. Any unmarked constituent which precedes the constituent which has been promoted to level 1, will be promoted by one level. Where the sequence of levels 1 3 occurs, the level 3 will be promoted by one level to prevent a downward skipping of levels. If the following constituent is level 3 also, it may be optionally promoted.

(3.34)	Underlying	<sup>3</sup> ʔúṭè <sup>2</sup> gélé á: <sup>2</sup> só <sup>m</sup> bá <sup>3</sup> tí:mé
	Marking	1
	Raising	2
	Surface	<sup>2</sup> ʔúṭè <sup>1</sup> gélá: <sup>2</sup> só <sup>m</sup> bá <sup>3</sup> tí:mé
		Yesterday Gele cooked the fish
	Underlying	<sup>2</sup> só <sup>m</sup> básà <sup>3</sup> tí:mé
	Marking	1
	Raising	2
	Surface	<sup>1</sup> só <sup>m</sup> básà <sup>2</sup> tí:mé
		She cooked the fish

In the basic clause construction, a level 3 after a level 1 constituent may remain at level 3 under certain conditions which are dealt with when downdrift is discussed below.

The probable historical origin of this system is explored in section A of Chapter V.

The allocation of underlying tone levels is a syntactic phenomenon. The decision that a particular constituent should be in

focus is for reasons of information structure, and the reallocation of tone levels follows from this. The expected situation is that a marked constituent is in focus, and therefore promoted to level 1. On one occasion (and one occasion only) in the transcribed corpus this does not happen; Lanki is being reproached for his failure to look after his senile mother and at one point he says:

(3.35)     <sup>2</sup>sê<sub>ω</sub>sà  
               sê<sub>ω</sub>  sà  
               now 3fSg  
               now she . . . .

He wants to stave off the attack and to keep the floor, but is still formulating what he is going to say. In as much as the use of the suffixed subject has committed him to a particular subject, (and his audience will expect a statement to follow), he does have some idea of what is coming, and of who the subject of the clause will be, but he has no idea as to what will be in focus. He may conveniently pause in the hope that the expectation of an assertion and a verb will deter a further onslaught. This example shows why marking, a syntactic phenomenon, and focus, an informational phenomenon, should be kept separate.

The narrative clause is a basic clause which also contains the conjunction morpheme pu. I have not elicited this conjunction, nor have I found it in texts, but ten Raa quotes it as pu; I do not know its tone. This conjunction morpheme appears at or towards the beginning of the clause, and it may be preceded by a subject NP or an adverbial, but not any constituent which is marked. It must be followed by a suffixed subject morpheme, and by the nominative morpheme in the form of é. These three morphemes constitute one word. When it is followed by the suffixed subject pgn, no trace of

pu appears if the pgn has an initial consonant:

- (3.36)      pu sà· é  
              sá:  
              and she

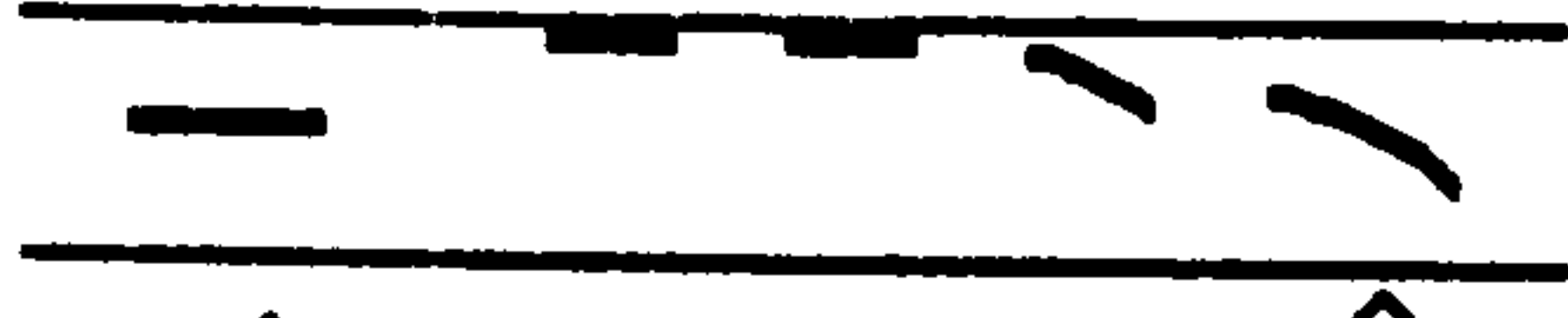
If the suffixed subject pgn has an initial vowel, the p remains

- (3.37)      pu ì é  
              pí:  
              and you (Sg)


But instead of the 3mSg pá:, which can occur, the usual form is ká:. p<sub>ω</sub> is impossible because labials are prohibited from cooccurring with <sub>ω</sub>; there are two ways around this prohibition, either the <sub>ω</sub> is deleted, giving pá:, or the labialisation is retained but the plosive replaced by one which is similar, but capable of appearing with <sub>ω</sub>. p and k<sub>ω</sub> are competing forms for the phonologically impossible p<sub>ω</sub>. From a historical point of view, the association of labialisation with the suffixed subject pgn for the 3mSg was unexpected from the rest of the system, where labialisation in 3Sg forms is a characteristic of the nominal pgn series, and not of the suffixed subject pgn series; pu neatly explains its appearance.

As I do not know the tone on pu, I assume that the whole word takes its tone from the nominative morpheme, it is always high level. If pu has a high tone, then there is probably no need to posit the presence of the nominative suffix in the form of é.

The justification for requiring the whole word to be high rather than low should now be stated, because it is often phonetically low:

(3.38)   
 sá: gélésà ǰâ:  
 and she saw Gele

If a marked constituent is to be level 1, then in example (3.39),

(3.39)   
 sà: hǔ̀bùsà ǰâ:  
 and she saw a cow

sà: would be expected to be on a level yet higher than 1. This does not fit. The use of level 1 is related to informational prominence, and a conjunction and a pronoun have little prominence, and there is no sense of new information, as there often is with the presence of a lexical noun or verb. Furthermore, this narrative conjunction (taking it as high toned), is often realised not with a level 3 when compared to the following level 1, but with a level 2, as it was in example (3.30), which is even less explicable if it were taken as low toned. This is why I consider it to be high toned; and I account for its realisation on a low pitch as a result of the system of levels which I postulate for the language.

According to this reasoning, the narrative conjunction has an underlying level 4, which however never appears as its position in the clause always promotes it, usually to level 3, but sometimes, (often, but not necessarily, when a level 1 has immediately preceded it), to level 2. But this constituent is never found as focus and therefore does not appear on level 1, despite the fact that it contains a suffixed subject pgn. However, this analysis will be qualified later.

But the presence of the suffixed subject morpheme, and of the nominative morpheme, makes the narrative conjunction a marked



constituent, and as such, a marked verb may not appear in the same clause. Each clause which stands on its own as an information unit will usually have one constituent which is in focus in the information structure and if it is the verb which is so chosen in a narrative clause, it cannot be marked, because a verb can only be marked only in the absence of any other marked constituent. If the verb is informationally prominent, it is fronted to a position following the conjunction word and promoted to level 1.

(3.40)	Underlying	<sup>4</sup> pu à ÷	<sup>3</sup> ḵàṭá	<sup>2</sup> lá:ʔè
	Marking		1	
	Raising	<sup>3</sup>		
	Surface	<sup>3</sup> ḵá: <sup>1</sup> ḵáṭà	<sup>2</sup> lá:ʔè	
		and the hare had had enough		

Such fronting will not be to a position before a temporal, if one appears after the conjunction word.

(3.41)	<sup>3</sup> ḵá: <sup>2</sup> ʔúṭé	<sup>1</sup> ḵí
	and he came yesterday	

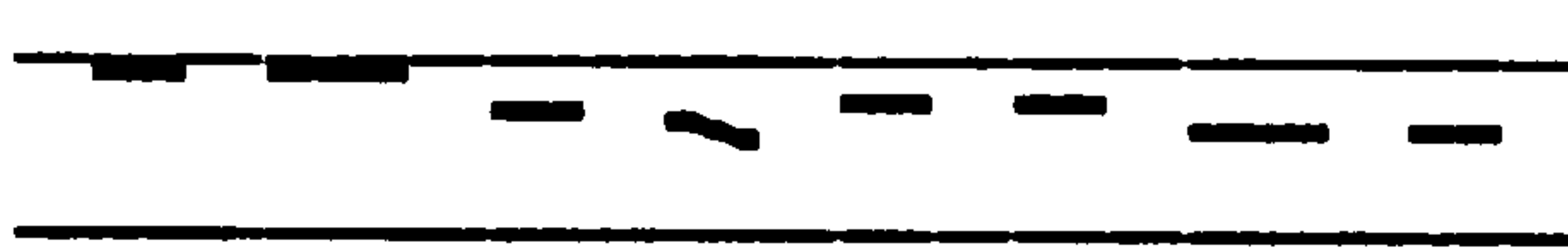
In the basic clause pattern, it is under these circumstances that an unmarked constituent, the verb, may be promoted to level 1.

In the natural flow of language, these rules will give little trouble; these rules are derived from spoken texts. However, in elicitation, forms can be produced which may not be sequences which are likely to be produced because of the way in which information is usually structured, but which, because of the freedom of sequence of word order, could be acceptably produced by the informant. If you wanted to make the statement that Gele cooked the fish yesterday, without focussing on the 'yesterday',

then the word ʔúṭè, 'yesterday', would have initial position, and its underlying 3 promoted to 2. If, during the production of the clause, 'Gele cooked the fish', you realised that it might be a good idea to indicate when, ʔúṭè would be most likely to appear at the end, or just before the final verb, and in both places would share an unpromoted 3 with the verb. When requested to produce:

(3.42) gélá: ʔúṭè sóbá t'í:mé

the pitch pattern that resulted was:

(3.43)   
gélá: ʔúṭè sóbá t'í:mé

The rules predict:

(3.44) <sup>1</sup>gélá: <sup>2</sup>ʔúṭè <sup>2</sup>sóbá <sup>3</sup>t'í:mé

But the knowledge that ʔúṭè is a temporal which has underlyingly a level one below that of the nominal sóbá caused Nd Augustine to slightly raise the pitch realisation of sóbá, not so much as to be a 1, but just enough for it to be heard as higher than ʔúṭè. ʔúṭè is raised by the rule which disallows a downward jumping of levels, from 1 to 3; I did hear not anything about its realisation to make me believe that it was anything other than on the appropriate level 2. Nd Augustine gave me no indication that he had any difficulty producing this clause, although he was certainly very willing to point out to me my foolishness on other occasions.

At this point it is pertinent to consider how words with only low tones fit into this scheme.

It seems that the language had achieved, or was very near to

achieving, a thorough application of this system of tone levels when contact with other languages introduced words which presented difficulties for the system. Different tone levels are recognised by the pitch of the high tones in words. Downstep is only recognisable when a previous high tone has occurred. After a low tone, the conditions which bring about downstep have no effect.

- (3.45)    ɿí'pó < ɿíʔ'pó 'you didn't come'  
           k̀àpó < k̀àʔ'pó 'you didn't come back'  
           bòbá 'millet stalks'





k̀àpó and bòbá both have the same pitch realisation. Uninterrupted development of the language would have brought about a situation in which nothing which could stand alone as a word would be without a high tone somewhere. Evidence for this statement can be seen in the discussion of morpheme structure in subsection A1 of Chapter IV and of Central Khoisan morpheme structure in subsection 3C of Chapter V. Verbs were a possible exception to this, it was not so important for them because of their typically final position; the markedly falling realisation of the initial syllable of a verb with only low tones would show that it was one tone level below a preceding word. But when focussing on this question in elicitation, it seemed that it was usual for the first high tone in an utterance to have pitch level 1, whatever the rules predicted. So the derivations in (3.46) and (3.47), where the object is the element marked with the suffixed subject pgn, need a final rule of promotion. This rule does not take notice of an earlier high tone in a temporal on level 2, as example (3.47) shows, nor the presence of a high tone in the narrative conjunction.

(3.46)		kù̀bà	ṭí:gé
		Obj	Verb
	Underlying	2	3
	Mark object:	1 à	- (3mSg subject)
	Rule 1	-	-
	Rule 2	-	2
	First high is <sup>1</sup>	-	1
		<sup>1</sup> kù̀bà:	<sup>1</sup> ṭí:gé

The pitch level of the realisation of <sup>1</sup>kù̀bà: in relation to <sup>1</sup>ṭí:gé is the same as that of a low tone preceding a high tone in the same word, in other words the two words seem to function as one tonally, as far as the pitch realisation on which the low tones preceding the high were realised.

(3.47)	ʔúṭè	mòḗì	kù̀bà	ṭí:gé	
	Temp	Subj	Obj	Verb	
	Underlying	3	2	2	3
	Mark object:	-	-	1 à	- (3mSg subject)
	Rule 1	2	1	-	-
	Rule 2	-	-	-	2
	First high is <sup>1</sup>	-	-	-	1
		<sup>2</sup> ʔúṭè	<sup>1</sup> mòḗì	<sup>1</sup> kù̀bà:	<sup>1</sup> ṭí:gé

In considering words in isolation, where they would have tone level 1, a word with all low tones had a pitch level lower than either a low preceding a high or any low following a high.

(3.48)				
	k'àsà	k'ápó	ʔísà	ʔáʔàpò

Sometimes, when a low toned word was expected to have tone level 1 in a clause, a high tone in a following word, would sometimes, but not always, have something I interpreted as a tone level 2. This was one of the topics which in my work I returned to at decent intervals, but I could not satisfy myself of any regularity. There is no way of showing a lowering of tone level between two words all of which have low tones. In this way both the following clauses have the same realisation.

- (3.49)      <sup>1</sup>mòǝ̀ì <sup>1</sup>ḵù̀bà: ṭí:ǵé 'Moji built the house'  
               <sup>1</sup>mòǝ̀ì <sup>2</sup>ḵù̀bà: ṭí:ǵé 'he built Moji's house'

The presence of an overt subject in the second clause and its absence in the first was not a factor which affected the phonetic realisation of the pitch on the last word. Elicitation was inconclusive and the transcribed texts do not help.

A long sequence of low tones in a word or words without any high morae, has a noticeable, but slight, downward movement. This is not found with high tones, where the maintenance of an established pitch level is needed. However, in longer utterances, where there is more than one clause, there is a "steadily falling intonation contour" as Hagman 1977 writes of Nama, which means that a level 1, and other lower levels, in subsequent clauses may not reach the same pitch level as those in the initial clause in the utterance.

- (3.50)      <sup>3</sup>sá: <sup>1</sup>bàrúàsà <sup>2</sup>íḵá: <sup>1</sup>màḵǎ: <sup>1</sup>ǝ̀?wá:sì  
               and she sent a letter that she has received the things

In (3.50) the pitch of the high in <sup>1</sup>màḵǎ: does not reach that of <sup>1</sup>rú in <sup>1</sup>bàrúà. Although in single clauses the usual overall impression is

of a sequence of tone levels only, I have sometimes heard this 'steady fall'. The pitch realisation of ɔ́á: in (3.51) was somewhat below that of ɛ́í. It was not so low as to be downdrifted to level 2. ɔ́á: has to be received by the listener as level 1; level 2 is just not Sandawe.

- (3.51)     <sup>1</sup>ɛ́í <sup>2</sup>wàré <sup>1</sup>ɔ́á:gáʔ̀  
           1Sg mate catch 3Pl  
           They've caught my friend

There are also examples where this overall lowering does not operate. In (3.52), the high tones in <sup>1</sup>sèʔé <sup>1</sup>ɔ́á: are phonetically slightly higher than that in <sup>1</sup>ɛ́ě:pó. Only the word <sup>1</sup>ḵó:sípòwàʔ̀ is raised to a higher tone level; <sup>1</sup>sèʔé reestablishes the preceding level 1.

- (3.52)  
<sup>2</sup>ḵá: <sup>2</sup>ʔúṭè <sup>1</sup>ɛ́ě:pó <sup>2</sup>ʔúṭè <sup>1</sup>ḵó:sípòwàʔ̀ <sup>1</sup>sèʔé <sup>1</sup>ɔ́á: <sup>2</sup>sàòsũ:  
 and           absent 2Sg   present 2Sg if very well talk 1Pl  
 you weren't there yesterday, if you'd been about yesterday we  
 would have had a real good talk about it

As has just been seen, the narrative clause is a variant of the basic clause; it has the addition of a narrative conjunction. The imperative has features of the basic clause. Specifically, just as the suffixed subject pgn in the basic clause can appear after any constituent except the subject, so too the imperative morpheme and the pgn have the same freedom of occurrence.

The imperative is a form of the basic clause which has its own pgn forms in the second person. They have the form:

(3.53) 2Sg ɸò  
 2Pl ɸè

I have no motivation to lead to a segmentation of these forms, and I cannot say if the labiality is to be related to that found in the nominal 2Sg pgn, ɸò. I assume that these forms are made up of an imperative morpheme and a pgn. Before a pgn with an initial consonant the velar element appears as xɿ.

(3.54) dàrí mòxɿsà ²ʔí tsʰàwà  
 hut xɿ 3fSg look for  
 let her look for a hut

An object NP can be, and often is, raised to level 1 when following the verb; this is not possible in the basic clause type. It seems as if here the tendency is for the first item to take the pgn imperative suffix and the urgency of an imperative demands that a following noun should take a level 1.

(3.55) ¹mě:ɸò ¹hèwéxé:ʔ. ²t̪âkà ¹mě:ɸò ²hèwéxé:ʔ. ³t̪à'kí  
 NEG ɸò those want NEG ɸò those run  
 don't long for those things, don't run after those things

A verb is not raisable in such a position.

(3.56) ¹wàrà'gě:ɸò ²ɸáné  
 God ɸò ask  
 ask God for them

The nominative suffix has been found in the imperative, but in my example it follows the item marked ɸò and is best analysed as

a separate clause in order not to violate the incompatibility of a marked verb and marking on any other clause constituent, and to account for the non favoured VS sequence.

- (3.57)        <sup>1</sup>hísà      <sup>2</sup>gà'dàj?`    <sup>1</sup>ǰí:géḵò    <sup>1</sup>hàpá:  
                  when 3fSg get thin    eat ḵò 2Sg NOM  
                  if it gets thin, you eat it yourself

Up to this point, all clauses have been characterised by a mobile suffixed subject pgn. The majority of other clauses types are based on the nominal clause, which I also refer to as the copular clause. There is one, the exclamatory clause, which seems to constitute a class of its own.

I call a clause which make a statement implying surprise, or appreciation an exclamatory clause. It is defined by two things: the absence of any pgn or nominative suffix, (except where there is both an adverbial and no overt subject) and secondly by having every element of its structure realised on tone level 1.

- (3.58)        <sup>1</sup>ǰǒ:    <sup>1</sup>k'̀àwé  
                  the child is ill

<sup>1</sup>gàlà mà    <sup>1</sup>ts'èwéó:  
                  and he went on making the long rope

<sup>1</sup>tàtá    <sup>1</sup>dì?á?`    <sup>1</sup>dḵòmó  
                  father really knows how to buy eggs

<sup>1</sup>xâj    <sup>1</sup>ǰé:  
                  bad 2Sg do  
                  you did wrong



The only sequence which has been noticed is the unmarked SOV; I assume that all constituents have their underlying tone level and that it is a characteristic of this clause type to raise all constituents to 1.

A copular clause has as its structure:

(3.59)  $NP_1 + NP_2$

It is characterised by its incompatibility with the nominative suffix and the suffixed subject pgn. This structure is referred to as a nominal clause. In a nominal clause, the underlying tone levels are 2 as in (3.60). Frequently the whole clause is in focus and both constituents promoted to level 1, as in the examples in (3.61).

(3.60)  $S \rightarrow {}^2NP_1 + {}^2NP_2$

(3.61)  ${}^1\text{̀}ò\text{̀}m\text{̀}ó\text{̀}s\text{̀}ò\text{̀}k\text{̀}í\ {}^1\text{̀}\text{̀}\grave{a}\text{̀}k\text{̀}\hat{i}$   
 people  
 there were even no people

${}^1\text{̀}\grave{c}\text{̀}ú\text{̀}m\acute{a}\ {}^1\text{̀}\text{̀}\grave{a}\text{̀}k\text{̀}\hat{i}\acute{e}:$   
 country  $\text{̀}\text{̀}\grave{a}\text{̀}k\text{̀}\hat{i}$  3Sg  
 the country had nothing

It is possible to focus on the  $NP_1$ . When this is done, the  $NP_1$  is raised to level 1, but the  $NP_2$  remains at its underlying level 2.

(3.62)  ${}^1\text{̀}\text{̀}\grave{r}\text{̀}\grave{e}\text{̀}\text{̀}\text{̀}\text{̀}\acute{e}\text{̀}\text{̀}\text{̀}\text{̀}\grave{e}\ {}^1\text{̀}\grave{e}\text{̀}m\acute{e}\text{̀}s\acute{u}\ {}^2\text{̀}\acute{a}\text{̀}:s\grave{u}$   
 proper name person(f) good 3fSg  
 Tseretsetse, as a person, is good

In example (3.63), ʔá:w̄ is not in agreement with kósógó, but kósógó is a statement of the area in which the person spoken about is good. It is in focus.

- (3.63)      ʔkósógó ʔʔá:w̄  
                  thought good 3mSg  
                  he's got a good disposition

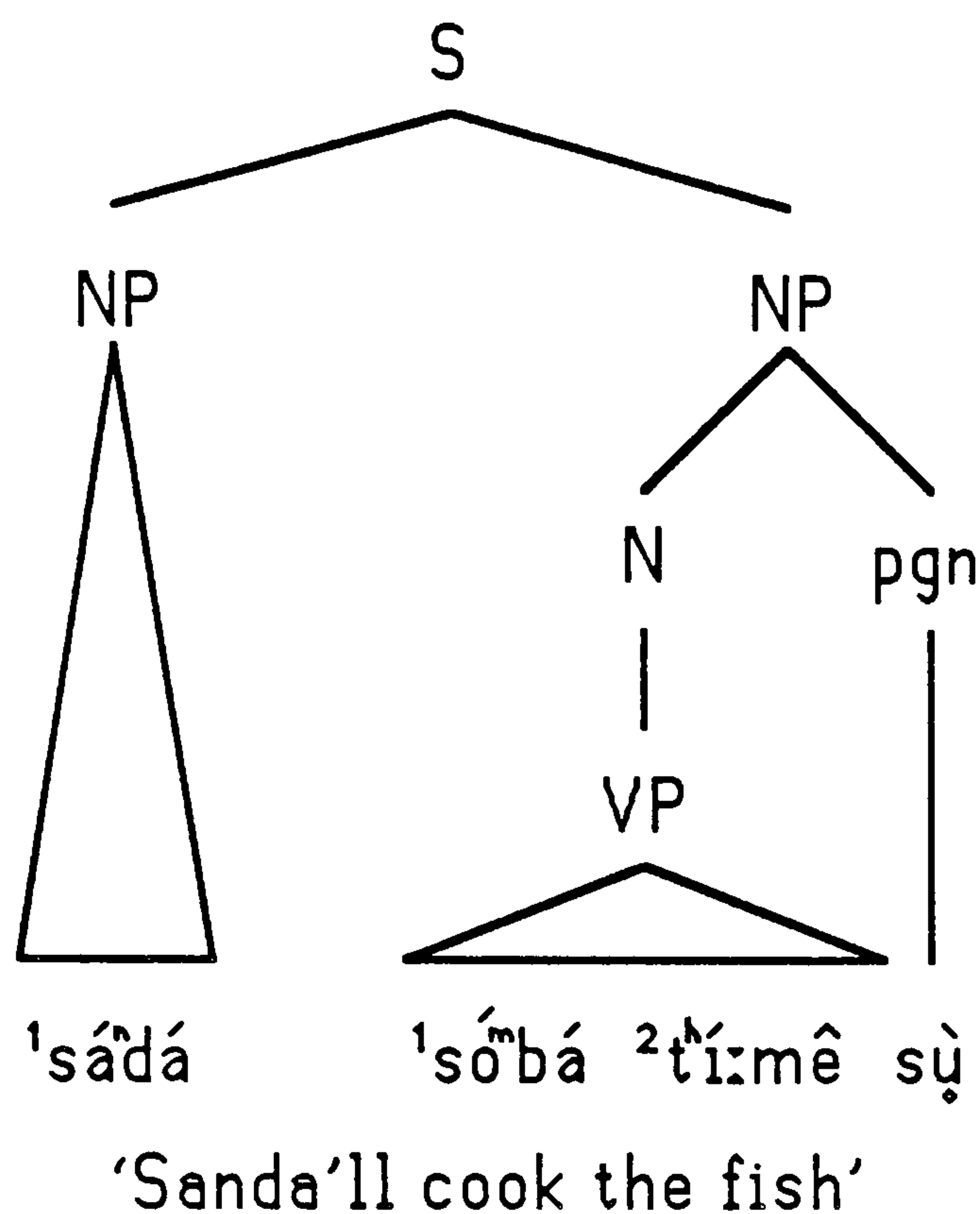
The nominal clause is used as the basis for two types of clause which have verbs. The first to be treated is the irrealis; the second uses the suffix sí.

- (3.64)      ʔsáda ʔsóba ʔtí:mésù  
                  Sanda will cook the fish

The clause in (3.64) is translated by a future tense in English, but the structure is also used in complex sentences to indicate something that is not yet realised, and I will refer to the construction as the irrealis. Its irrealis use has been seen in (3.52). It has few similarities with the basic clause in its structure. Although it contains a pgn, this pgn is from the nominal series. This pgn can only appear on the verb; it has not the free privilege of occurrence which the suffixed subject pgn has been shown to have in the basic clause. The nominative suffix -á: is not possible in this structure. In the basic clause, the declarative suffix -gâ can appear on any constituent, (it must immediately precede either the pgn or the nominative suffix). In the irrealis construction, -gâ can never follow the object. If it follows the noun it will have a low toned nominal pgn marked agreeing with the noun; if it follows the verb, it will follow the nominal pgn which is suffixed to the verb and have the suffix -ʔ̄. (The nature of this suffix is discussed in subsection A2 of Chapter V.) All these facts

can be explained if the irrealis is taken as a nominal clause. The inability of -gâ to follow the object is taken as an indication that the object and the verb form one constituent. The structure of (3.64) can be represented as in (3.65).

(3.65)



Within the VP, the tonal relation between the object and the verb is what is expected, underlyingly  ${}^2O \quad {}^3V$ . As is the usual custom with nominal clauses, both constituent NPs share the same tone level.  $NP_1$  can be promoted as being in focus, or both NPs can be raised if the whole clause is in focus; this is analagous to the marking of a final verb in the basic clause structure. With an irrealis clause of SV structure, it is possible for both the forms in (3.66) to be used.

- (3.66)     ${}^1gélé \quad {}^1má?ì:$   
 Gele will be tired  
 ${}^1gélé \quad {}^2má?ì:$   
 Its Gele who'll be tired

The translation is intended to show that there is a proportionality between the examples in (3.67) and those in (3.66).

- (3.67)      <sup>1</sup>gélé <sup>1</sup>maʔà:  
 Gele was tired  
<sup>1</sup>gélá: <sup>2</sup>maʔ`  
 Its Gele who was tired

The use of tone levels here shows the partial assimilation of the underlying nominal clause structure to that of the basic clause in the use on tone levels, but when both subject and object are present, this is impossible.

- (3.68)      \*<sup>1</sup>sáǎdá <sup>2</sup>sóǎbá <sup>3</sup>tí:mêsù

The reason is clear when such a clause is presented to an informant. As soon as he hears <sup>1</sup>sáǎdá <sup>2</sup>sóǎbá, the first reaction is to take it as one single NP, that is as meaning 'Sanda's fish'. The unmarked interpretation of two NPs, when the second is one tone level lower than the first, is as the associative construction. Example (3.69) is possible, with the approximate meaning given.

- (3.69)      <sup>1</sup>sáǎdá <sup>2</sup>sóǎbá <sup>2</sup>tí:mêsù  
 she will cook Sanda's fish

In subordinate clauses the irrealis can appear with a conjunction word.

- (3.70)  
<sup>2</sup>sê <sup>1</sup>híkí <sup>2</sup>dǎ:sì <sup>3</sup>ká: <sup>2</sup>ʔáʔàni <sup>2</sup>hě:w <sup>3</sup>tâj <sup>3</sup>sí: <sup>2</sup>ts'exìsé <sup>3</sup>máts'àsì  
 now how can I            lizard this run            alone eat  
 now how can I get the lizard to run off so I can eat on my own

The narrative conjunction is used in (3.70); it contains a suffixed subject pgn, which is not compatible with the irrealis used as an independent clause, (where it would be translated as a future). I take it that this usage also is an indication of the way in which the originally nominal clause is losing its peculiarly nominal characteristics; the benefits of having a clear structural signpost in complex sentences has clearly outweighed the historically nominal structure. The narrative conjunction is also found in constructions derived from the nominal construction even when not subordinate. See (3.52) for an example:  $\text{t}^{\text{h}}\text{e}:\text{p}^{\text{o}}$  is not compatible with the suffixed subject pgn which is present in  $\text{k}^{\text{a}}\text{z}$ . The synchronic status of the narrative conjunction has outstepped its historical origin.

Note how this sentence, (3.70), constitutes only one information unit; only the interrogative has tone level 1. We don't need to be told that the friendship of the hare and the monitor lizard is one intended, by the hare, to be of benefit to him. That the hare wants to remove the lizard from the scene and enjoy eating the goat they have acquired is not something that the audience does not expect.

The second type of nominal clause which has come to be used as a clause best considered to have SOV structure, is that which uses the suffix -sí. It employs a different strategy to assert its SOV status.

The suffix -sí indicates possession, ability to do something, achievement of goal, variously as it is used with a nominal, an imperfective verb and a perfective verb form.

- (3.71)       $\text{m}^{\text{a}}\text{t}^{\text{o}}\text{s}^{\text{i}}\text{s}^{\text{i}}$  'I've a gourd'  
                $\text{t}^{\text{h}}\text{i}\text{m}^{\text{e}}\text{s}^{\text{i}}\text{s}^{\text{i}}$  'I can cook'  
                $\text{t}^{\text{h}}\text{i}:\text{m}^{\text{e}}\text{s}^{\text{i}}\text{s}^{\text{i}}$  'I managed to cook it'

Forms with  $sí$  are nominals, they take the nominal pgn series, and in main clauses they are incompatible with the nominative suffix - $á$ : and the suffixed subject pgn series. Historically clauses which have a verb with this suffix are copular clauses with the structure:

(3.72)  $S \rightarrow NP + NP$

But when used in a clause the allocation of tone levels is:

(3.73)  ${}^1NP_1(\text{Subject}) {}^1NP(\text{Object}) {}^1Vsí$

It is the use of tone level 1 with the verb that differentiates the use of  $sí$  as a nominal and as a verb of a finite clause.

(3.74)  ${}^1\underset{\omega}{c}á\grave{a}: {}^1hèwé {}^1mànàsísì$   
 place that know  $sí$  1Sg  
 'I know that place'

${}^1wá\grave{?}má:tà {}^1\text{?}íésèts'é$   
 companions loc stay  $sí$  3mSg neg  
 'it doesn't stay with its kind'

(The goat then goes in with the cows, gets gored and compensation is demanded)

If an additional NP is added also in agreement with the  $NP_1$ , which is the 'subject' NP, a choice can be made either to bring it into focus or not. In the first of the following examples, the man who married Ignatia is in focus; in the second the thief is not. In the first example, the conversation is about Ignatia and the fact that some one has married her is new information. In the second example, we know that the  $nà\text{?}ásò$  fruits have been stolen and that

the man who the hare is talking about is going to be the thief.

(3.75) 'ǰémésé: 'kó:sè 'ʔìǰǎ:sà ²síésúsě:  
man exist Ignatia take 3fSg sí 3mSg  
'somebody has married Ignatia'

'ǰémésé: 'kó:sè ²ʔìsásě:  
man exist steal sí 3mSg  
'there must be somebody, somebody who has stolen  
them'

And as it functions as a nominal, a form with sí + pgn is itself capable of taking again another sí as a nominaliser.

(3.76) 'ʔít'ǎ:ǰíwàsêsisì (see next example)

In the following example, ʔít'ǎ:ǰí is a verb which can be translated as 'lengthen'

(3.77) NP<sub>1</sub> NP<sub>2</sub>  
'ǰéǰé 'ʔít'ǎ:ǰíwàsê  
'the ears have succeeded in becoming long'  
'the ears are long'

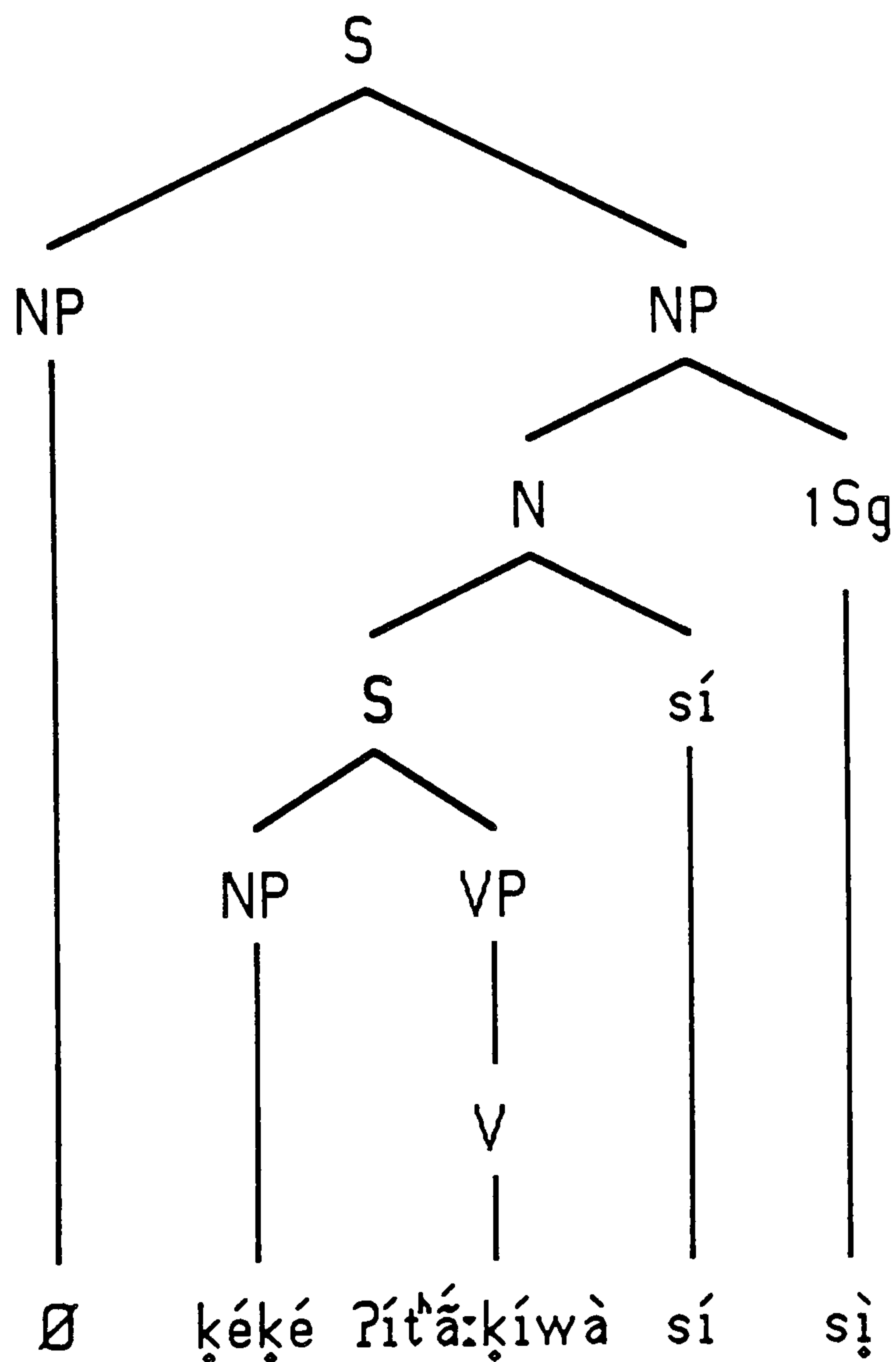
'ǰéǰé 'ʔít'ǎ:ǰíwàsêsisì  
I have ears which have succeeded in becoming long  
'ǰéǰé ²ʔít'ǎ:ǰíwàsísì  
I have ears which have become long

I was not able to lead Nd Augustine to show me the way to any real understanding of the difference of use of the last two forms in

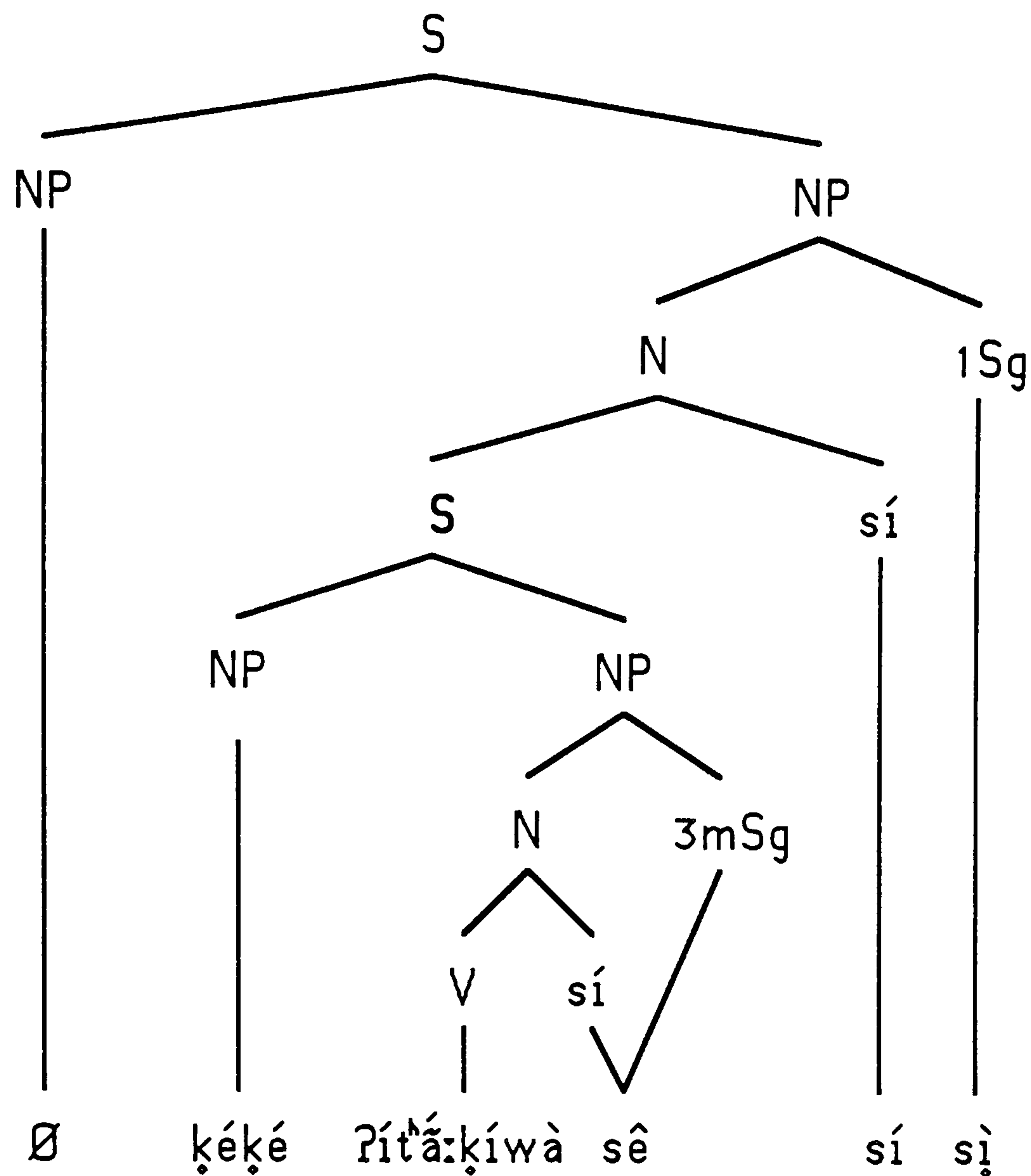
contexts; they both were adequately translated for him by 'I have long ears'.

The trees in (3.78) show how the different relationships of subject and verb in a clause of the structure NP + VP and in a clause of the structure NP + NP, where the tone levels on the subject and verb are different, account for the difference in the allocation of tone levels in the last two clauses of (3.76).

(3.78)



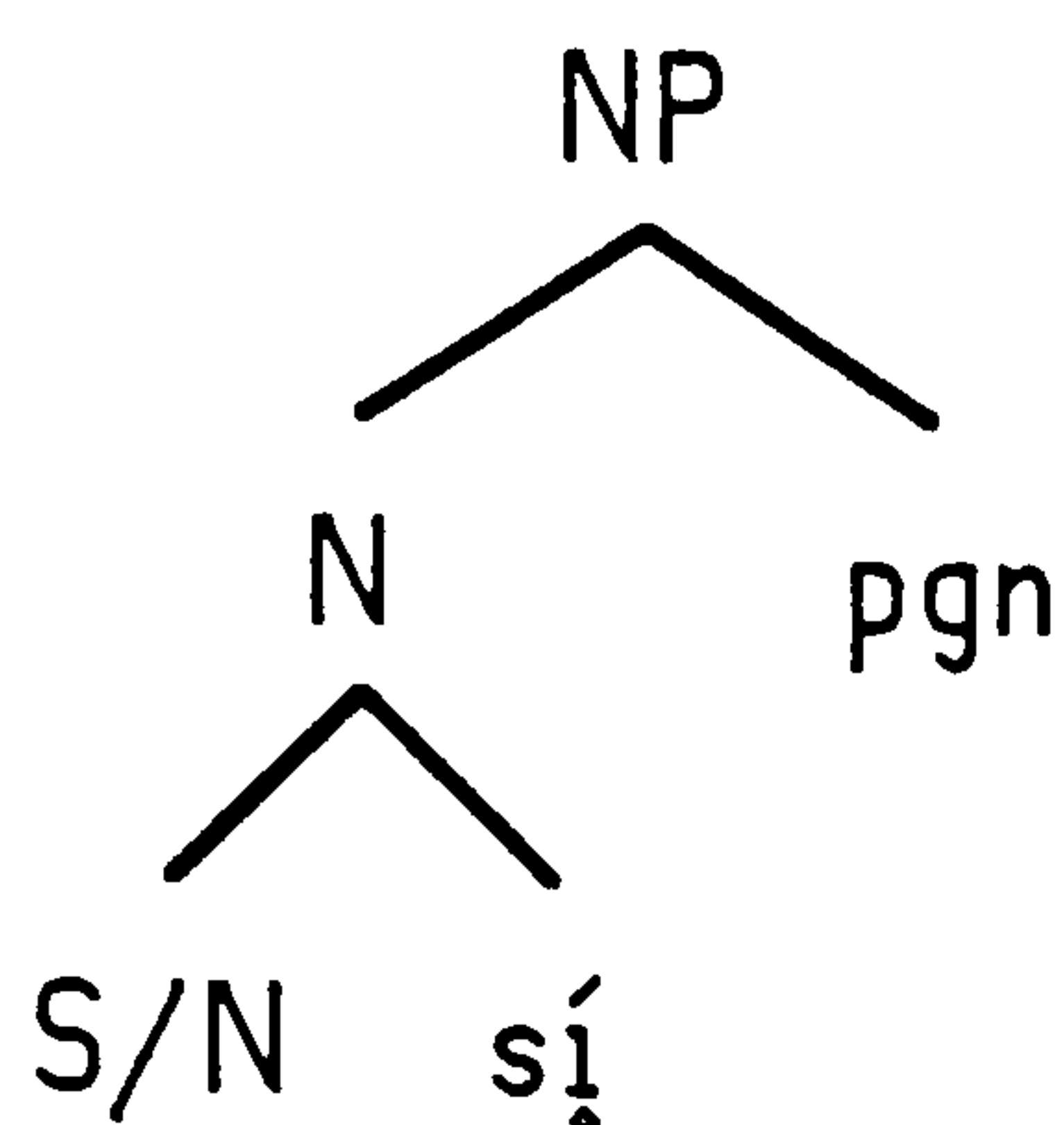




The first tree has taken S as the point of origin for 'kéké ʔítá:kiwàsê, although NP could well have done also. Within such an NP I have not elaborated a strategy to demonstrate if each of the two words is itself a separate NP or if they are coordinate within one NP. The use of the specifier  $\xi$  seems to show that both interpretations are used:  $\xi$  can either appear on the second word or on both, but not on the first word alone.

When VP+sị is used as a nominal, the V+sị+pgn will have a tone level one below that of an object NP, or any NP other than the subject, in other words the relationship will be the same as that used in the basic clause. I take it that the structure is:

(3.79)



- (3.80)    <sup>1</sup>síríkó    <sup>2</sup>ḡǎj:ʔ̀tè    <sup>2</sup>ʔíésè:  
Siriko   other side of   stay sí 3msg  
the one who lives the other side of Siriko

This usage differentiates a clause of the structure O V+sí from an NP whose structure includes the sequence O V+sí. The raising, in the clause, of the V to level 1 seems to be a deliberate innovation to make the structure unambiguous.

All clauses so far considered have been independent clauses. Some subordinate clauses are introduced by a subordinating conjunction, others have suffixes to show their status. Those with suffixes can appear either before or after the main clause; their behaviour is as for an independent clause. Clauses introduced by a subordinating conjunction, (SC), behave in the same way as narrative clauses; they may contain a focussed item, they may contain an emphasised item, (see below for emphasis), they may contain neither.

Where they contain neither, the tone levels are the underlying, unraised levels.

- (3.81)            <sup>1</sup>tétàkè            <sup>2</sup>ʔàmûà    <sup>3</sup>ʔó:    <sup>3</sup>níʔ̀  
completely imperative 2Pl   decide SC 1Pl   go(Pl)  
you must make a clear decision that we should go

This leads to a discussion of the underlying specification of the narrative conjunction. As is seen in (3.81), the sequence <sup>3</sup>ʔó: <sup>3</sup>níʔ̀ suggest that the subordinating conjunction shares with the verb an underlying level 3. The narrative conjunction has been given level 4 as its underlying specification. In <sup>3</sup>ʔó: <sup>3</sup>níʔ̀, the <sup>3</sup>ʔó: could have been raised from an underlying level 4 because of the preceding level 2. Like the narrative conjunction, the subordinating conjunction also appears on level 2 when following a level 1. There are very few occasions in the texts transcribed where tone level 4 is needed, and none of these is on a subordinating conjunction. I would like to keep an open mind about these conjunctions. Either they have an underlying level 4, as I analyse them here, or they are underlyingly level 3 and do not submit to raising rules except optionally.

Narrative clauses in sequence may each constitute one information unit, or more, or they may together form one information unit. This parallels the situation with subordinate clauses. In example (3.82), there are two basic clauses, the second introduced by the narrative conjunction, but only one information unit.

- (3.82)      <sup>1</sup>híaʔ̀      <sup>2</sup>ʃô      <sup>3</sup>ká:      <sup>3</sup>ɛêjʔ̀  
                  when 3Pl sleep and 3mSg day ʔ̀  
                  when they had slept and it had dawned

All of the types of main clauses considered so far have been either statements or commands. I will now describe what happens with questions before noting two phenomena which have a general application.

When questions have an interrogative word, that word is in focus, and will have tone level 1. There is no special intonation

pattern and the remainder of the tone levels will be as for statements.

(3.83)      <sup>1</sup>hôá: <sup>2</sup>ɣí 'who's coming'

The suffix *nè*, is placed immediately before the suffixed subject *pgn* in basic clauses, or after a nominal in constructions based on a nominal clause. It questions the whole clause. The clause does not necessarily require any special pitch or intonational pattern.

However, utterances with an interrogative morpheme and also those without, can have the whole pitch on them raised by one tone level. Example (3.84) has two instances of *nè*, the first is not used as a question which expects an answer and the overall level of the utterance is as for a statement, but the second is a direct question and has an extra high pitch level established. The answer comes on the second speaker's level 1, as a statement.

(3.84)      A: <sup>2</sup>sê <sup>2</sup>bă:bà      <sup>1</sup>ʔísìts'énì:      <sup>↑</sup><sup>1</sup>k'éʔêpònè  
                  now father did you refuse it listen 2Sg nè  
                  A: and you refused to do it! Are you going to listen?  
                  B: <sup>1</sup>k'éʔésì  
                  listen 1Sg  
                  B: I'm listening

The examples in (3.85) show this establishment of an extra high pitch level when there is no interrogative word.

(3.85)      <sup>1</sup>sàò      <sup>1</sup>ně:sègáʔ      <sup>↑</sup><sup>1</sup>ʔárè  
                  words there sure are true  
                  There's something to talk about, isn't there

A: <sup>2</sup>sê <sup>1</sup>hèsú <sup>2</sup>wàré <sup>1</sup>ʦí <sup>2</sup>ʔîsúgáʔ`

B: <sup>1</sup>hàpú <sup>2</sup>ʔîsúgáʔ`

A: <sup>1</sup>ʦí <sup>2</sup>ʔîsúgáʔ`

A: <sup>2</sup>sê <sup>1</sup>hèsú <sup>2</sup>wàré <sup>1</sup>ʦí <sup>2</sup>ʔîsúgáʔ`

now 3Sg friend 1Sg sister gáʔ`

A: Now she's my sister.

B: She's your sister?

A: My sister.

Two features that can be found in any clause type where they can apply are downdrift and a raising of the tone level under emphasis.

Downdrift can occur between two words. It has been noted between two words on successively lower tone levels. Between words on identical tone levels, there is good reason for downdrift not to operate: it would have the effect of imposing an interpretation that the words were on successively lower tone levels, which would indicate a different structure.

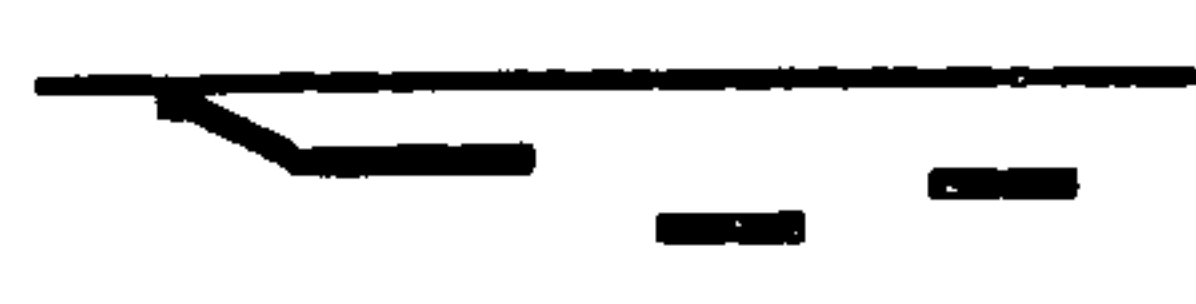
(3.86)



<sup>1</sup>hôá: <sup>2</sup>í

who NOM come(Sg)

who's coming



<sup>1</sup>hôá: <sup>2</sup>àí


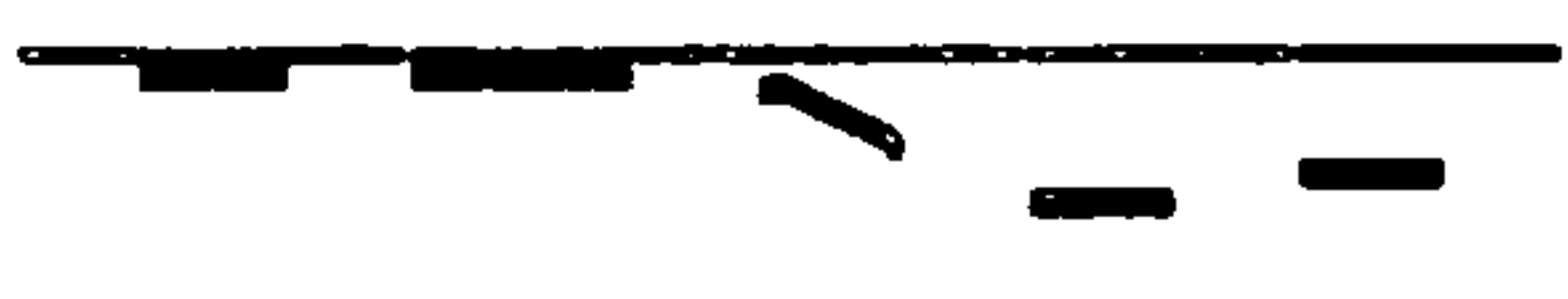

who NOM come(Pl)

who are coming

The pitch on ɣí is the same as that on áz; the pitch on ɣí is downdrifted from that of áz. In the second example in (3.86), the high tone in ɣàɣí has, phonetically, the same pitch level as the ɣ'é of k'ìɣ'é in example (3.87).

This downdrift requires for its operation the presence of a phonetically low tone between the two highs. A short syllable with two low morae but which, as it immediately follows a high tone, has a raised realisation, will not be a conditioning environment for this downdrift. Compare the pitch levels of the final syllable of the verbs in the first two clauses in (3.87) with that in the last clause.


(3.87)

	
<sup>1</sup> ʔúɣèsà <sup>2</sup> ɣí	
she came yesterday	
	
<sup>1</sup> ʔúɣáz:sà <sup>2</sup> k'ìɣ'é	
ʔúɣá:                      k'ìɣ'é	
some time ago    be angry	
she was angry some time ago	
	
<sup>1</sup> sɔ̃básà <sup>2</sup> t'í:mé:	
she cooked the fish	

Downdrift of this nature is more noticeable in shorter utterances than in longer ones.

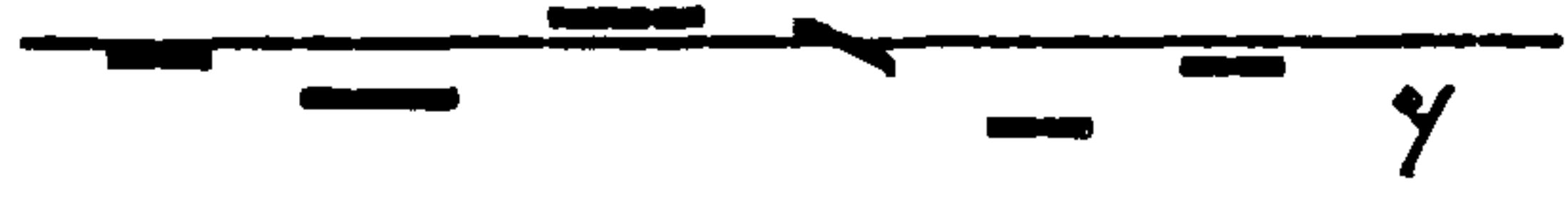

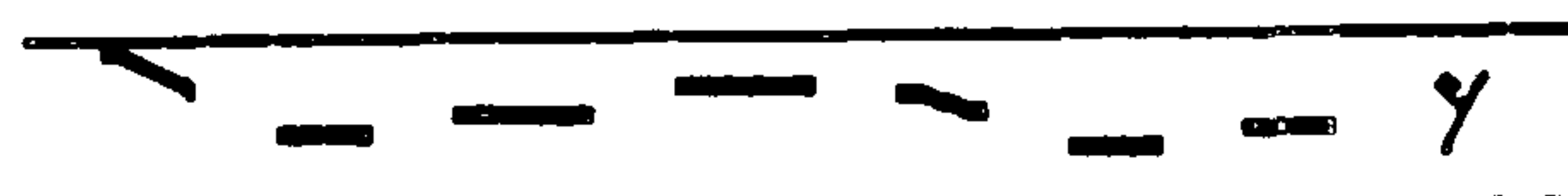
But it is regular for a verb with an initial high tone to be downdrifted even after the raised realisation of a short low syllable when this short low syllable has been preceded by a step down in levels. The nett effect of this is for a verb to remain at its

underlying level, 3, rather than being raised to 2.

- (3.88)   
 sá<sup>h</sup>dá s<sup>h</sup>ómbásà t<sup>h</sup>í:mé  
 she cooked Sanda's fish  
<sup>1</sup>sá<sup>h</sup>dá <sup>2</sup>s<sup>h</sup>ómbásà <sup>2</sup>t<sup>h</sup>í:mé (predicted)  
<sup>1</sup>sá<sup>h</sup>dá <sup>2</sup>s<sup>h</sup>ómbásà <sup>3</sup>t<sup>h</sup>í:mé (actual)

This type of downdrift does not occur after ?<sub>h</sub>.

One option which is open to a speaker when he wishes to emphasise a word, is to raise its level. It has been shown above how when there is focus on a word, it is fronted and it is promoted in its tone level. Even where a word is not marked and when it does not precede a marked word, its tone can be raised.

- (3.89)   
 dé ?é: t<sup>h</sup>ó:sàná h<sup>h</sup>íkì  
<sup>1</sup>dé<sup>h</sup>?é: <sup>1</sup>t<sup>h</sup>ó:sàná <sup>2</sup>h<sup>h</sup>íkì  
 dé ?é: t<sup>h</sup>ó:sàná h<sup>h</sup>íkì  
 wait SC1Sg to the toilet go  
 wait so that I can go to the toilet
-   
 dé ?é: t<sup>h</sup>ó:sàná h<sup>h</sup>íkì  
<sup>1</sup>dê?é: <sup>1</sup>t<sup>h</sup>ó:sàná <sup>2</sup>h<sup>h</sup>íkì
-   
 dôkò ?é: t<sup>h</sup>ó:sàná h<sup>h</sup>íkì  
<sup>1</sup>dôkò <sup>3</sup>?é: <sup>2</sup>t<sup>h</sup>ó:sàná <sup>3</sup>h<sup>h</sup>íkì

In example (3.52) the word following the emphasised word reverted to approximately the previously established level 1. In the first example of (3.89), the raising of the levels persists to the end of the utterance. The hare is being specious: he only wants an excuse to leave his companion the hyena and to 'lose' his knife so that he can send the hyena back just before food is served.

Example (3.89) also shows an anomaly of the same type as that illustrated by (3.42). The imperative form *dôkò* has fused with *ʔé:* to become one word. In *dêʔé:*, the *ʔé:* is on the pitch level of tone level 2. An NP following *ʔé:* will be higher in its pitch realisation and here I perceived it as level 1, although the rules predict that it will be on level 2.

Transcribing texts, then using them as a basis for elicitation and then, perhaps later, returning to elicited forms, results in different judgements. Basing myself on a sentence in the text, I elicited:

(3.90)      <sup>3</sup>sí: <sup>2</sup>sê̂ <sup>2</sup>ʔí <sup>1</sup>ʔé:ʔòsì <sup>2</sup>bă:rà:  
and then I began to drink

Later, the form given me was:

(3.91)      <sup>3</sup>sí: <sup>2</sup>sê̂ <sup>1</sup>ʔí <sup>1</sup>ʔé:ʔòsì <sup>2</sup>bă:rà:

I believe that *ʔí* was only heard (by me) on the first occasion as a level 2 because I had not perceived the raised level 1. *ʔé:ʔòsì* was modeled on a word in the text which was raised under emphasis.

The regular transcription would therefore be:

(3.92)      <sup>3</sup>sí: <sup>2</sup>sê̂ <sup>1</sup>ʔí <sup>↑1</sup>ʔé:ʔòsì <sup>↑2</sup>bă:rà:



It seems that what I have here called emphasis is less well integrated into the syntactic structure than the promotion which, in the basis clause, usually goes with marking and fronting. A synopsis of what I take to be the history of the basic clause is given at the end of subsection B2 of Chapter V.

There are four suffixes which are anomalous in their behaviour.

- (3.93)      ó: 'duration'  
               ô: 'finality'  
               ǎ: 'something else is coming'  
               v̂: 'surprise and satisfaction'

v is used for a vowel identical in quality to the preceding vowel.

They are anomalous because although in one respect they are suffixes, in another they have the characteristics of a word. There are two reasons why they can be considered suffixes. They all begin with a vowel, and no word begins with a vowel. Those which have an oral vowel cause the epenthesis of g after a nasalised vowel, (3.94), and those which have a nasalised vowel throw their nasality back onto a previous oral vowel. They behave as words in that they have a specification of tone level which is independent of the word to which they are attached; the tone level which they carry is 1, although ó: has been found on a lower tone level. Examples are given in (3.94)

- (3.94)      <sup>1</sup>mìníkíwàsúsũ:<sup>1</sup>gó:  
               mìníkíwà sí sũ: ó:  
               know them sí 1Pl ó:  
               we know all that

(3.95) 'gàlà mà 'tʂ'èwéó: .  
 long rope twist ó:  
 and he went on making the rope

'tʂ'éxìsé'tʂ'é'ó:ô:  
 alone 1Sg NEG ó: ô:  
 it's not me alone that's in this

'ɔ̃: sípò'ô:  
 arrive sí 2Sg ǂ  
 so you've got here then

'tʂ'í'í:  
 now me, I ...

The second example in (3.95) has shown also that ó: has been used together with ô:. ó: has also been found integrated into the structure of a word.

(3.96) wèréó:sà  
 and she went on walking about

It would be possible to analyse these anomalous suffixes as anomalous words, anomalous in not having an initial consonant, from which the other phonetic phenomena derive. If this were done, -ó:, as used in word structure, would have to be stated as a different item to the anomalous word ó:.

The discontinuous item, hí...jʔ̀, 'when/if', is anomalous in a minor sense in that the final glottal stop is usually silently released in comparison with other instances of jʔ̀. I take this as a factor of its usual position as final in an information unit; what

follows is usually a clause which has a focus, establishing a new level 1, on the same pitch as the realisation of hí.

There is one device which has been recorded as a type of hesitation phenomenon.

Lengthening of the final vowel of a word on its end pitch is sometimes used whilst the speaker is recalling something. It does not have the urgency and floor-holding properties of ǎ:, 'something else is coming'.

(3.97)      1mǎ:kǎ:ǎ:ǎ:    1sìtìní    2nâ    1mbîlì    2sâsà  
                  year                                  '62                                  now  
                  (and this was happening) in ... 1962

1hóts'ǎ:2hóts'ǎ:kí:ǎ:ǎ:  
                  what    what as well  
                  and some other things as well like ...

Two markers of conjunction will be mentioned. ǎ́ is found most frequently in texts conjoining verbs, but it can be used to conjoin nominals; the use of -à is as a suffix to verbs and it conjoins clauses.

The anomalous suffix ǎ́: 'something else is coming', seems probably to be related etymologically to the suffix, ǎ́ 'and'. ǎ́ is frequently used to join two verbs within the same clause. Its use with ʔíé 'to stay, remain' produces a form which in translation into English are best rendered by the continuous tense. It is found suffixed to either the first verb, which is the usual situation, or suffixed to the second verb, or, very occasionally, to both.

Tonally, two adjacent verbs linked by ǎ́ seem to have the same tone level.

(3.98)      <sup>1</sup>sêj̣   <sup>2</sup>ʔíé:   <sup>2</sup>híḳ̀ì  
                  now you're going

But if the second verb has an initial low tone, that verb is one tone level lower.

(3.99)      <sup>1</sup>sêọ̀   <sup>2</sup>ʔíé:   <sup>3</sup>ɟàṭí  
                  now we're coming

In the example in (3.98) the syllable hí has the same pitch as the preceding ʔíé:, but the syllable ṭí of (3.99) has a realisation lower than that on ʔíé: as if it were downdrifted from it because of the low toned ɟà. But the syllable ɟà is not a raised low after a high, but has the same realisation with respect to the ṭí as it would have as a separate word. It is not possible to give a rule that the second verb is a separate word with the same tone level as the previous one to which the é has been attached, because of the second example, nor to say that the second verb is one level lower, because of the first example. I had at first thought that this was an instance of the downdrift over two words of identical tone level specification, but then I heard example (3.).

(3.100)      <sup>1</sup>ʔàlásì      <sup>2</sup>wèréó::      <sup>3</sup>ḳ̀ạ̀  
                  in vain 1Sg walk ó: é      return  
                  I was wandering around and had come back having  
    achieved nothing

Here, ḳ̀ạ̀ has the low falling pitch expected after a word with a tone level one higher, and as no high tone is involved, downdrift cannot be invoked.

The rule about tone levels with é can therefore only be fully

stated by taking into account the inherent tone on the second item.

When  $\acute{\text{é}}$  is used on both verbs, there is tonal harmony, both have the same level.

- (3.101)       $^1\text{ǎ:t'ǎ:} \text{ } ^1\text{hí}\text{ǎ:}$   
 have diarrhoea  $\acute{\text{é}}$  urinate  $\acute{\text{é}}$
- $^2\text{hǒ:} \text{ } ^2\text{sê} \text{ } ^1\text{wàgìnìts'ò:} \text{ } ^1\text{ǎtí:}$   
 ah now visitor be 1Pl  $\acute{\text{é}}$  come  $\acute{\text{é}}$   
 and now we've come as visitors

$\acute{\text{é}}$  on the first verb only indicates successivity; on the second verb only  $\acute{\text{é}}$  indicates simultaneity; on both verbs, indicates their distinct, but complementary nature.

There is another conjunction which is a suffix; it has the form  $\grave{\text{à}}$ . It is only found suffixed to a verb and the verb which follows has no restriction as to the tone level it has, although the most frequent is 1. This use derives from its difference from  $\acute{\text{é}}$ .  $\acute{\text{é}}$  binds together the two verbs almost into a compound,  $\grave{\text{à}}$  emphasises their linked, but individual, nature.

- (3.102)       $^1\text{ǎtâ:} \text{ } ^1\text{dèdúts'ò:} \text{ } ^2\text{ǎě:}$   
 come  $\grave{\text{à}}$  Dedu LOC 1Pl arrive  
 so we came and we arrived at Dedu
- $^1\text{hík'ìó:à} \text{ } ^1\text{ts'ǎ:kà:} \text{ } ^2\text{hík'à:} \text{ } ^1\text{ǎě:}$   
 go ó: 3mSg home 3mSg go  $\grave{\text{à}}$  arrive  
 he went, he went home, he arrived

In all the foregoing discussion, the relation between the head of an NP and the nominal with which it stands in the associative

construction is the same as that which obtains in basic clause structure between a verb and any NP in its clause.

The subject or object of a nominalised clause will have that relationship to the verb.

(3.103)    <sup>1</sup>gélé <sup>2</sup>ɪíʔõ: <sup>1</sup>mànǎ:'ts'é  
 Gele arrival know neg 1Sg  
 I didn't know Gele had come

<sup>1</sup>m'k'ùtânò    <sup>2</sup>ɔě:'ts'é::gìsì    <sup>3</sup>ɪâ:  
 meeting arrive neg 3msg 1Sg see  
 I saw the fellow who wasn't at the meeting

When both subject and object, two NPs unmarked for their function by postposition, are present, it seems that the neutral state is for the subject to be marked by the nominative suffix.

(3.104)    <sup>1</sup>gélá: <sup>2</sup>sóm'ábá <sup>3</sup>t'í:méʔõ: <sup>1</sup>mànǎ:'ts'é  
 I didn't know that Gele had cooked the fish

Conversation is interspersed with words and phrases which add no new information, but which carry the conversation on or ease the interactive process.

Vocatives, for example, carry little new information and usually have a level 2 or something lower if a level 2 has preceded. When they are something more than this, they have been heard with a level 1. Vocatives can take a nominal pgn suffix.

(3.105)    <sup>2</sup>sêná <sup>3</sup>wàré <sup>1</sup>híkí <sup>2</sup>ɪé:sũ:  
 so friend, what are we going to do?

'má:mè 'hósì ³pá: ²ʔíxì ³ᵐbô  
 uncle why & 3mSg thus say  
 uncle, why did he say that?

'hě:w 'tí:kã: ²ᵛémésé:pò 'hísì ²ʔě:jʔ. 'ʔáʔ' 'tów'sú:gì'ó:  
 person(male) ah!

this shadow, man, as I see it, ah!, it's going to finish us all

Other items interspersed in the conversation generally have level 2. One frequent remark is (3.106). It usually appears on tone level 2, just as a slight confirmation of what has gone before. When it is used as an assertion, it will have level 1 and perhaps the gâ declarative, as in the second example in (3.106).

(3.106) ²hèwé ³tãk'é:  
 and that's how it is

²hèwé ²tãk'é:gáʔ.  
 it certainly was like that

The temporal sê is often used in this function of filling in between clauses and points of information. Like other units, it can be suffixed with -kí 'even'; then it is regularly found on tone level 1.

But this type of element, outside the syntactic structure of the clause, is usually on level 2 or lower.

(3.107) ²hínáwéts'áó:: unanalysable  
 ²ʔé:: 'yes'  
 ²hĩ:sì 'now' often translated by the Swahili 'bas(i)'

In establishing the system of tone levels used in Sandawe, the starting point was those uses which were syntactic. These are the structure of the associative construction in the NP, the allocation of a tone level on the verb at one tone level below the NPs in the clause, for those clauses which show this, and the principle of tonal harmony between coordinate items in one NP. Beyond these uses, there was one other factor involved and that is the way in which information is structured in utterances. The degree to which these uses have been syntacticised varies. The use of promotion on and before a marked item in the basic clause seems to be very nearly fully syntacticised; it is only from example (3.35) that it can be deduced that the syntacticisation is not complete. The principle derived from the basic clause structure has been extended to the irrealis construction in so far as its use in the irrealis does not produce forms which conflict with the interpretation strategy which recognises as an associative construction any sequence of two NPs where the second is one tone level below the first. The principle has been taken and used to disambiguate forms with *-sí*. In this disambiguation process, a clause type has been used which has a verb and its associated NPs on the same tonal level; this runs against the principle which is used in the basic clause. The raising of tone level under emphasis, often establishing an extra high tone level 1, is associated with no syntactic marker and can only be considered as a feature of the information structure of the clause. More syntacticised is the raising of tone level in association with an overt morpheme, for example the anomalous suffix *-óʒ*.

What I have referred to as a clause is a syntactic unit. A constituent which is in focus is a point of information. An utterance may contain any number of such points; They are characterised by tone level 1. A stretch which consists of a point



of information, those elements preceding it whose realisation on tonal levels is determined by the presence of that point of information, and those elements following realised on tone level 2 and below, could be seen as constituting a unit of information.

There is an overall 'steadily falling' movement of pitch in an utterance. In shorter utterances this is usually not realised because of the demands of the syntactic use of pitch. When several information units constitute an utterance, the pitch on each level 1 of the information points is likely to be successively lower unless there is a clear syntactic reason for it; this especially obtains with the use of the conjunction -à. This steady fall is neither contrastive nor significant. In transcribing texts from recordings, the stretch selected by my informant for transcription seemed to correspond well to this definition of utterance. He seemed able to recognise its end even without necessarily hearing the reestablishment of a new pitch level for the tone levels of the following utterance. This indicates that there may be utterance final cues which I have so far failed to hear.

The present structure of the basic clause can also be seen as the result of earlier strategies of information organisation. This is discussed in subsection A3 of Chapter V.

## C THE WORD

The descriptions of the previous sections now allow the phonological word to be defined. The phonological word is an entity for which a tone level has to be specified.

A phonological word may well consist of morphemes which belong to different syntactic units; this will depend on the model of syntactic statement used to account for the suffixed subject pgn..

A lexical item may consist of more than one phonological word. Compounds occur which seem to be two nominals in the associative construction. Although downstep could be an alternative analysis for most of them, those compounds in which the second constituent has all low morae show the pitch pattern of a difference in tone level, not downstep. Reduplicated verbs also show the same pattern. The first example in (3.108) must be either a recent formation or a recent calque on a formerly existing one, in Sandawe or another language, because it is given with the unassimilated *z. d̥* would have been the nativised form.

- (3.108)    <sup>1</sup>ʃèw<sup>2</sup>gèzá (buffalo's bile) 'plant sp with bitter leaves'  
           <sup>1</sup>dĩː<sup>2</sup>nòk'ò (stone + ? (cf nówé 'grind')) 'upper quern  
                   stone'

No compound has been found which has a level 2 + level 1 structure.

Nd Augustine showed some hesitation about identifying the tone pattern on <sup>1</sup>ʃí <sup>1</sup>nêsi with that on <sup>1</sup>ʃínêsi. There may be some phonetic cues to word boundary which I have not been able to identify.

## D A TEXT

This text was recorded on 18th May 1982. It has been slightly edited by omitting indistinct passages and I rely on Nd Augustine's interpretation where what I hear on the tape is different from what he repeated to me.

Words and suffixes which do not enter the transitivity system of the clause nor modify it in any way are marked with X. All pgn markers are marked by their person number gender specification, but they are not otherwise differentiated. The various locative suffixes are not differentiated and are not always separately indicated. The various declarative morphemes and interrogative morphemes are not differentiated. The internal structures of relatives is not given. The narrative conjunction is usually not broken down into morphemes, although the components are glossed separately.

and	the conjoining $\acute{\epsilon}$
AND	the conjoining à
ANOM	anomalous suffix
DEC	declarative morpheme
i.a.	inter alios (xì); in N + xì + pgn, N was one of the group and the suffixed pgn indicates the person and number of the whole group
IRR	irrealis morpheme
LOC	locative suffix
MULT	multiple morpheme (can indicate habituality, or plural object
PRIV	privative (translated by 'from' or as negative)

Q	interrogative morpheme
SPEC	specifier
X	suffixes whose exact meaning is not specified. They add to the conversational flow, but their presence does not affect the realisation on tone levels.
Y	words whose exact meaning is not specified. They seem to be conversational fillers.
Z	items which, although they can be written using the transcription for the language are probably best considered extra linguistic. ?é: indicates agreement with the other person talking.
?	unexplained morpheme

## The Short Courtship

A     <sup>2</sup>sê <sup>1</sup>ʔíxì:gâ: <sup>2</sup>ʔĩbô <sup>3</sup>ká? <sup>2</sup>sê <sup>1</sup>hàpúxìsũ: <sup>2</sup>sàòsũ: <sup>3</sup>ká: <sup>3</sup>ké?êj  
<sup>2</sup>sê <sup>1</sup>hó'ʔó: <sup>2</sup>sàòsũ:

Now, this is what he said. You and I are to talk so he can listen to it. So what shall we say?

<sup>2</sup>sê <sup>1</sup>ʔíxì ì gâ     à <sup>2</sup>ʔĩbô

now thus ? DEC 3mSg say

Basic clause.

-

<sup>3</sup>ká?

thus

Introduces speech; can be combined with ḳý + pgn as equivalent of 'and he/she etc said' and must then be considered a clause in its own right, e.g. <sup>3</sup>ḳísíká? 'and I said'; always has level 3.

-

<sup>3</sup>sê <sup>1</sup>hàpú xì sũ: <sup>2</sup>sàò ` sũ:     <sup>2</sup>ká:     <sup>2</sup>ké?é j     Ø  
now 2Sg i.a. 1Pl talk IRR 1Pl pu 3mSg NOM hear IRR 3mSg

Irrealis clause followed by subordinate irrealis clause.

-

<sup>2</sup>sê <sup>1</sup>hó'ʔó: <sup>2</sup>sàò ` sũ:

now Q talk IRR 1Pl

Irrealis clause; the low tones at the end show a steady fall.

B ²sàòts'ě: ?â: ¹sàò sũ: ¹màḵǎ:ná ²wàré ²sàòwàts'ě:  
 ¹ṭàḵîts'égá?` ¹dě:¹t'ě: ¹dě:¹t'ě:

Things to talk about. We'll talk alright. There's something we can talk about, there are plenty of things.

²sàòts'e                    ̣

thing to talk about SPEC

By substitution I established that the tone level on sàòts'ě: was level 2. It has the same relation to the verb as the focussed interrogative hó'ṭó:, but has the level 2 proper to an unraised NP, speaker B's level 2 finishes speakers A's beginning.

-

¹sàò ` sũ:

talk IRR 1Pl

Irrealis clause.

-

¹màḵǎ:ná ²wàré ²sàòwàts'è                    ̣ ¹ṭàḵî ts'é gâ ?`

thing X comrade to talk about (pl) SPEC absent NEG DEC ?`

¹dě:¹t'ě:

many

Two nominal clauses; both ṭàḵî and dě:¹t'ě: are nominals, not verbs; the subject of them both is màḵǎ: sàòwàts'ě:; màḵǎ: and sàòwàts'ě: have the ¹² relation as befits an object and a verb in a nominalisation; the translation of màḵǎ: as plural derives from the wà in the verb; ná is a suffix which seems to have neither syntactic nor informational import; wàré is a vocative on the expected level 2 which is interposed between the object and the verb of the nominalisation; despite the gloss it has no political connotations; the final ?` is a pgn concord in agreement with the whole sentence.

A 'sàò 'ně:sègá?` ↑'ʔàré 'hàpú ²sê 'ʔí?`kò ²ʔàkátʂ'à ³kóká?`  
 'hàpúná 'há?`tètʂ'èpò 'ʔí?`kò ²ʔàkátʂ'à ³sí: ²tè?` 'tè?`wá:xìpó'jó:  
 ³síxì ²tè?` 'hàpú?`kísì ²ʔàkátʂ'à ²kíxì 'tè?`wá:xìsé'ó:  
 'ʔàré

Yes, there are things to talk about, aren't there? You ask me something, you say where do you come from, yes, you ask me and then I'll tell you and I can ask you something and then you can tell me, alright?

'sàò 'ně: sí è gâ ?`

word exist(Pl) sí 3mSg DEC ?`

sí clause; again, the plural translation of the noun derives from the use of ně:, the singular stem is kó:.

-

'ʔàré

truth

lone nominal; extra high level 1 used as interrogative marker.

-

'hàpú ²sê 'ʔí ?` kò ²ʔàkátʂ'à

2Sg now 1Sg ?` IMP ask

Imperative, hàpú on tone level 1 as subject.

-

³k o ká?`

pu 1Pl thus

Basic clause, no verb.

-

'hàpú ná 'há?`tè tʂ'è pò

2Sg X where PRIV 2Sg

Nominal clause, both NPs on tone level 1.

-

<sup>1</sup>ʔí ʔ̀ kò <sup>2</sup>ʔàkátʔ̀à

1Sg ʔ̀ IMP ask

Imperative clause.

-

<sup>3</sup>sí: <sup>2</sup>ʔéʔ̀ <sup>1</sup>ʔéʔ̀.wá:xì pó <sup>1</sup>ó:

pu 1Sg NOM then tell them to 2Sg ANOM

Narrative clause, verb on level one in focus, anomalous suffix takes its own level 1 and is separated from the previous morpheme by an epenthetic j; ʔéʔ̀ as a temporal can intervene between an unmarked, focused verb and the narrative conjunction.

-

<sup>3</sup>síxì <sup>2</sup>ʔéʔ̀ <sup>1</sup>hàpú ʔ̀ kí sì <sup>2</sup>ʔàkátʔ̀à

pu 1Sg xì then 2Sg ʔ̀ too 1Sg ask

Narrative clause.

-

<sup>2</sup>kíxì <sup>1</sup>ʔéʔ̀.wá:xì sé <sup>1</sup>ó:

pu 2Sg xì tell them to 1Sg ANOM

Narrative clause, narrative conjunction realised on level 2.

-

<sup>1</sup>ʔárè

truth

lone nominal; extra high level 1 used as interrogative marker.



B 'ʔíxóʔ` ²ʔé: 'łáw wàj ³ʔé: ²sê ná 'hàpú 'háʔ`tètst`èpò ²wàré  
Let's do that. Yes, that'll be good. Right now, friend, where  
are you from?

'ʔíxì ʔò

thus pgn1Pl

Basic clause structure; the pgn is from a series which is used as translated here.

-

ʔé: łáw wà j Ø

yes be good wà IRR 3mSg

ʔé: is extracause matter; 'łáw wàj is irrealis clause; wà is multiple application of the verb - hence its use as a signal to translate an object as plural elsewhere; note that ww does not equal u.

-

²sê ná 'hàpú 'háʔ`tètst`èpò ²wàré

now X 2Sg Q LOC PRIV 2Sg comrade

Nominal clause; the privative suffix is explained further in subsection B2 of Chapter V - here translated as 'from'; the privative suffix forms a nominal - 'you are the second person singular person from where?'; raised under emphasis and as a question, the interval in 'háʔ`tètst`èpò between the high tone and the low tone is great, about a sixth; the final vocative is very low and has very little perceptible difference of pitch on the two syllables.

A 'tʃínèná 'tʃí ²wàré 'c'úmá ²ʔúṭá: 'lò:lóʔ` 'kò:sègáʔ` ²kàʔ`  
'mà'gàsìṭá: 'mànà:sípò ^'k'éʔéwàni: 'leʔ`

· Me? My friend, a long time ago there was a place called Mangastaa, you must know it. Have you ever heard of it?

'tʃí nè ná

1Sg Q X

-

'tʃí ²wàré 'c'úmá ²ʔúṭá: 'lò:lóʔ` 'kò: sí è

1Sg comrade place then long ago exist sí 3mSg

gâ ʔ`

DEC ʔ`

sí clause.

-

²kàʔ` 'mà'gàsìṭá:

Nominal clause; kò:sè from previous clause would be the NP<sub>2</sub>.

-

'mànà: sí pò

know sí 2Sg

-

'k'éʔéwà nè ì

léʔ`

hear Q 2Sg used to show that the speaker doesn't know

Basic clause with interrogative; raised to extra high.

B    <sup>1</sup>k'éʔéwàgâsì <sup>2</sup>ç'úmá <sup>2</sup>hèwéʔ. <sup>1</sup>k'éʔéwàsì <sup>2</sup>káʔ. <sup>1</sup>mà'gàsìtá:  
 I have heard of that place, I've heard that there's a place  
 called Mangastaa.

<sup>1</sup>k'éʔéwà gâ    sì <sup>2</sup>ç'úmá <sup>2</sup>hèwé ʔ.  
 hear DEC 1Sg place 3mSg ʔ.

Basic clause; ʔ marks NPs other than subject with one verb form -  
 ʔ derives from ts'í 'be, become' and is not the same ʔ as discussed  
 in Chapter V - it is here as appropriate for the verb form used.

-

<sup>1</sup>k'éʔéwà sì <sup>2</sup>káʔ. <sup>1</sup>mà'gàsìtá:  
 hear 1Sg that Mangastaa

káʔ. introducing second clause; two clauses: basic clause and NP  
 of incomplete nominal clause; the final t́á: is downdrifted from the  
 initial k'é.

A    <sup>1</sup>tsì <sup>2</sup>wàré <sup>1</sup>ʔóʔ. t́è ts'è sì gâ ʔ.  
 I come from there friend

<sup>1</sup>tsì <sup>2</sup>wàré <sup>1</sup>ʔóʔ. t́è ts'è    sì gâ ʔ.  
 1Sg comrade there PRIV 1Sg DEC 3Sg

Nominal clause; both NPs on tone level 1, vocative between the  
 NPs

B    <sup>1</sup>hínà  
 Yes

A polite yes

A ²ʔúʔá: ¹ʔóʔ.ʔèò ²màkàwáʔ. ²lò:lóʔ. ¹k'ómé: ²ʔúʔá: ¹k'ìǰíǰì:  
 ²ǰàʔí'ts'ésíʔ. ¹ʔóʔ.ʔèò ²ně:wà²jò: ²sê ¹híáʔ. ¹k'ìǰíǰì:gàʔ.  
 ²hǎ:gàsúké:jʔ. ¹hèwé ¹ᵐbô:gàʔiʔ. ³pó: ²ʔúʔá: ¹hèwéts'ò: ¹mǒ:ʔònò:  
 ²k'ómé

A long time ago we were there and we moved; a long time ago before ujamaa villages had come in we used to live there, and when they brought up villages, the idea of villages, then, for that reason, we moved to Moto.

²ʔúʔá: ¹ʔóʔ.ʔè ò ²màkàwáʔ. ²lò:lóʔ.  
 then there 1Pl Y long ago

Basic clause; no overt verb, ně:wà can be supplied from the next basic clause.

-

¹k'ómé ǰ ²ʔúʔá: ¹k'ìǰíǰì ǰ ²ǰàʔí ts'ì é: sí ʔ.  
 move and then village SPEC come PRIV 3mSg sí LOC

One NP + síʔ.; síʔ. is, or is on its way to becoming, lexicalised, but I have here reduced it to its probable component morphemes; tone level 1 as it precedes the marked in the clause (see next); k'ómé is coordinated to k'ìǰíǰì: ǰàʔí ('the coming of the village' - associative construction) by ǰ.

-

¹ʔóʔ.ʔè ò ²ně: wà ²ó:  
 there 1Pl exist MULT ANOM

Basic clause; the anomalous suffix has here chosen tone level 2, and an epenthetic j has been generated.

-

<sup>2</sup>sê 'hí á?` 'k'íǰíǰì ǰ à?` <sup>2</sup>hǎ:gàsúké: j?`

now hí 3Pl village SPEC 3Pl bring up j?`

Basic clause enclosed in hí j?`; both hí and k'íǰíǰì: are marked and have tone level 1.

-

'hèwé 'mbô ǰ à? i?`

3mSg word SPEC 3Pl j?`

Part of the previous clause; the speaker is amplifying what he means by k'íǰíǰì:; the hí is not repeated, but the NP is closed by ?`.

-

<sup>3</sup>pó: <sup>2</sup>ʔúṭá: 'hèwé tsì ò 'mǒ:tò nà ò <sup>2</sup>k'ómé  
pu 2Pl NOM then 3mSg LOC 1Pl Moto LOC 1Pl move

Narrative clause; the locative suffix on 'hèwéts'ò: indicates cause.

B 'mǒ:tònè: <sup>2</sup>k'ómé 'mǒ:tó?`sí?` 'ǎě:sísì'ó:

You moved to Moto. I've been to Moto you know.

'mǒ:tò nà è <sup>2</sup>k'ómé

Moto LOC 2Pl move

Basic clause.

-

'mǒ:tò ?` sí?` 'ǎě: sí sì 'ó:

Moto LOC X reach sí 1Sg ANOM

sí clause; verb and other NP on tone level 1; the anomalous ó: has here chosen tone level 1.

A 'ɔ̃: sí pò 'ô:  
You've been there!

'ɔ̃: sí pò 'ô:  
reach sí 2Sg ANOM

sí clause; the anomalous suffix ô has tone level 1 - it has not been noted on any other level.

B 'çã: 'hèwé 'mànà sí sì 'mõ: tó?  
I know that place. I know Moto.

'çã: 'hèwé 'mànà sí sì 'mõ: tó ?  
place SPEC 3mSg know sí 1Sg Moto LOC

sí clause; 'mõ: tó?', is in apposition to 'çã: 'hèwé, but it has not been raised with it to tone level 1 as it recapitulates known information.

A 'bási 'ʔó?`gô: 'wàré 'mõ: tó ts'ò: 'sê 'ně: wà 'tí 'wàré 'sê  
'há:w 'sàdàwě: 'màgàsìtá: ts'ě: s'ìgàsì

So now we're living there in Moto I'm that sort of Sandawe then, a man from Mangastaa.

'bási 'ʔó?` gâ ò 'wàré 'mõ: tó ts'ì ò 'sê 'ně: wà

so there DEC 1Pl comrade Moto LOC 1Pl now live MULT  
Basic clause, two marked items in apposition, both the temporal and the verb which follows have been raised to tone level 2.

-

<sup>1</sup>ʔí <sup>2</sup>wàré <sup>2</sup>sê <sup>1</sup>hǎ:w̃ <sup>1</sup>sàdàwě:

1Sg comrade now 3mSg Sandawe

<sup>1</sup>màgàsìtá: ʔì é: ʔì sị gâ sị

Mangastaa LOC 3mSg SPEC 1Sg DEC 1Sg

Nominal clause; <sup>1</sup>hǎ:w̃ <sup>1</sup>sàdàwě: and <sup>1</sup>màgàsìtá:ʔìé::sị in apposition to each other; the second NP is raised under emphasis, it is clear that speaker A is proud that he is from Mangastaa; notice how the third person form <sup>1</sup>màgàsìtá:ʔìé::sị has a 1Sg suffix, and that <sup>1</sup>hǎ:w̃ <sup>1</sup>sàdàwě: is also third person.

B <sup>1</sup>màgàsìtá: <sup>2</sup>ʔé: <sup>1</sup>màgàsìtá:ná <sup>2</sup>hínáwéʔàò <sup>1</sup>ʔìkígáʔ`ná <sup>2</sup>sê  
<sup>2</sup>ʔútá: <sup>1</sup>màgàsìtá:ʔ`tè <sup>1</sup>hétékà <sup>2</sup>hétékàʔòsì <sup>2</sup>ʔé:

Mangastaa! A long time ago I went courting to Mangastaa.

<sup>1</sup>màgàsìtá: <sup>2</sup>ʔé:

Z

-

<sup>1</sup>màgàsìtá: ná <sup>2</sup>hínáwéʔ`áo <sup>1</sup>ʔì kị gâ ʔ` ná

Mangastaa X Y 1Sg too DEC 3Sg X

<sup>2</sup>sê <sup>2</sup>ʔútá: <sup>1</sup>màgàsìtá: ʔ`tè <sup>1</sup>hétékà<sup>2</sup>hétékà ʔò sị <sup>2</sup>ʔé:

now then Mangastaa LOC marry nominaliser 1Sg do

The speaker doesn't get to the marked item in focus until <sup>1</sup>hétékà <sup>2</sup>hétékàʔòsì; every other NP is raised to level 1 before this.

A <sup>1</sup>hàpú <sup>1</sup>ʔàré

Did you?

hàpú ʔàré

2Sg truth

B ²ʔé: ²ʔúťá:ná 'hôk'é:káʔ` 'ǰémêsú 'ťésùk'áʔ` 'sèbàsìťiǎ:nà  
 'ʔóʔ`gáʔ` ²mǎgàsìťá:ts'ì ²sèbàsìťiǎ:nà ³ʔúťá: ²ʔóʔ` 'ʔàdòlófù ²ʔúťá:  
 'lò:lóʔ` 'kàránìé:ǎ

Yes, a long time ago, who was it, there was this woman,  
 Sebastiana. In that place a long time ago there was Sebastiana. At  
 that time there was a fellow Adolf, the one who was a clerk.

²ʔé: ²ʔúťá: ná 'hô k'é: k'áʔ` 'ǰémêsú 'ťé sù k'áʔ`

Z then X Q DEC then person(f) another 3fSg then

'sèbàsìťiǎ:nà

Sebastiana

Nominal clause; the speaker asks 'hô k'é: k'áʔ` 'who was it then' and  
 then proceeds to answer the question himself.

-

'ʔóʔ` gá ʔ` ²mǎgàsìťá: ts'ì ²sèbàsìťiǎ:nà ³ʔúťá: ²ʔóʔ`

there DEC 3Sg Mangastaa LOC Sebastiana then there

Nominal clause; NP<sub>1</sub> is ʔóʔ` and NP<sub>2</sub> is mǎgàsìťá: ts'ì; the final

three words seem to just thrown in to remind the speaker and the

listener of who, where and when, and to gain time.

-

'ʔàdòlófù ²ʔúťá: 'lò:lóʔ` 'kàránì é: ǎ

Adolf then long ago clerk 3mSg SPEC

Not a clause but two NPs in apposition, separated by ʔúťá: 'lò:lóʔ`.

A 'kàránìé:ǎ

The one who was a clerk



B 'hèwé ²dògósúnè 'lé?` ʔó?` 'hèwé ²fîsúnè 'lé?` 'híkâ: ²lé?`  
²ʔíé

Was it his kinswoman or his sister, I don't know what it was.

'hèwé ²dògó sú nè 'lé?` 'ʔó?` 'hèwé ²fîsú nè 'lé?`  
3mSg relation 3fSg Q maybe there 3mSg sister Q maybe  
lé?`, translated here as 'maybe' indicates that the speaker doesn't  
know.

-

'híkì à ²lé?` ²ʔíé

Q 3mSg maybe stay

Basic clause 3mSg used impersonally 'I don't know how things were  
(ʔíé)'.

A ²sê 'hèsú ²wàré 't̥í ²fîsúgá?` ³hĩ:sì

Now, she's my sister you know.

²sê 'hèsú ²wàré 't̥í ²fîsú gâ ?` ³hĩ:sì

now 3fSg comrade 1Sg sister DEC 3Sg Y

Nominal sentence; NP<sub>2</sub> carries gâ ?`.

B ²hĩ:sì 'ʔútá:sí?` 'síésûsìgá?` ²hèsú

A long time ago I was going to marry her.

²hĩ:sì 'ʔútá:sí?` 'síé sú ` sì gâ ?` ²hèsú

Y then X take 3fSg IRR 1Sg DEC 3Sg 3fSg

Irrealis clause; gâ follows verb and is itself followed by a pgn ?`  
in apposition to the whole sentence (see subsection B2 of Chapter V  
for the historical syntax of this ?`).

A ʔáʔ

Z

B 'hínà ²hínà 'lò:lóʔ` ²ʔúʔá: 'mǎ:k'ǎ: 'sìʔíníʔsì ²ʔúʔá:  
'ʔéḱùwà:ʔò:kí 'ʔéḱùwà:sámésì ²ḱá: 'híkâ: ²léʔ` ²ʔóʔ` 'ʔíé ²sê  
'wàré 'ḱêgá: ²síésú 'ʔóʔ` 'ḱúríóʔsì

Yes, a long time ago in 1960, I was even prepared to pay the bride price, and then...What was it that happened then...? Now another fellow has married her, there in Kurio.

'hínà²hínà

A polite yes.

-

'lò:lóʔ` ²ʔúʔá: 'mǎ:k'ǎ: ::: 'sìʔíní ʔsì  
long ago then year sixty LOC  
Nominal clause, taking lò:lóʔ` as NP<sub>1</sub>.

-

²ʔúʔá: 'ʔéḱùwà: ʔò ʔ kí  
then pay bride price nominaliser SPEC too

Temporal followed by NP; the NP is in focus on tone level one

-

'ʔéḱùwà: sámé sì  
pay bride price want 1Sg

²ḱá: 'híkì à ²léʔ` ²ʔóʔ` 'ʔíé  
pu 3mSg NOM Q 3mSg don't know there stay

Two basic clauses; I am not sure about the second clause, I cannot explain the level 1 on ʔíé.

-

<sup>2</sup>sê <sup>1</sup>wàré <sup>1</sup>té è gâ á: <sup>2</sup>síé sú 'ʔóʔ` 'kúrió ṭì  
 now comrade another 3mSg DEC NOM take 3fSg there Kurio LOC  
 Basic clause; the final two words are raised under emphasis.

A ʔé: 'kúrióʔ`gâ: <sup>2</sup>síésú 'ʔú̀bùrè <sup>2</sup>ḡáě:á:  
 Yes, he married her at Kurio, an Iraqw bloke.

ʔé: 'kúrió ʔ` gâ à <sup>2</sup>síé' sú 'ʔú̀bùrè <sup>2</sup>ḡáě: á:  
 Z Kurio LOC DEC 3mSg take 3fSg Iraqw tribesman NOM  
 Basic clause; the final two words are marked and give new information.

B <sup>2</sup>ʔé: 'ʔárè <sup>1</sup>hàpú <sup>2</sup>ḡîsú  
 Yes, that's it. She's your sister?

<sup>2</sup>ʔé: 'ʔárè <sup>1</sup>hàpú <sup>2</sup>ḡîsú  
 Z truth 2Sg sister  
 Nominal clause; only NP<sub>2</sub> is present; raised above level 1 as a question.

A 'ṭí <sup>2</sup>ḡîsúgáʔ`  
 My sister

'ṭí <sup>2</sup>ḡîsú gâ ʔ`  
 1Sg sister DEC 3Sg  
 Nominal clause; statement.

B    ʼɔ̃:ɡò: ²télà ²kʰ:ʔ.kí ³ʔúʔá: ²ʔô ʼtʃí ²tʰ:ts'é: ʼtê  
ʼmǎʔ.léxìsú:ɡá: ²níʔì ʼkàsìǎ:nìxìsú:ɡá:

We went right up to the house. At that time there another brother of mine, who was it now that I went with? I was with Kasiani.

ʼɔ̃: ɡâ ò ²télà ²kʰ: ʔ̣ ʔ̣.kí  
reach DEC 1Pl completely house SPEC LOC too  
Basic clause.

-  
³ʔúʔá: ²ʔô ʼtʃí ²tʰ:ts'é: ʼtê è ʼmǎʔ.lé xì sú: á: ²níʔì  
then there 1Sg brother another 3mSg somebody i.a. 1Pl NOM go  
ʼkàsìǎ:nì xì sú: á:  
Kasian i.a. 1Pl NOM

Basic clause; ʼtʃí ²tʰ:ts'é: ʼtê is in apposition to mǎʔ.lé; the speaker then remembers who it was and gives his name;

A    ʼkàsìǎ:nì ʼhàwé  
Which Kasiani?

ʼkàsìǎ:nì ʼhà wé  
Kasiani Q 3mSg

Nominal clause; a slight downdrift between the two NPs.

B 'kàsìǎ:nì 'hě:w 'hèwéṭáxì ²hě:w ²hòrógõ: ²màgàḏàsê:  
That Kasiani, Horogo, a tall man.

'kàsìǎ:nì 'hě:w 'hèwé ṭáxì ²hě:w ²hòrógò ẏ  
Kasiani 3mSg 3mSg just 3mSg Horogo SPEC  
²màgàḏà sí è ẏ  
be tall sí 3mSg SPEC

Nominal clause consisting of a string of NPs at NP<sub>2</sub>.

A 'ʔóʔ` 'ḷě: ¹ṭò'gòts'è:  
You went right up there to the homestead.

'ʔóʔ` 'ḷě: è ¹ṭò'gò ts'ì è  
there reach 2Pl homestead LOC 2Pl  
Basic clause.

B ʔàʔá 'ḷóʔ`ṭáxì 'heʔ` 'mà'gàsìṭá:ts'ì  
Just there at Mangastaa.

ʔàʔá 'ḷóʔ`ṭáxì 'heʔ` 'mà'gàsìṭá: ts'ì  
Z there just there Mangastaa LOC  
Nominal clause.

A 'màgàsìtá:ts'î: 'ɔě: ²taxì ²ɔó? ³hámbè

You went there a long time ago.

'màgàsìtá: ts'ì 'v̂:

Mangastaa LOC ANOM

-

'ɔě: è ²taxì ²ɔó? ³hámbè

reach 2Pl just there in the past

Basic clause.

B 'k'ò:ts'ì 'ɔě:ò

We went to the house.

'k'ò: ɛ̃ ts'ì 'ɔě: ò

house SPEC LOC reach 1Pl

Basic clause; despite the marking on the verb the speaker's delivery indicates that the first item is more important than the second and it is phonetically raised, 'ɔě:ò reverts to the expected tone level 1 pitch.

A 'ʔárá:gè ²wàré

Really!

'ʔárá:gè ²wàré

truth comrade •

ʔárá:gè is probably a fossilisation of ʔàré and the gâ declarative in the form gê; productively a pgn would be expected to be used with the declarative.

B 'híò ²ní?ǐ: ǎě:ǰ?ǐ: ³?ú?á: ²?o?` ¹ǎê 'hèwéts'ì 'hòbè 'híò  
 ²ní?ǐ: ǎě:ǰ?` ²?ú?á: ¹sú:gá: ²ǎê: ³ǎě:ts'è:?. 'hèsú ²?íjò ²k'ò:ǎ:  
 'hèwéts'ò: ²ní?ǐ: ³ǎě: 'hísà ²ǎ:á:súgì:ǰ?ǐ: ³sá: 'k'ò:nàsà ²k'élé: 'hísà  
 ²k'élé:gì:?. ²há: ¹t'ùts'ú ²t'èsé: ǎ:á:k'á:k'ó ³k'ó: 'ʔóʔò: 'híòǰ?`.

When we'd gone and got there, then on that day, what happened? When we'd gone and got there, on that day we arrived, we got to her mother's house. When she saw us, she rushed into the house, and after she rushed into the house, she didn't come out again. So you see, we were there, and as we were there like that...

'hí ò ²ní?ǐ: ǎ: ³ǎě: ǰ?` ¹ǎ:  
 hí 1Pl go and reach ǰ?` ANOM  
 Basic clause within hí ǰ?`; verbs conjoined by ǎ:.

-

³?ú?á: ²?o?` ¹ǎê 'hèwé ts'ì 'hòbè  
 then there day 3mSg Loc Q  
 Nominal clause; NP<sub>1</sub> is hòbè.

-

'hí ò ²ní?ǐ: ǎ: ³ǎě: ǰ?`  
 hí 1Pl go and reach ǰ?`

-

²?ú?á: ¹sú: á: ²ǎê ǎ: ³ǎě:ts'è ǎ: ʔ`  
 then 1Pl NOM day SPEC which (they) reached SPEC LOC  
 Temporal, subject and locative NP of a basic clause which is completed, after a pause and some fumbling for words, below.

-

'hèsú ²?íjò ²k'ò ǎ: 'hèwé ts'ì ò ²ní?ǐ: ǎ: ³ǎě:  
 3fSg mother house SPEC 3mSg LOC 1Pl go and arrive  
 Basic clause; hèwé refers back to the house.

-

<sup>1</sup>hí sà <sup>2</sup>ḷâ: sũ: j̥ʔ̣ ǂ:

hí 3fSg see 1Pl j̥ʔ̣ ANOM

Basic clause within hí j̥ʔ̣.

-

<sup>3</sup>sá: <sup>1</sup>k'õ: nà sà <sup>2</sup>ḷélé:

pu 3fSg NOM house LOC 3fSg rush in

Narrative clause.

-

<sup>1</sup>hí sà <sup>2</sup>ḷélé: j̥ʔ̣

hí 3fSg rush in j̥ʔ̣

Basic clause within hí j̥ʔ̣.

-

<sup>2</sup>há: <sup>1</sup>ṭû ṭì sù <sup>2</sup>ṭ'èsé: ǂ

but come out PRIV 3fSg carry on and

Nominal clause; NP<sub>2</sub> is ṭûṭ'ú; this structure is translated as a present or past negative.

-

ḷâ: ḷà ḷô <sup>3</sup>ḷó: <sup>1</sup>ʔóʔ̣ ò <sup>1</sup>hí ò j̥ʔ̣

see IMP X pu 1Pl NOM there 1Pl hí 1Pl j̥ʔ̣

Imperative, followed by narrative clause, in which the speaker returns to the story, but fails to give us a verb as he immediately follows with híòj̥ʔ̣ which again seems to be a verbless basic clause within hí j̥ʔ̣, 'after things were like that for us'.



A 'mànǎ:sàkô ³xaré 'ʔaré

She knew about it perhaps, didn't she.

'mànà ' sà kô ³xaré 'ʔaré

know 3mSg 3fSg X perhaps truth

Basic clause followed by one word nominal clause which, although a question, stands on an unraised level 1.

B ³k̥a: 'kàsǎ:nǎ:ká? 'sê'ě 'hě:sù 'ʔá:tsǎ ²sê 'ʔíxà: ²ʔíéj'ʔǎ: 'k̥àʔǎ: ²ní? 'hèwé?gô: 'k̥ǎ: 'ʔàíó: 'ʔàâ: 'dèdúts'ò: ²ě: 'màlím 'k̥àmîlì ²ts'ǎ:kò: 'ʔó?gô: ²nógó? 'p'ê:ʔ 'ʔík'ísí? ³pó: ³k̥àk'é: 'sú: 'ʔě:m̥sênò: 'hèwé ²ʔàʔégá?

And Kasiani said, 'She's hiding now. If that's how it's going to be, let's go back". And because of that we went back. We went and got to Dedu and we stayed there at Mwalimu Kamili's house. And early in the morning we went back to our place at /weemse. That's what happened.

³k̥a: 'kàsǎ:nì á: ká? 'sê 'ǎ 'hě:sù 'ʔá:tsǎ sà  
pu 3mSg NOM Kasiani NOM thus now ANOM 3fSg hide 3fSg

Basic clause, no verb, followed by basic clause.

-

²sê 'ʔíxì à ²ʔíé j? 'ǎ 'k̥à ʔò ²ní?

now thus 3mSg stay j? ANOM return 1Pl and go

Basic clause enclosed by hí j?, but hí seems to be absent: there is what seems to be a false start on the tape and the hí may be lost in it; the second clause is 1Pl imperative, using the appropriate pgn suffix ʔò.

-

'hèwé ?` gâ ò 'kà ~ 'jàtí 'ó:  
3mSg LOC DEC 1Pl return and come(pl) ANOM

Basic clause

-

'jàtí à 'dèdú tsì ò ²ḡě:  
come(pl) AND Dedu LOC 1Pl reach

Two basic clauses conjoined by à.

-

'màlím 'kàmîlì ²ts'ă:kù ò 'ʔó?` gâ ò ²nógó?`  
Mwalimu Kamili home 1Pl there DEC 1Pl sleep

Basic clause.

-

'pê ẏ ?` 'ŋ'íkì sí?`  
next day SPEC LOC early X

³pó: ³kà k'é: 'sú: 'ḡě:m̄sê nà ò  
pu 1Pl NOM return DEC 1Pl /weemse LOC 1Pl

Narrative clause

-

'hèwé ²t̄à?é gâ ?`  
3mSg thus DEC 3Sg

Nominal clause; I take 'hèwé ²t̄à?é as an NP.

## Chapter IV

### MORPHEMES AND SYLLABLES

In this chapter, the focus is on the synchronic analysis of morpheme structure; it is not until Chapter V that the historical and comparative implications are discussed. Nevertheless a synchronic analysis will reveal anomalies such as minority patterns or competing patterns where it is difficult to see what the synchronic regularity is, if any. Of necessity I would allow the possibility of several systems coexisting, thus adopting a polysystemic approach, but it has not been possible to do this with any consistency. However, once anomalies have been discovered, then a possible historical source is discussed, if it is appropriate, here in this chapter, or, more usually, in Chapter V.

An attempt to characterise the organisation of sounds in the spoken stream of language in Chapter II lost in generality because of the limited nature of suffixes, for example, the lack of parallelism between m and n, and between w and j, and it also ran into difficulties because of a conflict between at least two different sources, one of which admitted prenasalised plosives but not nasalised vowels and the other which admitted nasalised vowels but not prenasalised plosives. To investigate morpheme structure will eliminate the first complication but not solve the second problem.

## A MORPHEMES

In looking at morpheme structure, what is considered is what is stored in the dictionary, the lexical representation, to be operated upon by the rules of the morphology which produce the phonetic representation. It should be remembered that in Sandawe these rules produce a minimal perturbation in nouns. Whereas there is frequently no identifiable formative in nouns, except for some fossilised pgn markers, some verbs have a final é of as yet unidentifiable function. This can be seen from Table IV.1, which can be compared with the figures for non-verbs in Table IV.2.

---

Table IV.1

ZVKV verbs; V<sub>2</sub>

	V			V:				V̇:			
	/	^	\	/	^	v	\	/	^	v	\
i	7			1				2	1		
e	84	3	8	2			1	2		1	
a	10		37	1	1	2	3	2			
o	7	1	4	3		2		1			
u	2										
!			22								
u̇			8								
ʔ̇			10								
m			4								
w			3								

---

Table IV.2

ZVKV non-verbs; V<sub>2</sub>

	V			V:			V:			
	ˊ	^	ˋ	ˊ	^	ˋ	ˊ	^	ˋ	
i	15	2	24	3	1	2		1	1	1
e	23	1	26	11		12	3			
a	35	1	73	11		6	8	1		
o	19	1	18	7		1	3	3	3	
u	15		13	2			2	2		
?			6							

Accordingly, the two categories were taken separately.

### 1 Nouns

The consideration of the structure of the noun morpheme begins with those nouns which were in my file at one point during the investigation of the language. The longer the morpheme, the greater the possibility of unidentified compounds being considered, and I therefore decided to restrict myself to forms with only one or two consonants.

There are 91 forms with one consonant to be considered; they are the subject of Table IV.3. No nasalised vowel is short; if the two morphemes with short oral vowel and level pitch are considered, ɬí 'I, me' would suggest that personal pronouns should not be treated as nouns and ɬè 'son' only appears in the associative structure and is clearly a compound of what appears elsewhere as ɬõ: 'child', plus éz, a third person form found often with names of

Table IV.3

KV nouns; tone, length, nasalisation

	´	^	ˇ	˘
Long	9.:2	1.:19	25.:11	0.:2
Short	1.:0	20.: 0	0.: 0	1.:0

Figures before .: are those of morphemes with oral vowel, those following it are those for morphemes with nasalised vowel.

relationships. *mâ:* 'sweet, tasty' may not be a noun as it was elicited without word class information, being the translation of a Swahili adjective; it should be compared with Proto Southern Cushitic \**maŋ-* 'savory, good-tasting', Ehret 1980 p323. If it is taken to be outside the system, then length is predictable on the remaining monosyllabic morphemes, short if both the tone is falling and the vowel oral, otherwise long. This gives the distribution in Table IV.4. To see if there was any obvious relationship between initial consonant and tone these figures were broken down in Table IV.5.

Table IV.4

KV nouns; tone, nasalisation

	´	^	ˇ	˘
	9.:2	20.:19	25.:11	0.:2
as %	13	44	41	2

Table IV.5

KV nouns; K<sub>1</sub>, tone

	ˊ	ˆ	ˋ	ˌ
Ej	2:0	2:3	3:2	0:0
Fr	0:0	1:1	1:0	0:0
K <sup>ˊ</sup>	3:0	2:3	7:1	0:0
K <sub>ˊ</sub>	0:0	2:1	3:2	0:0
K <sub>ˋ</sub>	0:1	0:2	1:1	0:2
r	0:0	0:1	0:0	0:0
N	0:0	0:0	0:0	0:0
X <sup>ˊ</sup>	2:0	6:3	2:3	0:0
X <sup>ˋ</sup>	1:0	0:3	2:0	0:0
X <sub>ˊ</sub>	0:0	3:0	4:1	0:0
X <sub>ˋ</sub>	0:1	0:0	0:0	0:0
X <sub>ˌ</sub>	1:0	4:2	2:1	0:0

There did not seem to be any correlation between the properties of the initial consonant and the tone, but the number of nouns considered is small.

The low occurrence (2%) of items with all low tones is significant. Avoidance of canonical morphs with a phonetic low final pitch can be seen in the six tone patterns observable in Nama, Kxoe has a rule which raises the end point of a morph with all low tones in the absence of a high in the word and Žu/'hõasi has a tendency to raise all morph final low tones to mid (see subsection C2 of Chapter V). One of the two KV forms with low tone has what seems a good source which appears in Guthrie 1967-71 (gõ:

'circumcision dance', Common Bantu \*-gòmà 'drum') and I am prepared to take the second form dõ: 'tree sp.' as anomalous.

Much less easy to interpret is the relatively small number (13%) of forms with a high tone.

Considering the forms with two vowels, the combinations of tone patterns and length are many. The numbers of each combination on my file of nouns categorised by tone (which contains a smaller number of nouns than in my lexical file, the presumption being that those in the former were more to be trusted in their transcription), are given in Table IV.6.

---

Table IV.6

KVKV nouns; tone, vowel length

	VV	VV:	V:V	V:V:
^^	55	17		1
^	39	3	29	
~	3	1		
^^	7	1	1	
^^	-	-	4	24
^^	-	-	18	2
^	70	7		
^^	3			
^^	-	26	-	
^^	41	2		
^!^	-	-	2	
^!^	-	-	-	1

A hyphen indicates an impossible form, there are no rising tones on a short vowel.

---



The only clear pattern is the four most populated cells, forms with two short vowels. These have already been examined briefly in subsection E2 of Chapter II, where they were used as an additional demonstration that a low tone after a high toned syllable had a starting point only just a little below that of the preceding high.

Monosyllabic noun stems only had three tonal patterns, but here KVKV noun stems seem to quite happily show four, `´, `^, `˘ and `̀, they do not eschew forms without a high tone.

There is of course no guarantee that the stems in Sandawe which have clicks do not come from different sources; but it is instructive to take them as a subset of the total which deserves attention as being probably of old establishment in the language. (The facile logic is this. Sandawe is genetically classified as Khoisan. Therefore it is a descendent from Proto Khoisan; therefore morphemes with clicks are part of the inherited Khoisan vocabulary. This is to ignore the possibility that morphs with clicks can also have been borrowed into the language.) Noun stems of the form XVKV, from the larger sample of 5x3 cards, show tonally the distribution in Table IV.7; these nouns are quoted later

---

Table IV.7

XVKV nouns; skeleton and tone

	XVKV	⌘		XV	⌘
“	17	39	´	6	15
^	5	11	^	20	50
˘	21	48	˘	14	35
̀	1	2	̀	0	0

---

in (4.2). Percentage figures are then given for this distribution and for the distribution of click initial noun stems with one vowel only. The figures in the table do not match very well. In particular the identification of  $X\acute{V}K\grave{V}$  and  $X\hat{V}$  is weak. Furthermore, they do not match with the figures for Z- initial disyllables, ZVKV, given in Table IV.8.

---

Table IV.8

ZVKV nouns; skeleton and tone

	ZVKV	%		ZV	%
''	37	23	'	6	13
``	36	23	^	18	38
``	48	30	˘	21	45
``	39	24	`	2	4

---

The avoidance of forms without a high tone is expected from disyllabic forms in X- and from the monosyllabic forms, but Z- initial disyllables do not avoid this. Another question is where have all the  $X\acute{V}K\grave{V}$  forms gone?  $Z\grave{V}K\grave{V}$  forms are presumably to be explained as loans. The table indicates that it might be as well to consider Z- initial morphs and X- initial morphs separately, which I now do, taking those with Z- initial first.

I take as a starting point for Z- initial morphemes, 1348 items which were entered on my 5x3 cards and which have a Z- initial. After all items of more than two syllables, 561 altogether, were removed, because I suspected that the longer the item the greater the chance of it being a compound and therefore biasing the calculations, and then also after extracting both proper names of

both persons and places, and obvious Swahili and English loans, 81 in all, and verbs, 291 in all, there was a corpus of 415 non-verbs. 59 were monosyllabic nouns and 58 were items which were either not nouns or which were problematic for various reasons, perhaps because they seemed to be vocatives rather than nouns, or because there had been a problem in their meaning or transcription. The remainder formed the basis for Table IV.9.

---

Table IV.9

Z- nouns; tone, vowel length

	VV	VV:	V:V	V:V:
“	37	15		1
^	36		27	
^^		1		
^^		1		
^^	2	1		
^^	6	1		
^^			4	17
^^			20	
^	48	8	1	
^^	1			
^^		27		
“	39	2		
^!^				1
^!^				1

łòj 'noise' was not included in the above chart

---

Initial consonant and tone is correlated in Table IV.10.

---

Table IV.10

ZVKV nouns; K<sub>1</sub>, tone

		Fr	K <sup>ʔ</sup>	K <sup>h</sup>	K <sub>1</sub>	K <sub>2</sub>	N	Son
''	37	4	6	7	9	8	3	0
``	36	7	7	5	2	10	5	0
''	48	7	10	5	7	13	3	3
``	39	4	6	3	5	10	8	3

---

I considered the distribution in any one row, took each figure as a percentage of the number of occurrences in that row and compared each figure with the percentage value of the total number of occurrences of each initial consonant type in the whole. This showed that no figure in any one row differs more than 10% from the percentage figure in the whole sample of 160 nouns. The greatest deviance is the occurrence of K<sub>1</sub> with '' which occurred nearly twice as many times as expected, and next of K<sub>1</sub> with ``, whose occurrence was nearly half that expected.

Taking for each skeleton in Table 11, the number of occurrences of forms with an initial voiced consonant (K<sub>2</sub>, N, Son) as a percentage of the whole and then comparing it with the tone pattern gives Table IV.12. The figures from the corresponding, smaller, sample in X- is also given there.

It is interesting that the six combinations of skeleton and tone pattern that happen to have been frequent enough in the sample of Z- initial to have been chosen as majority patterns, that is, with eight or more items, do not overlap in their tonal patterns, although

Table IV.11

ZVKV nouns with V:, frequent tone patterns (8+ items); K<sub>1</sub>, tone

	Fr	K <sup>ˈ</sup>	K <sup>˨</sup>	Ḳ	Ḳ	N	Son
VV:							
ˈˈ	5	6	1	2	0	0	1
ˈ˨	4	5	4	4	5	2	3
˨ˈ	1	2	0	3	1	0	1
V:V							
ˈˈ	5	8	2	6	3	2	1
˨˨	3	3	3	5	3	3	0
V:V:							
˨ˈ	1	4	1	4	6	1	0

Table IV.12

ZVKV nouns with V:; Ḳ, N and Son at K<sub>1</sub>

	ZVKV	XVKV
ˈˈ	7%	50%
ˈ˨	22%	11%
˨ˈ	25%	(100%)
˨˨	30%	47%
˨˨	37%	20%
˨ˈ	41%	25%

they contain different vowel skeleta. What I also find intriguing about these frequent tonal patterns is that there is a set with level

tones, all having the lower percentages of voiced initials, and there is another set with the higher percentages of voiced initials, all of which include a rising tone and start with a low mora. (Of the first group it is the one which starts with a low mora which also has the greatest number of voiced initial consonants.) Furthermore, if, for the purposes of the second group we consider that a low tone is equivalent to a falling tone after a high mora at the end of the previous syllable (see the statement of this at the end of Chapter II), and if we consider that each vowel has two morae, then each of the tonal patterns of the second set can be derived from a pattern in the first set by moving the tones rightwards one mora and then supplying an initial low tone and ignoring the unassociated tone (or associating the last two tones with one mora).

(4.1)	´	´		´	`		`	´
	hh	hh		hh	ll		ll	hh
	h	hh h		h	hl l		l	lh h
	lh	hh		lh	hl		ll	lh
giving	v	´		v	`		`	v

Finally, allowing that a rising tone has to be long, the quantities on the vocalic skeleta for each pair of related tones are identical, all short. Unfortunately, I have not been able to use these observations in a statement of synchronic morpheme structure, nor can I yet see any diachronic relevance; but the relation between ´` and ´´ is taken up again in Chapter V.

Next, medial consonant and tone are correlated in Table IV.13. There are three deviances of more than 10% in this table, two in the  $\overset{N}{K}$  column, where  $\overset{N}{K}$  occurs with ´` about an eighth of the number of times expected and  $\overset{N}{K}$  occurs with `´ over one and a half as many times as expected. The third is where Son appears with ´` over

---

Table IV.13

ZVKV nouns; tone, K<sub>2</sub>

	Fr	K <sup>ʔ</sup>	<sup>N</sup> K <sup>ʔ</sup>	K <sup>h</sup>	<sup>N</sup> K <sup>h</sup>	Ḳ	<sup>N</sup> Ḳ	Ḳ	<sup>N</sup> Ḳ	N	Son
ˊˊ	2	5	0	1	0	6	1	3	6	5	8
ˊˋ	3	5	0	1	0	3	0	7	1	3	13
ˋˊ	3	5	1	2	2	3	0	5	14	6	7
ˋˋ	5	1	0	0	1	3	0	5	13	3	8

---

one and a half as many times as expected. It is also seen than the incidence of the 'prenasalised' consonants varies.

---

Table IV.14

ZVKV nouns; <sup>N</sup>K at K<sub>2</sub> for each K<sub>2</sub>

K <sup>ʔ</sup>	6%
K <sup>h</sup>	43%
Ḳ	7%
<sup>N</sup> Ḳ	63%

---

It looks as if <sup>N</sup>K<sup>h</sup> and <sup>N</sup>Ḳ would have, historically, a strong case for being considered prenasalised, but K<sup>ʔ</sup> and Ḳ could be the result of compounding.

I also give the occurrences of medial consonants with the tone patterns of the majority types of disyllables with at least one long vowel and Z- initial in Table IV.15.

---

Table IV.15

ZVKV nouns with V<sub>2</sub>; K<sub>2</sub>, tone

	Fr	K <sup>ʔ</sup>	K <sup>ʰ</sup>	Ḳ	Ḳ	N	Son	Ø
ˊˊ	1	2	2	3	2	3	2	
ˊˋ	3	9	1	3	3	2	5	1
ˋˊ	5		3	1	7	3	2	
ˋˋ	1	3	2	2	7		4	1
ˋˋ	1		1	1	4		1	
ˋˋ	3	2	1	2	6	5	8	

---

This does not reveal any characteristic in the nature of K<sub>2</sub> to contrast it with the frequencies for ZVKV nouns given in Table IV.13. But it does show that with ˊˋ there are over two and a half more instances of K<sup>ʔ</sup> than expected.

It is now time to consider the overall distribution of nouns with two vowels and with X- initial. I give a complete listing of these, with meanings. All syllable final nasality before a consonant has been written with "m," "n" or "ŋ".

(4.2)

ˊˊ	ˊˋ	ˋˊ	ˋˋ
	ʃékʔà 'blood'	ʃòʃá 'baboon'	
		ɬàkʔá 'tree sp.'	
cúpʰá 'ashes'		cúpʰá 'tree sp.'	
ʃétsʰá 'hiccough'		càkʔá 'gazelle sp.'	
ʃúkú 'quid'		ɬèkʔá 'bee'	
cámá 'spleen'	cábò 'leather strip'		ɬùdú 'brown hyena'



çímá 'upper arm'    ìínà 'breast'  
çúmá 'country'  
ìíná 'soil, sand'  
ìúmú 'waist'

çòmí 'frog sp.'  
ìámé ''  
ìònó 'small rat'  
ìùnú 'tree sp.'  
ìèwé 'plant sp.'

ṣóṣá 'amulet'  
çéḳé 'madness'

ìíṣó 'plant sp.'  
ṣòpí 'tree sp.'  
ṣàṭá 'foot'        ìàḳà  
   'hollow'

çùmé 'flour'

ìíà 'dikdik'

ìáṭá 'gap'

çàṭé 'unripe fruit'  
çòṭó 'tree sp.'

çáḳí 'bifurcation'    ìúkù/ì 'underneath'

ḅàṣú 'lion'  
ḅòḳá 'dry season'

ḅógá 'water pool in tree'

ìàní 'bow'

çéḳé 'tree sp.'

çátá 'biltong'  
çé'ké 'smoothness'  
çá'kó 'hardness'

ḅàṣá 'red earth'

ìàḳà 'hollow', I once recorded with all high tones, but I include it here on the principle of *difficilior lectio*. The distribution of tone patterns of the nouns in (4.2) is summarised in Table IV.16. On my 5x3 cards are 43 nouns which are disyllables, X- initial and with at

least one long vowel. The distribution of tonal patterns on these skeleta and in nouns with initial Z- is compared in Table IV.17.

---

Table IV.16

XVKV; X<sub>1</sub>, tone

	X <sup>ˊ</sup>	X <sup>ˋ</sup>	X <sup>ˌ</sup>	X <sup>ˍ</sup>	X <sup>ˎ</sup>
ˊˊ	8	2	3	1	3
ˊˋ	2	1	1	0	0
ˋˋ	11	4	5	0	1
ˋˌ	0	1	0	0	0

---

---

Table IV.17

KVKV nouns with V:; vowel length, tone

	ˊˊ	ˊˋ	ˋˋ	ˋˌ	ˋˍ	ˋˎ	others
XVKV:	4 (9%)	1 (2%)	1 (2%)	5 (12%)	0		
ZVKV:	15 (12%)	0	8 (6%)	27 (21%)	6 (5%)		

	ˊˋ	ˋˋ	ˋˌ	ˋˍ	ˋˎ	others
XV:KV	8 (19%)	1 (2%)	2 (5%)	13 (30%)	0	
ZV:KV	27 (21%)	0	4 (3%)	20 (16%)	1 (1%)	

	ˋˋ	ˋˌ	others
XV:KV:	6 (14%)	2 (5%)	0
ZV:KV:	17 (13%)	0	3 (2%)

---

The biggest discrepancy here seems to be the larger number of  $X\check{V}:K\grave{V}$  than  $Z\check{V}:K\grave{V}$ , nearly twice as many proportionally.  $X\check{V}:K\grave{V}$  is clearly the most populated  $XVKV$  form with at least one long vowel, followed by  $X\acute{V}:K\grave{V}$ .

But before I can go any further, yet one more possibility has to be considered. The listing of  $XVKV$  nouns at (4.2) has shown that the only instances of  $\text{t}$  at  $K_2$  have correlated with  $\text{x}$  as  $K_1$ ; that aspirated voiceless plosives at  $K_2$  have correlated with  $X'$ ,  $\text{x}$  and  $\text{x}$  as  $K_1$ , and that unaspirated voiceless plosives have collocated with  $X^h$  and  $\text{x}$  as  $K_1$ . Consonant cooccurrence restrictions now have to be considered.

It is well known that the nature of one consonant can well determine the nature of another even when they are separated by a vowel. For example, within a morpheme in Kimvita, one of the coastal dialects of Swahili, a morpheme initial nasal or voiced plosive predicts that the next consonant, if a voiceless plosive and within the same morpheme, will be aspirated; a voiceless plosive in morpheme initial position will predict that the next consonant, if a voiceless plosive and within the same morpheme, will be unaspirated. Patterns that could be observed in Hadza between  $K_1$  and  $K_2$  were strong enough to allow their use as a basis for speculation about what items were probably loan words in that language in Elderkin 1978. The possibility of such restrictions can now be investigated for Sandawe in Table IV 18. This raises certain possibilities to be tested against a larger corpus of nouns. One is that where a certain  $K$  is not possible at  $K_2$  neither is the 'prenasalised' version of that consonant, and this could be taken as another example of how Sandawe does not treat seemingly prenasalised consonants as single units. The second is that there are the incompatibilities between consonants at  $K_1$  and  $K_2$  listed in Table IV.19.

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Table IV.18

KVKV nouns, frequent tone patterns; K<sub>1</sub>, K<sub>2</sub>

K <sub>2</sub> :-	Fr	K <sup>ʔ</sup>	K <sup>Nʔ</sup>	K <sup>h</sup>	K <sup>Nh</sup>	Ḳ	Ḳ <sup>N</sup>	Ḳ	Ḳ <sup>N</sup>	N	Son	ʔ	h
K <sub>1</sub> :-													
Fr	4	2				4		1	2	1	3		
K <sup>ʔ</sup>		4:1	0:1	0:5	1:1			5:1	4:2	4:9	5:1	1	
K <sup>h</sup>	2	1				2:4			6	2:1	7:1		
Ḳ	1:3					6:4	1	3:1	5	4:1	5	2	
Ḳ	2	3		3:1				9	6	3	13	2	
N	1	1	0:1	0:2	0:1	1			6	3	6		1
Son	1					1		1	1		2		
h		1						1	3				
ʔ	1				2	1			1		3		

figures for Z- initial forms are quoted to the left of .:, for initial X- to the right of .:

---

Table IV.19

Cooccurrence restrictions

Fr	K <sup>h</sup>
K <sup>ʔ</sup>	Ḳ
K <sup>h</sup>	K <sup>ʔ</sup>
Ḳ	K <sup>ʔ</sup>
Ḳ	K <sup>ʔ</sup>
Ḳ	Ḳ
Son/N	K <sup>ʔ</sup>
Son/N	K <sup>h</sup>

---

Table IV.20 takes a larger sample.

---

Table IV.20

ZVKV nouns with V:, ZVKV minority tone patterns, ZVKV verbs; K<sub>1</sub>, K<sub>2</sub>

K <sub>2</sub> :-	Fr	K <sup>ˊ</sup>	K <sup>ˊˊ</sup>	K <sup>ˆ</sup>	K <sup>ˆˆ</sup>	Ḳ	Ḳ̄	Ḳ̄	Ḳ̄̄	N	Son	?	h
K <sub>1</sub>													
Fr	14	2	1			8	5	5	1	9	6	6	2
Z <sup>ˊ</sup>	6	15	2	8	2	1		4	4	4	8	2	1
Z <sup>ˆ</sup>	4	6		2	1	6	2		10	6	6	3	2
Z̄	4		1			13	4	2	5	15	10	5	4
Z̄̄	6	2	1	4	1	3		9	5	2	11	4	1
N	5	2		2	1	1			4	6	2	5	
Son		4		2	1	1		3	2	1	4	3	
?	4			1		1			2	5	4	2	3
h	1	7	1	1		4	1	1	3	7	1		

---

With Ḳ as K<sub>1</sub>, the evidence in (4.2) is that Ḳ is not found at K<sub>2</sub>. Taking all disyllabic nouns and all verbs in Ḳ- initial, there are 9 instances of K<sup>ˆ</sup> at K<sub>2</sub> to 2 of Ḳ. One is ɔ̀ĩḲá 'to be scattered', where Ḳá is known to be a probable suffix, but the other is the quite frequent ɔ̀àḲí 'go (pl subject)'. I suggest that Ḳ patterns as Ḳ̄, allowing only K<sup>ˆ</sup> at K<sub>2</sub>, and that ɔ̀àḲí is an exception. But looking at nouns of three or more syllables in m-, Ḳ̄ is by far the strongest at K<sub>2</sub>, 15 instances to 5 of K<sup>ˆ</sup>; I would, however, be reluctant to use this as counter evidence because m- words have a high likelihood of being loans into the language, as the Table IV.21 shows.

---

Table IV.21

Z- initial nouns; Z<sub>1</sub>, length

10	20	30	40	50	60
		x	ʔh	s	f
		tʰ		kʰtʰ	
			ʔ		
	tʰ	kʰtʰ	pʰ		
tʰ		t	p		k
		g	ɬ b	d	
			dʒ		
		n			m
			wr l		
					→j(80%)

This table shows for each Z<sub>1</sub> the number of nouns of three or more syllables as a percentage of the total number of nouns with that Z-. Proper names and obvious (to me) recent loans were not included in the above corpus.

---

Looking at this table, it is also interesting to note that those initials which each account for more than 10% of the sample are s, k and m; those which each account for less than 1% of the sample are f, dʒ and j.

I accept the cooccurrence restrictions given in Table IV.19, except for the Son/N at K<sub>1</sub> with Kʰ at K<sub>2</sub>, for which four examples were found in the larger sample. Fricatives and Kʰ pattern together at K<sub>1</sub>; Kʰ, ʔ, N and Son pattern together in being incompatible with

Ḳ at K<sub>2</sub>. K', K<sup>h</sup>, Ḳ and Ḳ at K<sub>1</sub> all collocate with Ḳ at K<sub>2</sub> and either K<sup>h</sup> or Ḳ at K<sub>2</sub>. K' at K<sub>2</sub> implies either K<sup>h</sup> or Ḳ at K<sub>1</sub>, but not Ḳ at K<sub>1</sub>.

Having established that there are consonant cooccurrence restrictions, the attempt to find the missing X'VK' noun forms can be resumed. Then verb forms will be considered.

With either X- or Z- initial, the three tone patterns in Table IV.17 which have a figure for more than 20% are V':V, V̂':V and V̂V̂:'. If we are to look for something to compensate for the V'V gap with nouns, it is less likely that they are hidden as V̂V̂: forms which have a rising pitch as their phonetic outline. V':V and V̂':V both have or include a falling pitch. The likely monomorphemic nature of these two skeleta is therefore investigated.

There was a total of 11 forms of all word classes with X'VK'. Two are clearly bimorphemic: ɓá:tsì 'come out' and ɓá:sì 'run away', and share an identical stem ɓá:. The adjective ɓá:m is |ɓá:+w|, as the feminine ɓá:sù shows. Three forms end in ɓì and violate the K<sub>1</sub>K<sub>2</sub> restrictions ɓá:ɓì, 'buttock meat', ɓú:ɓì, 'spot', and ɓá:ɓì, 'above', which leads to the speculation that a fourth item with ɓì may also be bimorphemic: ɓá:ɓì 'fresh (of milk)'. Two of the four remaining have a medial click, (they are ɓú:ɓè, 'kidney' and má:ɓà, 'louse'), and the increasing weakness of the tone pattern being considered at present adds force to the supposition that clicks are not permitted morpheme internally. Similarly ɓó:kà 'tree sp.', could also be taken as a compound historically. Although we are not in a position to reject a medial k' out of hand, its high incidence with this tone pattern which was found in Table IV.15 makes it suspicious. That leaves only ɓú:rè 'knot in wood' to give difficulty for an interpretation as a compound, because r is not a consonant which one associates with morph initial position in Khoisan, and it has a click initial.

But the 13 non verbal X̂V:K' forms are inconclusive. As the

possible bimorphemic origin of  $\acute{V}:\grave{V}$  forms increased, the likelihood of the acceptability of a morpheme medial click diminished. This, and its failure to observe the consonant cooccurrence restrictions, makes  $\acute{t}\check{u}:\acute{t}\grave{a}$ , 'vessel to collect honey with', a likely compound.  $\grave{z}\check{e}:\grave{n}\grave{a}$  'west' is  $\grave{z}\check{e}:$ , 'to go in' and  $\grave{n}\grave{a}$ , 'towards'. The others listed below include two with nasalisation of a vowel together with a medial consonant, two with the medial consonant x, which did not occur in the nouns listed above, and one with three vowel qualities, taking  $\grave{m}$  as  $*\acute{m}\grave{u}$ . They are:

- (4.3)  $\acute{c}\check{e}:\grave{d}\grave{i}$  'tree sp.'  
 $\acute{t}\check{i}:\acute{k}\grave{a}$  'fire for smoking bees'  
 $\grave{c}\check{o}:\acute{x}\grave{a}$  'a sort of valley'  
 $\grave{b}\check{o}:\acute{x}\grave{i}$  'not yet, still'  
 $\acute{t}\check{e}:\grave{m}$  'tree sp.'  
 $\acute{c}\check{u}:\acute{k}\grave{u}$  'tree sp.'  
 $\acute{c}\check{e}:\acute{t}\grave{a}$  'ant sp.'  
 $\acute{c}\check{i}:\acute{k}\grave{i}$  'stinging wasp sp.'  
 $\acute{s}\check{i}:\acute{s}\grave{a}$  'movements of body after death'  
 $\grave{c}\check{a}:\grave{m}\grave{a}$  'tree sp.'  
 $\acute{t}\check{i}:\grave{m}\grave{o}$  'plaster'

This list does not give any explanation for the poor showing of  $X\acute{V}K\grave{V}$  with nouns.

## 2 Verbs

Firstly verbs in  $X$ -were considered. The figures in Table IV.1 have shown that there are two classes of verbs formally, those which have a final  $\acute{e}$  and those which have no such suffix. I looked at the forms of the verbs with  $\acute{e}$  first. There were 64 out of a total of  $X$ -



initial verbs on my cards of 158.

A dozen had one vowel, X<sup>́</sup>V was twice as frequent as X<sup>ˇ</sup>V.

Those with two vowel qualities, with a nasal or a sonorant before the é and with two short unnasalised vowels in the elicitation form were distributed as follows:

(4.4)	XVmé (18)	XVné (7)
	XVwé (7)	XVré (2)

Although most of these forms which had the perfective/imperfective distinction showed the former by lengthening the first vowel, some did not; it is not clear if the final é in both is identical, but for the present exercise, both were considered the same. Two verbs had a w as K<sub>2</sub> but only forms with <sup>ˇ</sup> on the first syllable, and one had an m as K<sub>2</sub> but a long vowel at V<sub>1</sub>. Another two verbs had x as K<sub>2</sub>:

(4.5)	ʃáxé	'to loose touch with someone'
	čóxé	'to grow up (pl subject)'

I assume that č<sup>̀</sup>ěgé, 'sharpen', was č<sup>̀</sup>ě followed by é, (cf. č<sup>̀</sup>ě:kì 'sharpness'); another stem was ɰ<sup>̀</sup>íké, 'bite, chew', where the failure to obey the rules of consonant sequence indicates a probable bimorphemic form.

Final -ʔé was taken as a suffix: compare k<sup>̀</sup>ũ:ǵù 'small round pot' and k<sup>̀</sup>ũǵùʔé 'swollen'. This eliminated four forms; all had low tones before the ʔé. I further noted that both sé (4 forms) and ɰé (2 forms), appeared to be suffixes, both were preceded by low tones, and the final mé of ʃàʔ<sup>̀</sup>.mé 'pronounce' may also belong here. It is known that some suffixes on verbs have the effect of causing all previous tones to be low, (see section I of Chapter II).

In (4.6) are given the consonants which stand at  $K_2$  with verbs in final é and X-initial.

(4.6)		x
	m	n
	w	r

There remain those verbs without a final é. 26 were of the form XV, (2 of which had X $\grave{V}$ ; such a form was suspect in the consideration of nouns). From the remainder I discounted those with three consonants, and there were six potential suffixes which lead to the rejection of forms which showed them; these two categories had 33 verbs. The suffixes were k $\grave{i}$ /k $\grave{i}$ , k $\acute{a}$ , k $\acute{i}$ , s $\grave{i}$ , k $\grave{u}$  and t $\grave{s}$  $\grave{i}$ /t $\grave{s}$  $\grave{e}$ , and, on the strength of the t $\acute{s}$ , I put c $\grave{e}$ t $\acute{s}$  $\acute{a}$ , 'to speak strongly', on one side. Forms showing reduplication were also rejected. I also rejected the three forms with a final ? $\grave{}$ , because I was aware of the ease with which t $\acute{s}$  $\grave{i}$  could alternate with ? $\grave{}$ ; and by this time the list was reduced to 31 items. There were three forms with a nasalised vowel and a consonant, a great complexity in Khoisan terms; they were:

(4.7)      ǰí $\acute{k}$  $\acute{e}$  'to dry (intrans.)'

and the two with a final nasalised vowel:

(4.8)      c $\acute{o}$ x $\check{o}$ : 'to scuffle along on the buttocks'  
             c $\acute{u}$ b $\acute{e}$ : 'to sink'

I then considered the other forms, and where it was possible to find a form shorter than the citation form I had, I excluded the citation form from the corpus.

- (4.9)      ɔ̀ɔ̀mɛ́? wá:sì 'I've missed them' cf. ɔ̀àá 'to miss'  
             ɟí:gé, perfective of ɟínì 'to eat meat'  
             híɓí:, perfective of ɓímè 'to plaster'  
             ɔ̀í:ts'â: 'it's straight' cf. ɔ̀ímè 'to straighten'

When more than two vowel qualities were present, for this purpose counting ɔ̀ as a vowel quality, I excluded the verb.

- (4.10)      ɔ̀énà 'snore'  
             ɟě:ɬ'â 'to close the mouth'  
             ɟě:tì 'to dream' (cf ɟě: 'eye')

When, as in the last example, an etymology presented itself and indicated a compound, I rejected the form.

- (4.11)      ɔ̀õ:k'â 'leave off' (cf ɔ̀ók'ó 'go on')  
             ɟék'â 'to stalk' (cf ɟě: 'see', and ɟékù 'waken')  
             ɔ̀ów 'be wet' (cf ɔ̀ó: 'wetten')

Finally I excluded ɟàtí, 'to go (pl subject)' despite its great frequency in the language, because of the violation of a consonant cooccurrence restriction.

I now hoped that I had genuine disyllabic verb morphemes. They are listed, and their tonal distribution is shown in (4.12). The correlation of tone and initial consonant in that list is shown in Table IV.22. The medial consonants in that list, counting K<sup>h</sup> and K<sub>ɔ</sub> as predictable variants, are displayed in (4.13).

(4.12)

''				
č'áxá 'increase'				
č'áʔá 'catch'	ɟ'áʔà 'fry'			
ɟ'úʔú 'sprout'				
č'ók'ó 'increase'	ɟ'ót'à 'scratch'	ɟ'ǎ:t'à 'have diarrhoea'	ɟ'ùp'à 'blow'	
	ɟ'ók'ò 'wash'			
	č'ók'ò 'twist'	ɟ'ě:k'à 'become heavy'	ɟ'àʔá 'be satisfied'	
ɟ'úmá 'divine'	č'am 'be silent'		č'amá 'crawl'	
	ɟ'unì 'mature'			
	ɟ'íà 'play'			

---

Table IV.22

XVKV verbs; tone, K<sub>1</sub>

	X <sup>7</sup>	X <sup>1</sup>	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	
''	2		1		2	5
'\`	1	1	1		3	7
'\`			1		1	2
'\`			1		2	3

---

(4.13)

		x(1)		
			ʔ(3)	
	p(1)	t(3)	k(4)	
	m(3)	n(1)		
				∅(1)

Compared with XVKV nouns, two new medial consonants have appeared, x and ʔ; the former also appeared in Xǂ:Kǂ nouns. There were no ejectives. The significance of the appearance of x and ʔ in this list does not emerge until the morph structure of Northern Khoisan has been analysed in subsection C2 of the next chapter.

Whereas there is a restricted set of consonants (4.6) which appear as K<sub>2</sub> in X- initial verbs in é, anything appears at K<sub>2</sub> with Z- initial verbs in é.

---

Table IV.23

ZVKé verbs; K<sub>2</sub>

s	3
Fr	10
ʔ	10
K <sup>ʔ</sup>	7
K <sup>ʰ</sup>	6
K <sub>◌</sub>	6
K <sub>◌</sub>	10
m	14
n	5
w	5
r	3
∅	5

---

With other verbs in Z- there likewise seems to be no restriction about what can appear as K<sub>2</sub>.

### 3 Forms with medial -X-

Of the 37 forms which I have on 5x3 and which have a medial X, 22 are verbs. Only the two which have more than two syllables are those with a final é: hùṽùmsé 'to put a finger into something and then taste it', and k'ùrùc'é 'to rub the eye'.

Tonally their distribution is shown in the Table IV.24. All the vowels are short except where there is a rising tone on a syllable which must then have a long vowel.

---

Table IV.24

ZVXV; tone

ˊˊ	ˊˋ	ˋˊ	ˋˋ	ˋˋ	ˋˋ
7	7	1	0	4	1

---

Seven of these are X medial because they have what seems to be a hV́ prefix, where V is a vowel identical to the following V<sub>2</sub>, except that both i and a are found with a at V<sub>2</sub>. The initial consonant of this believed prefix is ʔ with X<sup>h</sup> as K<sub>2</sub>, so ʔúṽù 'to cough', where I take it that the K<sub>2</sub> governs the nature of the K<sub>1</sub>, according to the rules governing consonant collocation.

Three others factorise themselves out because of convincing etymologies:

(4.14) xǎ:ṽà 'to scrape ground like bulls before fighting, or a chicken'

xánĩ: 'to scrape ground like a guchiro'

mĩ:ç'ǎ 'to grind very finely'  
k'ác'ǎ 'to grind (vegetables)'

This leaves ten that must be taken as monomorphemic synchronically without any historical explanation.

Of 15 nouns, 4 clearly have a <sup>1</sup> <sup>2</sup> structure indicating their compound nature, and the rarity of the tone patterns of the following would also suggest compounding:

(4.15)      sâɿ'ǎ 'bird sp'  
            mòç'ê 'meat from chest'

This last also has an etymology from

(4.16)      mò 'heart'  
            ç'ê 'thong, strip of leather'

One is derived from a verb:

(4.17)      k'ác'ǎsǎ 'type of vegetable' (cf. k'ác'ǎ 'to grind')

Two seem to have a hV prefix.

(4.18)      híɿ'í 'heat'  
            hóç'ô: 'face'

Two of the remainder seem to be different versions of the same root: they refer to the same tree. If they are variants of the same root, the alternation of ɿ and ɓ in the click influxes is interesting, (cf. also ɿĩ:mò 'plaster', ɓímè 'to plaster').

- (4.19) xéǎ́ 'tree sp'  
 séǎ́ 'tree sp, (also ten Raa's Sandawe name)'

Two seemingly different lexical items have the same form, k'ǎ́ǎ́.

The inexplicable nouns forms are then:

- (4.20) k'ǎ́ǎ́ 'tree sp' 'notch'  
 má:ǎ́ǎ́ 'louse'  
 míǎ́ǎ́ǎ́: 'tree sp'  
 xéǎ́, séǎ́ 'tree sp'

má:ǎ́ǎ́ 'louse' has a tone pattern for which I earlier have suspected a bimorphemic origin. Synchronically, medial -X- is clearly permitted; historically, it seems probable that medial -X- derives from compounding.

#### 4 Incidence of labiovelarisation

ǎ́ is not compatible with any labial, but Swahili loans have been found used in a text, for example, ǎ́ǎ́ǎ́ǎ́, 'gruel'. It has not been found with sonorants, nor with the only pulmonic nasal consonant it could occur with, n; as it happily cooccurs with ǎ́, its absence with n could be taken as accidental, but the parallelism between ǎ́ and N is not strong. Its frequency of occurrence is shown in Table IV.25.

There are some interesting figures here. The low percentage of the occurrence of labiovelarisation in XV verbs historically may indicate the existence of XV verbal roots but generally longer noun roots. The absence of labiovelarisation in XVKV nouns can be taken as showing the equivalence of labiovelarisation in XV and a rounded vowel at V<sub>1</sub> in XVKV: a rounded vowel occurs at V<sub>1</sub> here in 39% of



---

Table IV.25

X- initial; labiovelarisation

	at K <sub>1</sub>	at K <sub>2</sub>	of
	⌘	⌘	
Xé verbs	33	-	12
XV verbs	12	-	26
XVCé verbs	18	0	34
XVKV verbs	16	0	31
X...é (not -C-)	6	0	18
other X- verbs	14	3	37
XV nonverbs	39	-	41
XVKV nouns	2	0	41
XVKV nouns with V:	9	0	43
longer nouns	8	0	40
medial -X- nouns	0	33	12
medial -X- verbs	5	0	22

---

the sample and the only occurrence of labiovelarisation is in  $\text{c}^{\text{h}}\text{àk}^{\text{h}}\text{á}$  'gazelle sp.', which still has only two vowel qualities. The association of labiovelarisation and the first consonant is clear and the high percentage with medial -X- items shows their likely historical bimorphemic constitution. Table IV.26 gives figures for its incidence with Z- initial forms.

There is a greater proportion of occurrences of labiovelarisation at K<sub>2</sub> with Z- initial nouns.  $\text{wá}\text{k}^{\text{h}}\text{à}$  has also been recorded as  $\text{wá}\text{k}^{\text{h}}\text{à}$ , and has a variant  $\text{hú}\text{k}^{\text{h}}\text{à}$  and is related to  $\text{k}^{\text{h}}\text{é}\text{z}$ , all are forms of the verb 'to kill'. These show that although w,  $\text{w}^{\text{h}}$  and u are analysed as different elements of syllable structure, they must

---

Table IV.26

Z- initial; labiovelarisation

	at K <sub>1</sub>	at K <sub>2</sub>	of
	⌘	⌘	
ZV nouns	23	-	47
ZVKV odd tones	0	22	9
ZVKV level tones	5	1	160
ZVKV: nouns	8	4	56
ZV:KV: nouns	0	15	20
ZV:KV nouns	4	4	52
Zé verbs	2	-	15
ZV verbs	19	-	36
ZVKé verbs	6	0	84
ZVKa verbs	8	0	56
ZVKV verbs	9	1	98

---

be capable of being readily related through the specification of their phonetic realisation. Except for <sup>1</sup>dĩ:²tṣṣ̃: 'bird species', where the tone pattern indicates a compound, all instances of labiovelarisation at K<sub>2</sub> are with velars. The comparison with Southern Cushitic, which has a labialised velar series and no other possibility of labiovelarisation, is clear, (for example: dàkṣ̃é: 'donkey' cf. Iraqw dàq̃àj 'donkey').

### 5 Vowels

Finally, the cooccurrence of vowels in XVKV and ZVKV nouns was examined and the results are shown in Table IV.27.

---

Table IV.27

KVKV nouns; V<sub>1</sub>, V<sub>2</sub>

XVKV nouns

	V <sub>2</sub>	i	e	a	o	u
V <sub>1</sub>						
i		0	0	4	1	0
e		0	4	3	0	0
a		2	2	7	2	1
o		2	0	4	2	0
u		1	1	3	0	4

ZVKV nouns

	V <sub>2</sub>	i	e	a	o	u
V <sub>1</sub>						
i		6	4	12	1	0
e		0	5	3	1	1
a		7	9	37	8	2
o		4	1	8	15	0
u		6	9	7	0	14

---

There are tendencies but no pattern strong enough to produce a rule, except perhaps the failure of o to appear with u in the same stem. Over 40% in each table have identical qualities for both vowels.

## 6 Tone

The search for regularities about morpheme structure has shown that there are four tonal possibilities on a KV morpheme, one of which, ` , is infrequent. A morpheme whose realisation is  $K_1VK_2V$  can show one of five possibilities, ´´, ´`, ˇ`, `` and ``. The last pattern appears so infrequently with stems in X- initial that it must be considered secondary, though its occurrence with Z- initial forms is unexceptional. An attempt to reduce the remaining four possibilities to three to give a parallelism with the possibilities with KV did not succeed.

But morphemes of any length and with any combination of short and long vowels seemed possible and no patterns emerge. Overall rise fall patterns have been found, and there are a few examples of an overall fall rise pattern. This pattern has been considered potentially undesirable in section I of Chapter II. A sequence  $K'VK\grave{:}K'$  would be indistinguishable from  $'K'VK\grave{:}^2K'$ . I have recorded  $\text{ts}'\acute{\text{a}}\text{x}\grave{\text{u}}\text{:d}\acute{\text{e}}$  'stick'. Although it is tempting to relate it to the stem seen in  $\text{ts}'\grave{\text{a}}\text{x}\grave{\text{u}}\text{s}\acute{\text{e}}$  'slap', I have no evidence that a speaker of the language makes this connection, nor do I know if he perceives it as  $K'VK\grave{:}K'$  or  $'K'VK\grave{:}^2K'$ .  $K'VK\grave{:}K'$  is a little more frequent; phonetically the overall pitch movement is falling and not rising, because of the nature of the raised low tone. It is found in places where there seems no reason to reanalyse it as  $'K'VK\grave{:}^2K'$ , for example,  $\text{b}\grave{\text{o}}\text{k}\acute{\text{i}}\grave{\text{a}}\text{l}\acute{\text{e}}$  'bird sp.' and  $\text{k}'\grave{\text{a}}\text{:k}'\grave{\text{a}}\text{r}\acute{\text{i}}$  'bird sp.' The last example cannot be  $'K'\grave{:}^2K\grave{:}K'$  because the realisation of  $\text{k}'\grave{\text{a}}$  is a phonetically high falling pitch. There are indications that  $r > n$  before a consonant in some seemingly reduplicated forms, another example is  $\text{k}'\grave{\text{a}}\text{:k}'\grave{\text{a}}\text{r}\grave{\text{a}}$  'black'; the suggested progression here is  $\text{k}'\grave{\text{a}}\text{r}\grave{\text{a}}\text{k}'\grave{\text{a}}\text{r}\grave{\text{a}} > \text{k}'\grave{\text{a}}\text{r}\text{k}'\grave{\text{a}}\text{r}\grave{\text{a}} > \text{k}'\grave{\text{a}}\text{:k}'\grave{\text{a}}\text{r}\grave{\text{a}}$ . The structure of these items strongly suggests a reduplicated form where the tonal realisation has

become integrated into the tonal structure of the word. Overt reduplications retain the intrinsic phonetic pitch pattern of their component parts, for example 'wèré<sup>2</sup>wèré 'to walk about' cf. wèré 'to walk' and 'ʃàk'ú<sup>2</sup>ʃàk'ú 'fruit sp.', but k'ã:k'arí seems now considered one unified morpheme. One probably has to consider that, whatever the situation in the primary, Khoisan, part of the dictionary, the massive foreign influence has brought about, in principle, complete tolerance for any pitch pattern, and that the only thing measurable is the frequency with which the pattern occur.

## 7 Conclusion

It is difficult to bring much of this information to bear in a synchronic statement without having to resort to diacritic or rule exception features. Sandawe lexical morphemes can be any sequence of syllables. Tendencies, some stronger, some weaker, exist, but their interpretation, if available, is best left to the historical discussion in Chapter V. This statement of morpheme structure has invoked the syllable; the next section considers the syllable.

## B SYLLABLES

### 1 The phonetic syllable

A phonological word has been defined in Chapter III. The definition has been possible only by reference to the properties of one phonological word in its syntagmatic relation to other words in the same utterance, and by considering the relation of the sound to the syntactic structure. Within a word, patterns of sound also emerge. In Chapter II, I identified certain components as being relevant to the specification of those patterns in Sandawe. Phonological components do not appear randomly, however these components are defined and whether these components are, crudely, horizontal or vertical slices of the speech stream. In Chapter II, the description of the sound of a word was in terms of the components of syllable structure given in (4.21). What was in Chapter II called a closure is here referred to as a coda.

- (4.21)
- |   |   |
|---|---|
| 1 | Consonant   |
| 2 | Labiovelarisation   |
| 3 | Vowel, with a minimum of two and a maximum of<br>four morae |
| 4 | A tonal value, high or low, on each mora                    |
| 5 | Nasalisation  |
| 6 | Final nasality  |
| 7 | Up to two codas, each one mora long                         |

The only obligatory constituents of the syllable are components 3 and 4. Component 2 is not found without component 1.

The syllable here is the phonetic syllable, that is a phenomenon which is observable at the prephonetic level of representation. In sequences, it specifies a possible Sandawe word and does this without any reference to the morphological derivation of that word. The establishment of the prephonetic representation and the definition of the phonological structuring is in principle an iterative operation which relies on an understanding of the meaning and the morphological derivations in a language.

The syllable has had a varied history and one none the less amazing for the variety of its definitions. From being taken for granted in many early phonologies, it was entirely rejected for early generative phonology, only to be reinstated as its usefulness in rule operation was recognised, and then challenged as its definition became problematic; the open ended possibilities in Gonkana (Hyman 1984) illustrate this, and there is a certain openendedness about the phonetic syllable in Sandawe. As well as practical difficulties, theoretical considerations have lead to the proposal that the syllable is not a universal, ( e.g. Kaye et al 1988). But the question of universality is irrelevant. What is universal is the potential of using a syllable-like unit. Some languages avail themselves of this potential, some may not, and a language may not utilise the potential to the full or neatly.

In relating the phonetic specification to a syntactic and lexical description, different theories presuppose various depths of abstractness. Because I am interested in the historical development of languages, I prefer to take an abstract phonology, because the startingpoint of such a phonology is similar to an internal phonological reconstruction, which is the indispensable foundation of any historical study. The underlying representation in an abstract phonology also shows a structure, if phonetic categories are projected on to it. In Sandawe, as in many other

languages, the morpheme boundary is important in delimiting the unit within which such syllable-like structuring can be found. I will refer to the syllable structure at this level as the underlying syllable, and will consider it later in the next subsection.

The European adaptation of Near Eastern writing systems produced the phoneme based systems which are now so familiar. The impression that vowels are separated from each other by consonants, and that consonants are separated from each other by vowels, complicates, visually and in practice, the understanding of the influence of vowel on vowel and consonant on consonant. For example, if we can extend the partial system of consonant cooccurrence restrictions, as detected in a previous subsection, to a complete one,  $K_1$  is directly dependent for its nature on  $K_2$ , (or vice-versa), without any reference to the 'intervening' vowel. Other processes are also purely consonantal, such as the leftward movement of aspiration in Swahili. What it is difficult to justify is the notion that, other than on a superficial level, the relationship of consonant and vowel is one of sequence. I propose to talk about syllable components, each of which coexists with each other and is adjacent to all of the components of the previous syllable and of the following syllable. So syllables are in sequence, but sequencing of syllable components, or rather the placing of the various realisations of syllable components within the syllable and beyond, relative to each other, is the result of realisation rules.

But some notion of sequence is necessary even within the syllable because syllables are of different length and because each component of length is capable of being associated with a tonal value which appears in a fixed sequence. I accept the idea of timing units with which vowel and codas and tone are associated, and these I have been calling morae. The vowel quality is associated with morae and those morae which follow a vowel are associated



with the codas. More than one coda may occur. So ɨ́ázṁ, when set in the framework of (4.22) would be specified as (4.23).

(4.22)

	Consonant				
	Labiovelarisation				
	Final nasal				
	m	m	m	m	
	Tone	Tone	Tone	Tone	
	Vowel			Coda	
	Voicing				
	Nasalisation				

(4.23)

	ɨ́				
	∅				
	∅				
	m	m	m	m	
	h	h	h	l	
	a			m	
	˘				
	∅				

Using these components, a working definition of a syllable is that it can only contain one value for the vowel.

The maximal structure of the phonetic syllable seems to be:

(4.24)

Consonant					
Labiovelarisation					
Final Nasal					
m	m	m	m	m	m
Tone	Tone	Tone	Tone	Tone	Tone
Vowel				Coda	Coda
Voicing					
Nasalisation					

Such an analysis does not show the relationship between consonantal nasality final to the last vowel mora and nasalisation of the vowel, which has been seen above to be a troublesome point; it does not show the relationship between consonantal nasality final to the last vowel mora and the two codas, that is, their inability to cooccur. It does not show the restrictions of cooccurrence between labiovelarisation and the initial consonant. If labiovelarisation is present, then the specification for consonant cannot include the feature labial or glottal, but some loans exhibit this collocation, for example,  $\underset{\omega}{\text{ù}}\hat{\text{b}}\underset{\omega}{\text{à}}$  'gruel', and rapid speech produces  $\underset{\omega}{\text{?}}$ . With a few exceptions at this level of analysis, the phonological word consist of an integral number of syllables. If

each word is an integral number of syllables, then the occurrence of component 6 on its own in the word *ˈbô* 'word, to say' is not explained, nor the appearance of *m̃* as a coda without a vowel in a few presumed Bantu loans, for example *m̃dàˈkà* 'a type of dance'; I do not know if *m̃* in such words is one or two morae long. These part syllables appear only at the beginning of phonological words. The raw statement of the structure of the phonetic syllable in (4.24) also cannot show the morphological relationship between at least some codas (*w* and *j*) and full vowels and between *m̃* as a coda and *m* as a consonant, as shown in (4.25).

(4.25)      *ɬá:w̃ + ɛ̃*      gives      *ɬá:wũ:* 'the beautiful one'  
               *ɬá:m̃ + ɛ̃*      gives      *ɬá:mũ:* 'the old one'

If the voicing specification is voiceless, then only two morae are present. In any syllable, at least two morae must be present. Not all the six sequences of the possible codas are found, there are no formatives of certain forms (e.g. with an initial *j* or *w̃*). If there is a coda present, then the maximum length of the vowel is three morae.

## 2 The underlying syllable

The majority of instances of the collocation of nasalisation and a coda are to be found when they are heteromorphemic. I give two examples.

The distinctiveness of the nasalisation in the first example of (4.26) can be seen by comparing *ɔ̃ǎ:m̃sésì* and *ɔ̃ǎ:m̃sésì* 'I want to follow (*ɔ̃ǎ:* 'follow')'. The two occurrences of the morpheme *j* in the second example are occurrences of the same nominalising morpheme, in *hèwé?wǎjj* in its original function, in *híc'awàj* now to

- (4.26) ʃǎ:m̄sésì  
           ʃǎ:           m̄sé           sì  
           warthog have in mind 1Sg  
           I thought it was a warthog
- ʰhèwéʔ̀wǎjj ʰʔ̀á: ²híç'awàj  
 ʰhèwé ʔ̀wà j ɛ̃ ʰʔ̀á: ²híç'à wà j  
 3mSg multiple j SPEC well fasten multiple j  
 he'll look after his things properly

be taken as the irrealis suffix in the 3mSg. When j is the closing glide of a diphthong, the suffixation of ɛ̃ adds only one mora. When j is a closure, two morae are added, so tʰǎ:j ('father') + ɛ̃ gives tʰǎ:ĩ. I have not integrated the possibility of diphthongs functioning as vowels into the statement of surface syllable structure, although it is clear how they would fit in. This would slightly complicate the already complicated cooccurrence relations between the components of the structuring.

There is one item which shows clearly how a diphthong functions as a vowel in that it can cooccur with nasalisation. It is ɕǎjʔ̀t̄è 'the other side of'. ɕǎj does not occur outside this context although ʔ̀t̄è is a common locative suffix, (to be precise, a sequence of two locative suffixes). Compare Nama ɕǎ: 'in' and Žu/'hōasi nɰáng 'within'. I also noted the Sandawe form as ɕǎjʔ̀t̄è, but I do not know if I was accurate, or if indeed, the form was an attempt to adapt ɕǎjʔ̀t̄è to the permitted phonetic syllable structure by reanalysing it as ɕǎjjʔ̀t̄è, (from ɕǎ:j+ɛ̃+ʔ̀t̄è), which would be a possible sequence. This tonal pattern might also have been because of the following ʔ̀, (irregularly). ɕǎjʔ̀t̄è is the only item I have found with a nasalised diphthong.

At this underlying level, final nasality is always homorganic

to the consonant of the following syllable. This allows it to be taken as a component of that syllable, as initial nasality, and makes it possible to talk of prenasalised consonants. Initial nasality can only cooccur with plosives. In the statement below, these prenasalised consonants are subsumed under Consonant. An abstract analysis would not eschew backforming an acceptable underlying form for  ${}^m\text{?}$  when the  ${}^m$  and the  ${}^?$  are not strictly heteromorphemic. To allow for prenasalised consonants does not of course solve the problem of my indeterminacy in discriminating between a nasalised vowel followed by an oral consonant and an oral vowel followed by a prenasalised consonant; it indicates where I think the solution must lie, if a solution exists.

All instances of phonetic syllables with more than two tonal specifications have been either the result of the fusion of different morphemes or of the creation of codas by the 'loss' of a vowel. The coda  $\eta$ , derives from  ${}^g\grave{i}$ .

(4.27)       $|\text{ɔ}\check{\text{e}}:+\grave{i}|$       gives       $\text{ɔ}\check{\text{e}}:\grave{j}$  'you went in'  
               $|\text{ɕ}\check{\text{a}}:+\check{\text{e}}|$       gives       $\text{ɕ}\check{\text{a}}::$  'the opportunity'

By restoring such vowels in an analysis, and thereby creating new syllables, then two things are possible. Codas are eliminated as a component of the underlying syllable. All syllables can be specified with only two morae tonally.

Most voiceless vowels can be predicted; they are low toned short  $i$  and  $u$  in morpheme final position. The only exceptions are a few recent loanwords, which have final voiced vowels of this nature, and occurrences of  ${}^?\grave{}$ .

The underlying syllable structure then can be seen as follows.

(4.28)

Consonant	
Labiovelarisation	
m	m
Tone	Tone
Vowel	
Nasalisation	
Length	

It should be again emphasised that some of the components are themselves decomposable into further components, and that I have chosen to represent bundles of components by conventional labels for ease of exposition only. Length has been disassociated from the mora.

It would be possible to take labiovelarisation as perhaps the vowel realisation of the first mora of a syllable. I have not done this, not so much because then a syllable with two vowel qualities would then exist, but because I have in mind the historical development:

(4.29)  $K V K_{\omega} V > K_{\omega} V K V$

although there is nowhere that this rule is synchronically valid. A historical example is given.

(4.30)  $\underset{\omega}{\text{d}á\text{x}é:} < * \underset{\omega}{\text{d}á\text{x}é:}$  'female which has not yet given birth'  
(cf. Žu/'hōasi zāowà 'maiden', dshàù-mà 'girl')

Ehret 1986 has some examples with what seems to be a metathesis of vowels, one of which is rounded; these might also be understood better if labialovelarisation were a distinct syllable component.

To take labiovelarisation to be the first mora of the vowel in the syllable would complicate the statement of where this labiovelarisation could occur, because the vowels u and o, with one of which it would then have to be identified, are not subject to restrictions of occurrence with any consonant. Labiovelarisation entails some restrictions.

Throughout this chapter, it has been difficult to escape from the historical aspect of the situation in Sandawe. There seem to be few restrictions on sequences of tones on morae and a wide variety of different pitch patterns occurs, especially on nouns. One restriction which operates is that the vowel of any one syllable within one morpheme will only have two choices for tone. Within a morpheme one or more low toned morae will not usually separate two high toned morae. When this happens, historical compounding, borrowing or backformation is to be suspected. The relation of the underlying syllable structure proposed here and the structure of the morph in other Khoisan languages will be the subject of section C of the next chapter.

## Chapter V

### COMPARISONS

It is the intention of this chapter to consider some historical relationships of the tonal situation in Sandawe. The first two sections relate to the system of tone levels. Section A makes a comparison with Nama and Kxoe and identifies the morphemes which have contributed to the creation of the Sandawe system of tone levels. The historical study of word structure in section B investigates the origin of these morphemes.

#### A SYNTACTIC TONE

##### 1 Sentence structure

The presence in Sandawe of a series of suffixes which agree with the subject and which can be suffixed to any clause constituent except the subject, and Sandawe's use of tonal levels as part of sentence structure, can both be compared with the situation in Nama. The following outline of Nama declarative sentences is drawn from Hagman 1977, adapting it for the purpose of this comparison.

The basic structure of a Nama declarative clause is:

(5.1)        NP    +    kè    +    NPà    +    Verb  
              (Subject)                                (Object)

kè indicates that the sentence is declarative. When an NP is subject and when it also immediately precedes kè, that NP has no



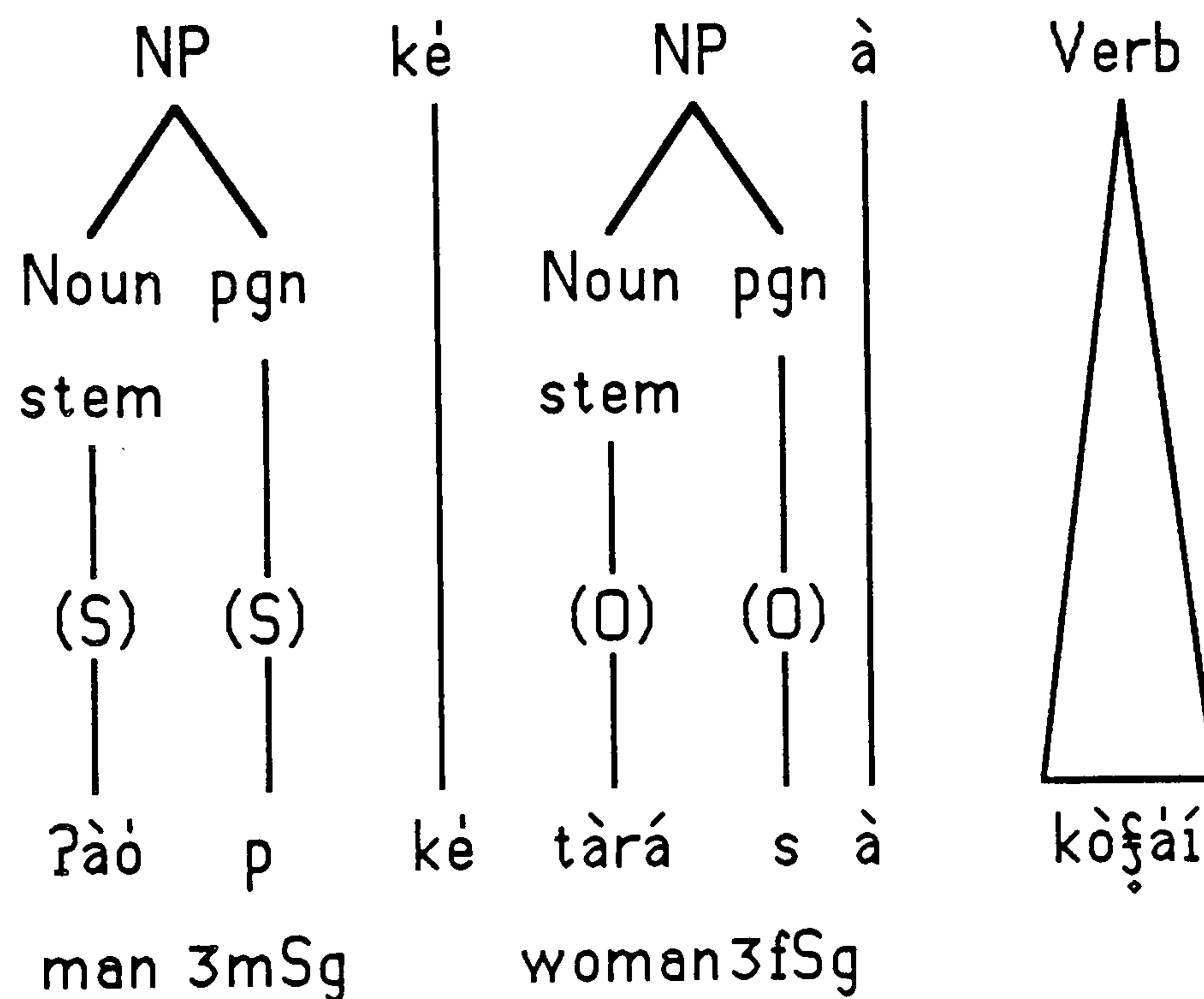
case suffix. Otherwise, any NP in the clause will be followed by à, called by Hagman 1977 the subordinative suffix. In the examples below I use the minimum form of an NP, that is, a noun.

A noun has the structure

(5.2) Noun stem - pgn suffix

As in Sandawe, pgn suffixes show person, number and gender; but in Nama their suffixation to a noun shows the person, gender and number of that noun; they also have the same function as the Sandawe subject series, as will be seen.

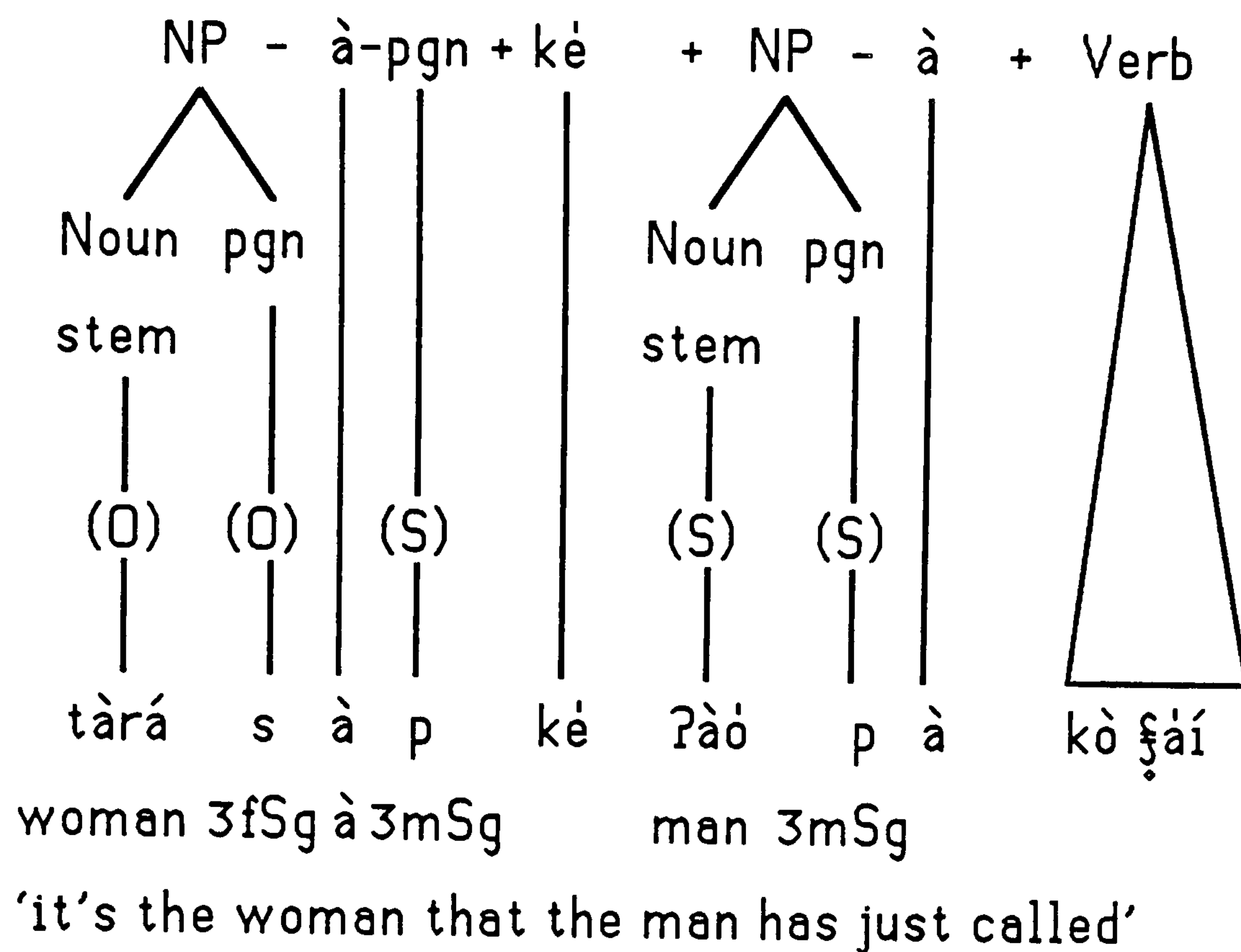
(5.3)



'the man has just called the woman'

The sequence of the constituents of the basic sentence is variable in Nama as well as in Sandawe. If any other constituent is placed immediately preceding kè, the subject is demoted, that is, is moved elsewhere, and it also receives the subordinative suffix à. But such a demoted subject leaves a copy of its pgn marker immediately preceding kè. The promoted NP retains its subordinative suffix à.

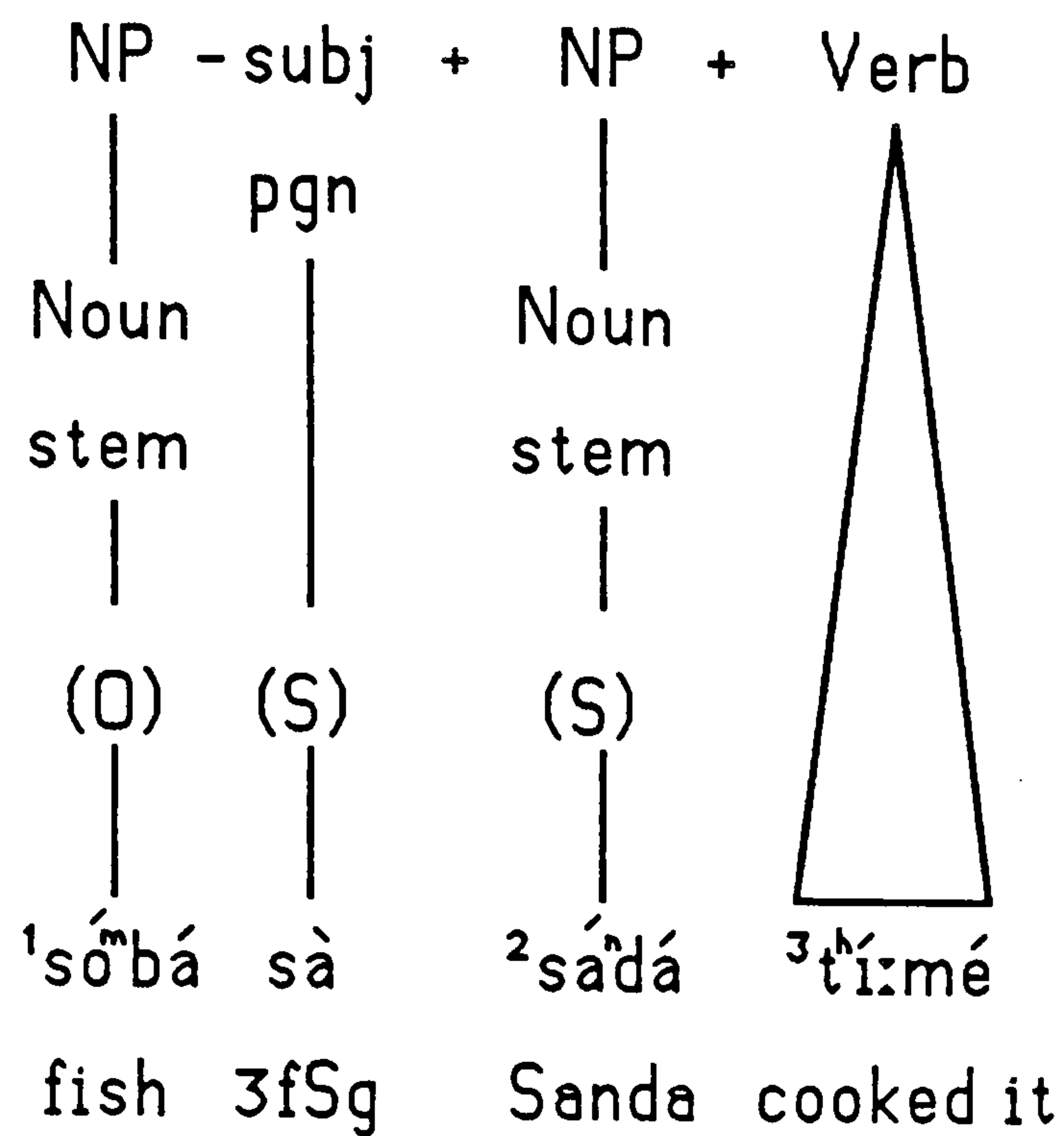
(5.4)



Sandawe does not have the subordinative suffix (Nama à), nor does it have a declarative morpheme (Nama ké) as an obligatory sentence constituent. Neither are noun stems in the third person usually associated with a pgn suffix. But the unmarked order of constituents is SOV and if a subject is demoted to a later position, the general downward movement of pitch begins instead with the object, but the subject leaves behind, in the constituent with which this general downward movement begins, a copy of information as to its person, gender and number in the form of the subject pgn. This is illustrated in the tree in (5.5).

In Sandawe, the general downward movement of the pitch begins in a position analogous to the position of ké in Nama: in Nama however, "there is a steadily falling intonation contour from the beginning to the end of the declarative sentence" (Hagman 1977). It is not clear from Hagman if downdrift is involved, or if it is a movement like that which successively lower tone levels, as in Sandawe, would produce; interrogative sentences may not have this "steadily falling intonation contour".

(5.5)



Apart from overtly marking a clause as declarative, *ké* can be seen as having two other functions. It serves as a guide to the subject, in as much as the immediately preceding *pgn* is in agreement with the subject. It indicates which lexical item is in a position of emphasis because such an item is the one preceding *ké*. These two functions of emphasis and subject marking are combined in Sandawe in the change from level 1 to level 2 and the use of the *pgn* suffix.

## 2 Tone in the NP

A change from one syntactic tone level to another in Sandawe corresponds in Nama to the presence of a mid toned *ké* or the presence of the low toned subordinative suffix *à* or to both. The associative in Nama, which compares semantically to the associative in Sandawe, shows a low toned morpheme between the two constituents, as in (5.6).

Kxoe has several genitive forms; one construction involves a *dì*, which seems comparable to Nama *tì*, and one has no marker but

sometimes has tone lowering on the second constituent, as in (5.7):

(5.6)      ʔáòp tì ʔòm's  
          man house  
          'the man's house'

(5.7)      tí ɿ̀è  
          tí ɿ̀é  
          1Sg fire  
          'my fire'

Sandawe uses syntactic tone to mark the construction.

(5.8)      ¹sáǎdá ²sǒmbá  
          'Sanda's fish'

          ¹hàpú ²núá  
          'your ugali'

### 3 Origin of tonal levels

If the Nama, Kxoe and Sandawe structures had a common source, it is therefore quite possible that the origin of the system of levels in Sandawe is to be found in the loss of low or mid toned syllables. What started as probably a straightforward downstep associated with such a loss cannot now be analysed as downstep in Sandawe, because downstep, which does occur within words in Sandawe, differs from the realisation of a following lower word level. The analysis in terms of word levels also capitalises on the fact that phonological words have to be clearly demarcated for the realisation of their internal tones. The morpheme which gave Nama

tì and Kxoe d̀ is probably one source of the use of tone levels in the Sandawe associative construction. The morpheme which gave the Nama subordinative suffix à is probably the source of the use of tone levels in Sandawe sentence structure; it is the origin of this suffix which is considered in subsection B2 below.

## B PHONOLOGICAL WORDS

Within a word, the situation is that usually the inherent tones on each morpheme remain unchanged. The origin of downstep is here reviewed and a reference is given to the origin of the downglide. Tonal phenomena are the way in to an understanding of the Sandawe pronominal and negative forms from a historic perspective. In subsection B2 a morpheme of the form  $\text{ʔ}\grave{\text{y}}$  is isolated; it provides an origin for the subordinative suffix in Nama and therefore a motivation for the genesis of the system of tone levels in Sandawe.

### 1 Tone

A low tone following a high tone and followed by a word final syllable with  $\text{ʔ}$  initial and a voiceless vowel appears as a high tone, as has been shown in section I of Chapter II. Downstep derives from the deletion of a syllable with a low tone, as has been indicated in the same section.

- (5.9)       $\text{ɿ}^{\text{h}}\text{á:k}\grave{\text{i}}\text{nà} \rightarrow \text{ɿ}^{\text{h}}\text{á:}^{\text{h}}\text{nà}$  'to on top of'  
              $\text{c}^{\text{h}}\grave{\text{à}}\text{wéts}^{\text{h}}\grave{\text{i}}\text{pó} \rightarrow \text{c}^{\text{h}}\grave{\text{à}}\text{wé}^{\text{h}}\text{pó}$  'you didn't fall'

On two occasions the deletion of a segment with a low tone does not produce downstep, but results in the last mora of the previous syllable having a low tone whatever its original specification is.

The irrealis has the following suffixes listed in (5.10). Except for the 3mSg  $\text{j}$ , all other suffixes appear also in the low toned nominal pgn series, (quoted in the next subsection), where

- (5.10) `sì  
 `pò  
 `j  
 `sù  
 `sù:  
 `sǐ:  
 `ʔǐ:

they are not associated with a preceding low mora. The forms with these suffixes are nominals and can be followed by the specificising suffix ǐ, but these forms have j throughout the paradigm.

- (5.11) ʔisâjpǒ:pò 'you are the one who will steal'

The downglide here can well be attributed to the loss of j. A tentative origin for this j is given in later in this section.

The second source of the downglide, that which gives ʔǎ: 'in front' and pǎ:gu 'ritual shields', has been adequately discussed in subsection E2 of Chapter II.

## 2 Pronouns, negatives and the origin of ʔǐ

(5.12)		High	Low
	1Sg	sé	sì
	2Sg	pó	pò
	3mSg	é:	∅/m/ w/ è
	3fSg	é:sú/sú	sù
	1Pl	sù:	sù:
	2Pl	sǐ	sǐ
	3Pl	só	sò

The nominal pgn markers of Sandawe are given in (5.12). A noun suffixed with the high series is translated in English with a copular construction; the verb of the present/past negative also has a high series pgn as a final suffix. Most adjectives will have the low series; the verb of the irrealis construction takes the low series. These are exemplified in (5.14).

(5.13)      màrímòsé  
               màrímò sé  
               teacher 1Sg  
               'I'm a teacher'

              ɿí'ʔé:  
               ɿí ʔè sé  
               come NEG 1Sg  
               'I didn't come'

(5.14)      ʔá:sì  
               ʔá: sì  
               good 1Sg  
               'I'm fine'

              ɿàʔîsò  
               ɿàʔí ì sò  
               come FUT 3Pl  
               'they'll come'

Why should there be two suffix series, segmentally similar, but differing in tone?



Secondly, the negative morpheme has two allomorphs,  $\text{ts}^h\text{è}$  (as in  $\text{ɿ}^h\text{ts}^h\text{é}$ : above) and  $\text{ts}^h\text{é}$ . The first is used in the present/past negative, the second is used elsewhere.

(5.15)       $\text{ts}^h\text{í}^h\text{ts}^h\text{é}$   
                $\text{ts}^h\text{í} \text{ts}^h\text{é}$   
               1Sg NEG  
               ‘it’s not me’

$\text{ɿ}^h\text{à}^h\text{ɿ}^h\text{sò}^h\text{ts}^h\text{é}$   
                $\text{ɿ}^h\text{à}^h\text{í} \text{ì} \text{sò} \text{ts}^h\text{é}$   
               come FUT 3Pl NEG  
               ‘they will not come’

The  $\text{ts}^h\text{é}$  allomorph seems to be a privative morph, by which label I want to characterise the meanings negative and ‘from’.

(5.16)       $^1\text{ts}^h\text{â} \text{ } ^2\text{t}^h\text{é}^h\text{:sè}^h\text{ts}^h\text{èsá}^h\text{: } ^3\text{ɿ}^h\text{í}$   
                $\text{ts}^h\text{â} \text{ t}^h\text{é}^h\text{:} \text{ sí} \text{ è} \text{ ts}^h\text{è} \text{ s}^h\text{ì} \text{ á}^h\text{:} \text{ ɿ}^h\text{í}$   
               water bitter having 3mSg from 1Sg NOM come  
               ‘I came from Dar es Salaam’

Why the alternation of aspiration and ejection, the tonal alternation, and the downstep?

And thirdly, the declarative morpheme  $\text{gâ}$ , when used in the basic sentence structure, is followed by a morpheme from the subject pgn series or, when further followed by  $\text{á}^h\text{:}$ , NOM, by a low nominal pgn suffix. But when used after nominal constructions, it has a final  $\text{ʔ}^h$ . In this section, this suffix is written  $\text{ʔ}^h\text{v}$ , as the nature of the vowel (represented by  $v$ ) is to be discussed.

- (5.17)    ʔá:sìgáʔỳ  
           ‘I’m fine’  
           màrímòséǵáʔỳ  
           ‘I’m a teacher’

What is this ʔỳ?

In Nama there is a present tense copula, ʔá:

- (5.18)            sáátʰ kè ʔá káj  
                   sáátʰ            kè ʔá káj  
           addressee2Sg DEC    big  
           ‘you are big’

In Kxoe, what Köhler calls non verbal predication is effected either without anything, or with a pgn suffix, or with ʔà.

- (5.19)    kʷé  
           ‘he’s a Kxoe’

          ɿwáɕì  
           ɿwá ɕì  
           child 3fPl  
           ‘they’re girls’

          gwàbá ʔà  
           ‘they are Mbukushu’

I believe that a construction with a morpheme of the form ʔỳ, can elucidate the three Sandawe problems listed above.

I take as starting point for the màrímòsé type of structure the formula in (5.20).

(5.20) NP p̀̀n ʔ̀̀

A final glottal stop has a raising effect on tones of a preceding vowel. This occurs as a productive rule in Sandawe, as has been shown above. The vowel of ʔ̀̀ became voiceless and the tone on the p̀̀n was raised. The ʔ̀̀ later dropped, its presence having been registered in the raising of the tone, and the high toned suffix series was created.

(5.21) NP p̀̀n ʔ̀̀  
 NP p̀̀n ʔ̀̀ devoicing  
 NP p̀̀n ʔ̀̀ tone raising  
 NP p̀̀n deletion

I would here have to brave two problems in a synchronic analysis, namely that tone raising would have happened, if we are to look at the present day Sandawe rule, only when a high tone preceded the p̀̀n suffix, and that this did not happen to adjectives. However, I am now trying to suggest why things are what they are from a diachronic point of view rather than give a watertight synchronic analysis.

When the negative morpheme followed, in the form ʔ̀̀, this is what happened:

(5.22) NP p̀̀n ʔ̀̀ ʔ̀̀ gǎ̀:bè sò ʔ̀̀ ʔ̀̀  
 NP p̀̀n ʔ̀̀ ʔ̀̀ devoicing  
 NP p̀̀n ʔ̀̀ ʔ̀̀ tone raising  
 NP p̀̀n ʔ̀̀ ʔ̀̀ deletion  
 NP p̀̀n 'ʔ̀̀ ejectionisation gǎ̀:bèsó'ʔ̀̀  
 'they're not Maasai'

The origin of the ejective is now easily explained though the motive for the downstep, which involves raising the tone of tʂè, is not so clear. The low tone would raise itself to a highish, falling pitch after the high on the pgn suffix, but this does not carry any indication of a lost syllable. Perhaps by becoming a downstepped high this loss was registered. 'tʂé now became the regular form of negative after all nominals, even where the pgn suffix was low. Both nominal pgn series can be reduced now to one with a low tone. The same ʔỳ can be seen as the final constituent in màrímòséǵáʔỳ and ʔá:sìǵáʔỳ.

But there is more to be said about ʔỳ than just that it is a copular morpheme. As an introduction to this, I will reproduce the Kxoe (Köhler 1981) and the Nama (Hagman 1977) pgn suffixes. The Central Khoisan languages have often been referred to as gender languages, but this is no more than a popularised half truth which catches on. The gender markers are members of a larger set of suffixes which indicate person, number and gender. The pgn suffixes of Kxoe and Nama are:

(5.23)	KXOE			NAMA		
	Sg	Du	Pl	Sg	Du	Pl
1m	t <sub>1</sub> /ra	ʈam	ʒe	1m	tá	k <sup>h</sup> m ké
1f	t <sub>1</sub> /ra	ɕam	ɕe	1f	tá	(i)m sé
1c	-	k <sup>h</sup> am	te	1c	-	(i)m sé
2m	ʈi	ʈao	ʒao	2m	t <sup>h</sup>	k <sup>h</sup> ò kò
2f	ɕi	ɕao	ɕo	2f	s	rò sò
2c	-	k <sup>h</sup> ao	to	2c	-	rò t <sup>h</sup>
3m	m	ʈa	ʒu	3m	pi	k <sup>h</sup> à kù
3f	h/ɕi/i	ɕa	ɕi	3f	s	rà tì
3c	a	k <sup>h</sup> a	n	3c	ʔì	rà (i)n

It is clear that many of the suffixes are not single morphemes historically; it is unclear how they became what they are.

In Sandawe there are two pgn suffix series. I have taken the subject series as the older; the nominal series has an overt resemblance to the freestanding pronoun series. The subject series agrees with the subject or is sometimes the only indication of what the subject is in default of an NP. It can be suffixed to any constituent of the basic sentence except the subject NP itself. The pgn suffixes and the free standing pronouns are:

(5.24)		Subject	Nominal	Free standing pronoun
	1Sg	sì	se	ṭí
	2Sg	ì	po	hàpú
	3mSg	à	we	hèwé
	3fSg	sà	su	hèsú
	1Pl	ò	sũ:	sũ:
	2Pl	è	sĩ:	sĩ:
	3Pl	ʔà	so	hèsó

Honken 1977 points out that Sandawe has the vocalism for the 1Pl and 2Pl forms the wrong way round compared with Central Khoisan. Whichever form is original, I find it interesting that the vowels of 1Pl and 2Pl show a strong likeness to what I believe (Elderkin 1988) is a Common Southern Cushitic phenomenon in person marking:

(5.25)	1	o
	2	e
	3	i

Southern Cushitic languages are to be found on almost every side of

Sandawe. The 2Sg -po seems to be an innovation; although o appears in nonSg 2 forms in both Kxoe and Nama, there is no trace of labiality in the singular. A look at the Kxoe paradigms would reveal a weakness if \*ti '1Sg' were to be palatalised to [tɕi], which happened in Sandawe. This could explain why an innovation was needed. If a language related to Northern Khoisan were in some way ancestral to Sandawe, po might not be so much of an innovation as a retention: Heikkinen 1987 reports a !xũ 2Sg personal pronoun in bà.

In the third person in Kxoe and Nama, the feminine singular marker is distinct from the masculine. In Sandawe, the nominal pgn suffix for 3fSg shows not only the fricative, s, but also labiality, for example:

(5.26)	3mSg	3fSg	
	ʔá:w	ʔá:sù	'good'
	ʔá:m	ʔá:sù	'tatty'
	hèwé	hèsú	's/he'

It seems then that labiality is more of a third person marker rather than specifically a masculine third person marker. This could mean that Sandawe 3fSg in -su is a relic of the time when the third person feminine was formed by the addition of a suffix of a fricative nature to a marker of person. In Sandawe, the masculine usually lost its labiality and finished up as e or ez or Ø. The high incidence of ɕ in feminine forms in Kxoe supports this interpretation of s as a specifically feminine marker. If ever it had appeared with a labial third person marker in Central Khoisan, there seems to be no trace of it now. If Sandawe were to show the original situation, then, delight for those who believe that Tanzania boasts two Khoisan languages, the nearest language in which b clearly has a third

person reference irrespective of gender, is Hadza.

There is in both Nama and Kxoe a third gender labeled in the above paradigms, common. The nearest I have found to a three-way distinction in Sandawe is in:

- (5.27)      màwélé      'some male or other'  
               màsùlé      'some female or other'  
               màʔýlé      'somebody or other, something or other'

There is a construction where ʔý is clearly a 3mSg phenomenon:

- (5.28)                    <sup>1</sup>ʔígàsì <sup>2</sup>t'í:mêsĩ:sì  
               ʔí gâ sì t'í:mé ì sì ʔ: sì  
               1Sg DEC 1Sg cook-it FUT 1Sg SPEC 1Sg  
               'I'm the one who'll cook it'

- <sup>1</sup>ʔùmágàsù <sup>2</sup>t'í:mêsũ:sù  
               ʔùmá gâ sù t'í:mé ì sù ʔ: sù  
               Tsuma DEC 3fSg cook-it FUT 3fSg SPEC 3fSg  
               'Tsuma's the one who'll cook it'

- <sup>1</sup>gélégáʔý <sup>2</sup>t'í:mêj  
               gélé gâ ʔý t'í:mé ì Ø ʔ: Ø  
               Gele DEC 3mSg cook-it FUT 3mSg SPEC 3mSg  
               'Gele's the one who'll cook it'

Sandawe verbs can be associated with an object morpheme. Those of the plural are shown in (5.29), and having extracted ´, which is proper to the object morpheme, and ʔ: as plural, in the third person what is left is ʔi. In (5.30), pó is '2Sg', é is 3Sg, sà is 3fSg and there seems to be no substance for the verb 'give' except perhaps

the :. A third person recipient is ?i, as in (5.31).

- (5.29) 1Pl sú:  
2Pl sǐ:  
3Pl ?í:

(5.30) pó:ésà 'she gave it to you'

(5.31) ?í:ésà 'she gave it to him/her'

Another form of this verb (and of many verbs) shows the sequence ?ỳwà which often occurs corresponding to a translation 'them'.

(5.32) ?í?ỳwà:sà 'she gave them to him'

wà, it seems from other uses, basically denotes a multiple action, which leave the ?ỳ to stand for the third person thing given, the plurality of which the translation derives from the wà.

Usually a noun is used in the third person and in Sandawe it is suffixless. But there are a few what seem to be relics where a possible pgn suffix has become fossilised:

- (5.33) t'ámèts'ú 'woman'  
t'ámèts'ì 'women'  
ts'íná 'buttocks' (cf. Baucom 1974, \*tsi)  
ǰémésé: 'human (male)'  
ǰémêsú 'human (female)'  
ǰòmósò 'humans'  
ǰǒ: 'child'  
ǰǒ:kó 'children'



There are others, especially names of relationships.

But when a nominal is used in other than the third person, it has a low pgn suffix, and also when used with the specifier  $\tilde{}$ , in all persons.

(5.34)            nê sî  
                   nê     sî  
 PROX DEM 1Sg  
 'me, the one here; I'm here'

                  'tʂí ²lá:ʔèsî:sî  
 tʂí lá:ʔè sî    ̃:    sî  
 1Sg hare 1Sg SPEC 1Sg  
 'me, the hare'

                  tʂùmásũ:sù  
 tʂùmá sù    ̃:    sù  
 Tsuma 3fSg SPEC 3fSg  
 'specifically Tsuma'

Vocatives (5.35) can have the suffix, and adjectives (5.36), and an NP formed with tʂè 'from', (5.37).

(5.35)        ɔ̃:ʔò 'child!'

(5.36)        'ɔ̃: 'lá:w 'the child is fine'

(5.37)            'gáwàtətʂèsî ²ɿîsî  
 gáwà tət tʂè sî ɿí ì sî  
 hill LOC from 1Sg come FUT 1Sg  
 I will come from the hill

The general principle in Sandawe too, then, is that a nominal is marked for person, gender and number and not just the two latter. In the third person the pgn suffix is usually absent with noun stems.

In the construction using -sì- 'having', which when used following a noun stem is translated as involving possession, the low pgn series is used:

- (5.38)                    ʔàkílìsê  
                           ʔàkílì      sí      è  
                           intelligence sí 3mSg  
                           'he's intelligent'

This can stand on its own as a sentence, but there is no way in which á: NOM can be used with it:

- (5.39)            \*'tʂá: 'ʔàkílìsísì  
                           tʂí á:  
                           but  
                           'tʂí 'ʔàkílìsísì  
                           'I'm clever'

Neither is it possible to use á: NOM with the màrímòsé type of construction, nor with a irrealis verb.

The construction with -sí- can also stand as a noun:

- (5.40)                    'máʔósèsà ²ʔã:  
                           máʔó sí      è      sà      ʔã:  
                           gourd sí 3mSg 3fSg see  
                           'she saw a man with a gourd'

Structures without the possibility of the nominative suffix -á:



pgn is something which is in apposition to their sentential nature. The downward facing square bracket draws attention to this. When the first NP is deleted, the net result is that a nominal, whatever pgn marker it might show, agrees with a 3mSg subject pgn, as is shown in (5.46).

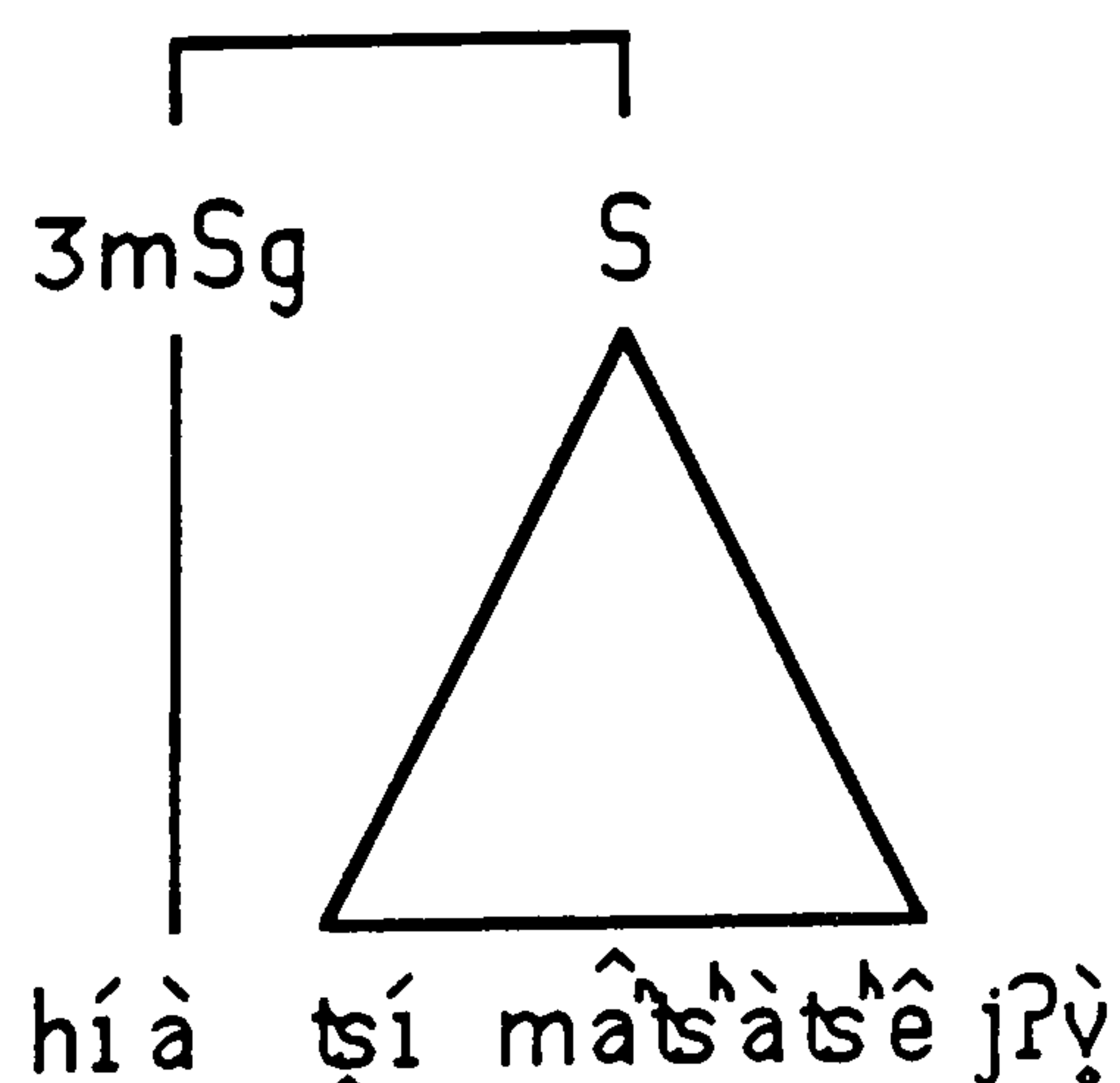
(5.43)            'hía ²ᵢî:ʔỳ  
 hí    à    ᵢí    ìʔỳ  
 hí 3mSg come ìʔỳ  
 'when he came'

'hísà ²ᵢî:ʔỳ  
 hí    sà    ᵢí    ìʔỳ  
 hí 3fSg come ìʔỳ

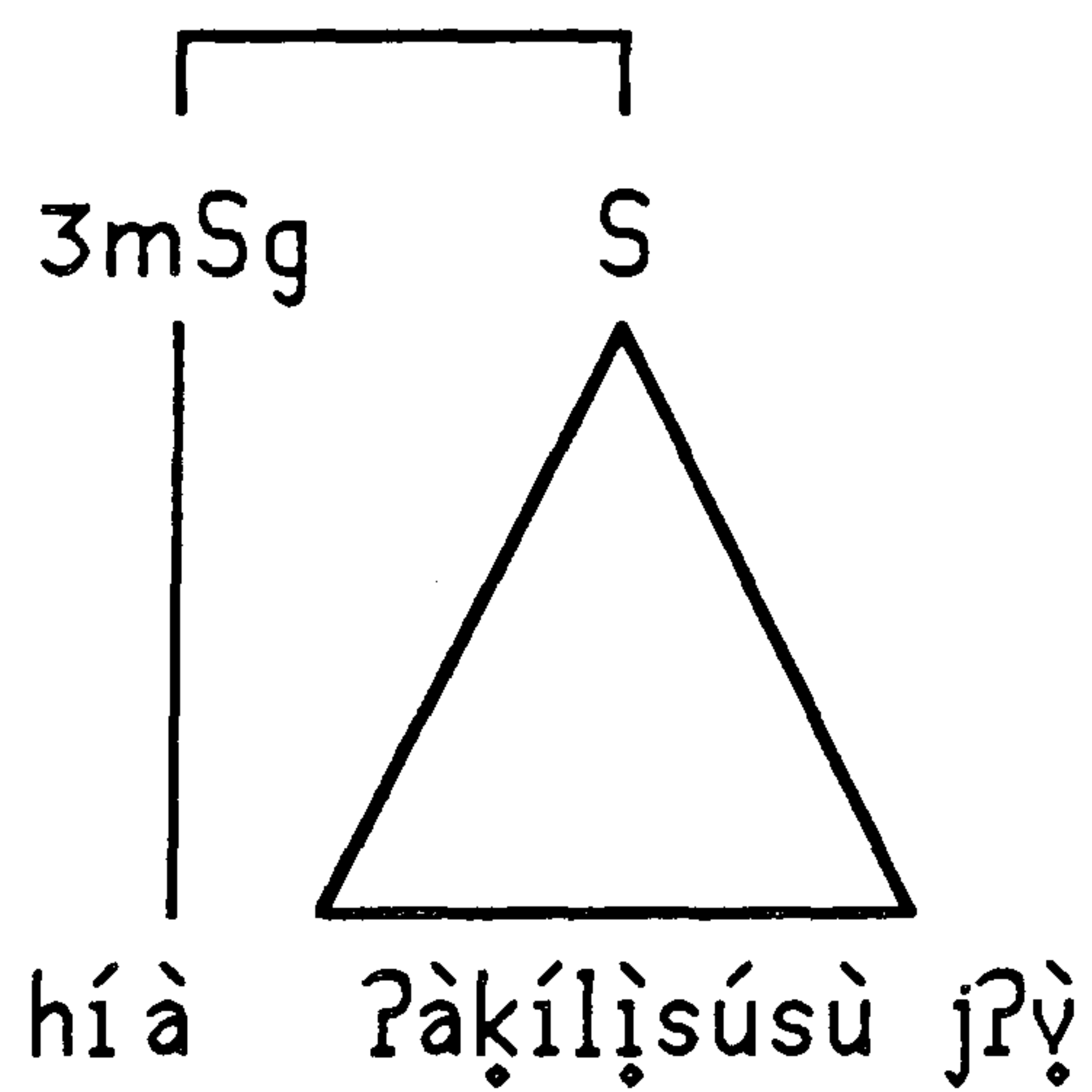
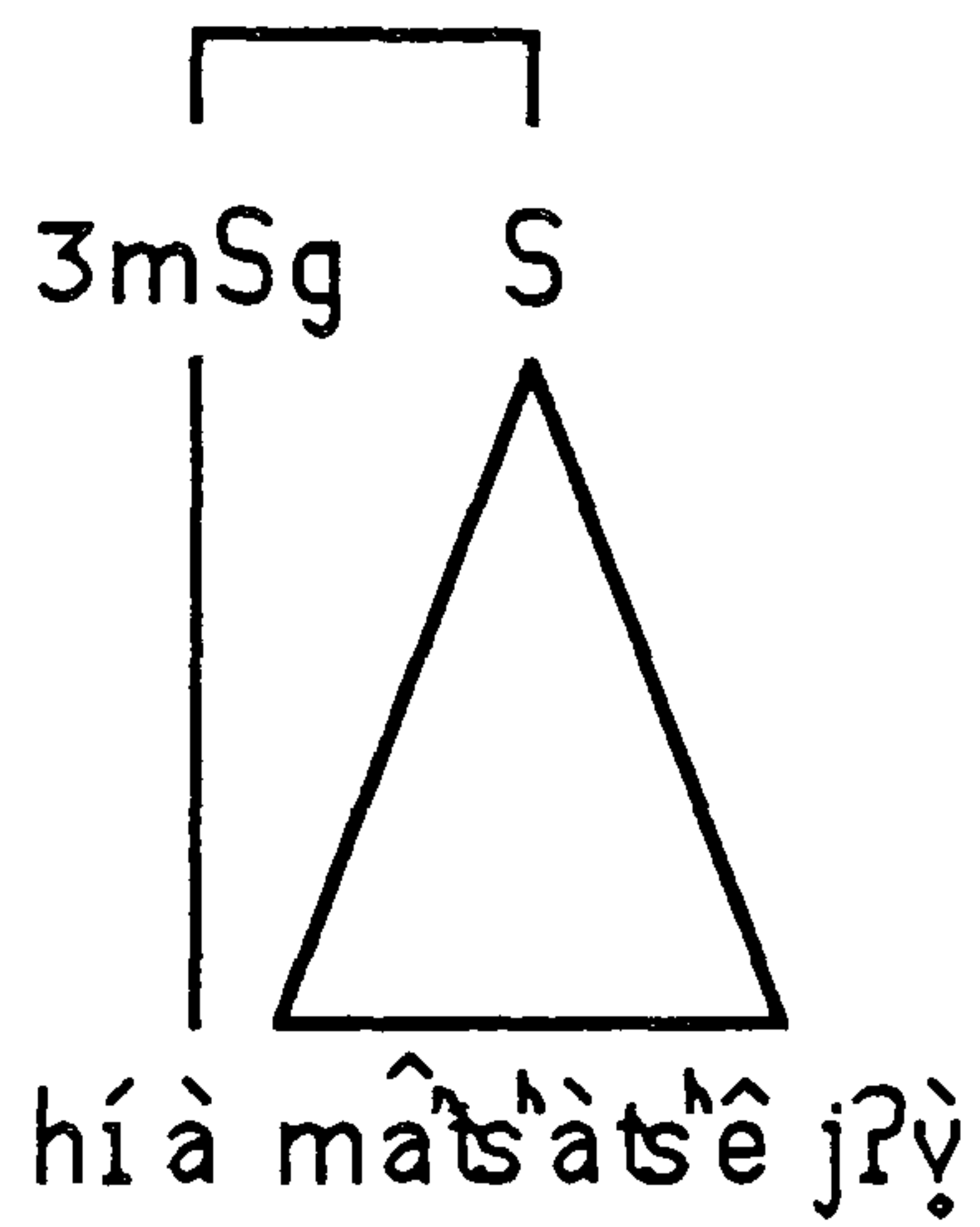
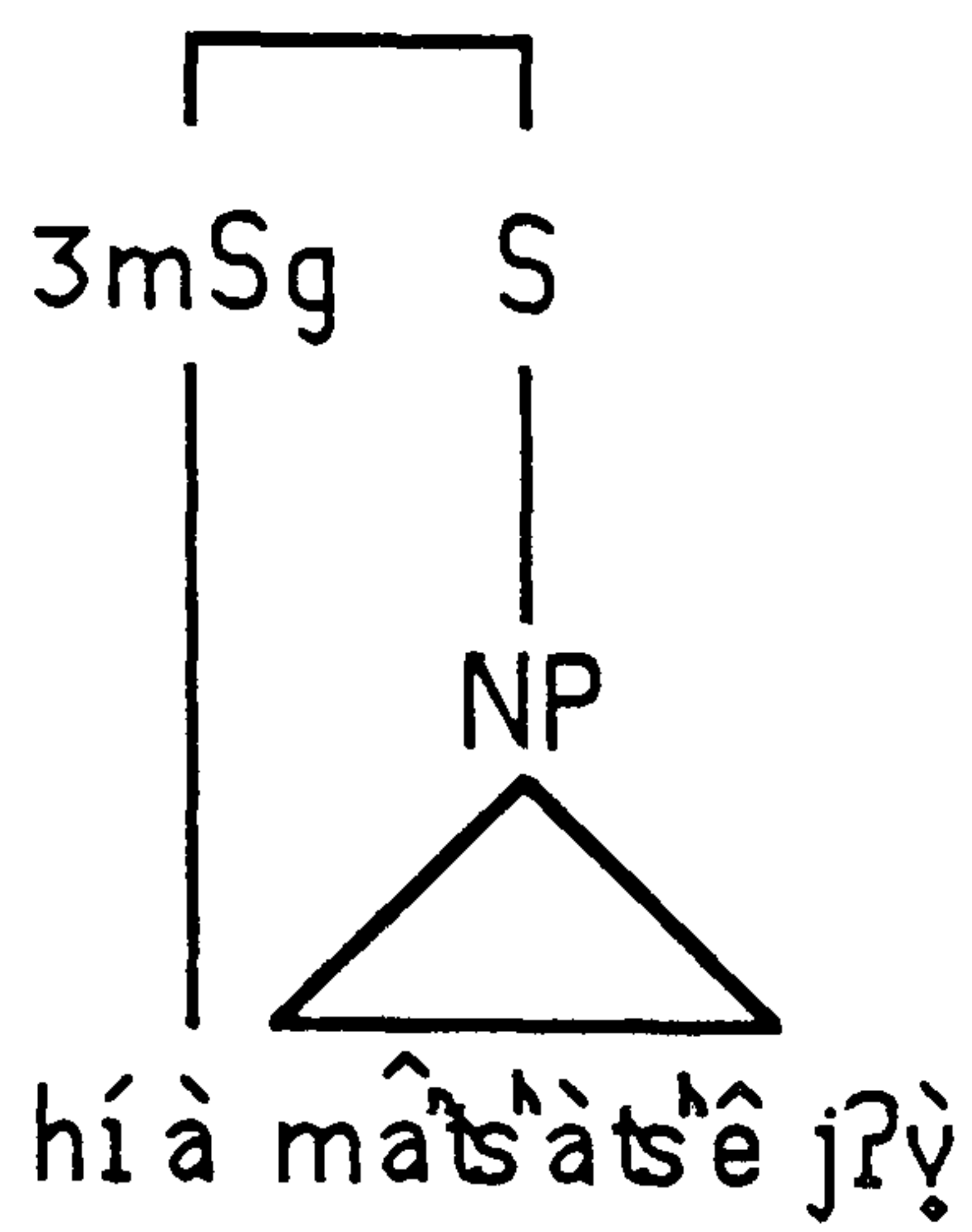
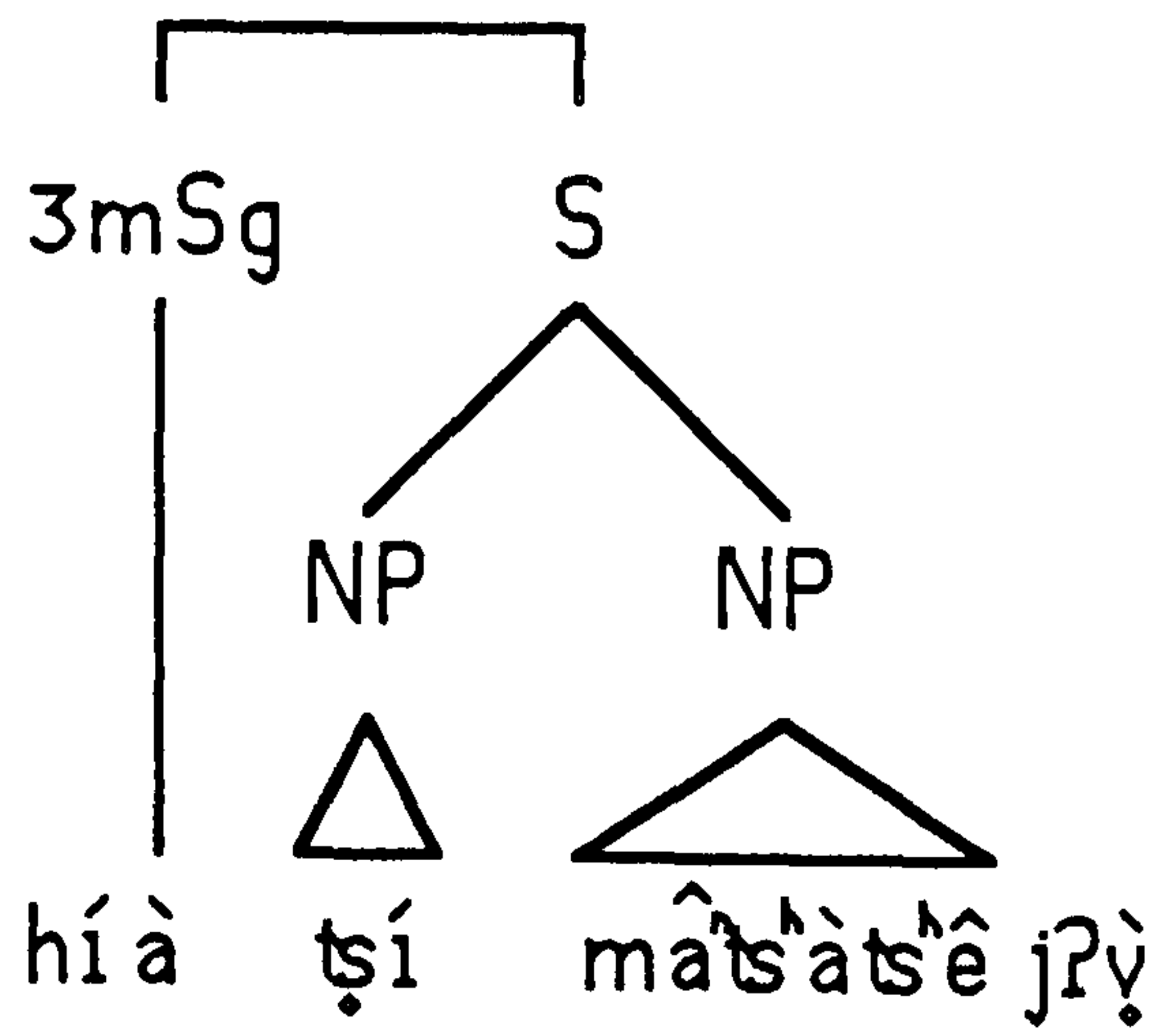
(5.44)            'hía ²ʔàkílìsúsùjʔỳ  
 hí    à    ʔàkílì    sí    sù    ìʔỳ  
 hí 3mSg brains having 3fSg ìʔỳ  
 'when she comes to her senses'

'hía ²mâᵗsàᵗsêjʔỳ 'ᵗínésì  
 hí    à    mâᵗsà    ᵗsè    sé    ìʔỳ    ᵗíné    sì  
 hí 3mSg eat NEG 1Sg ìʔỳ lie down 1Sg

(5.45)



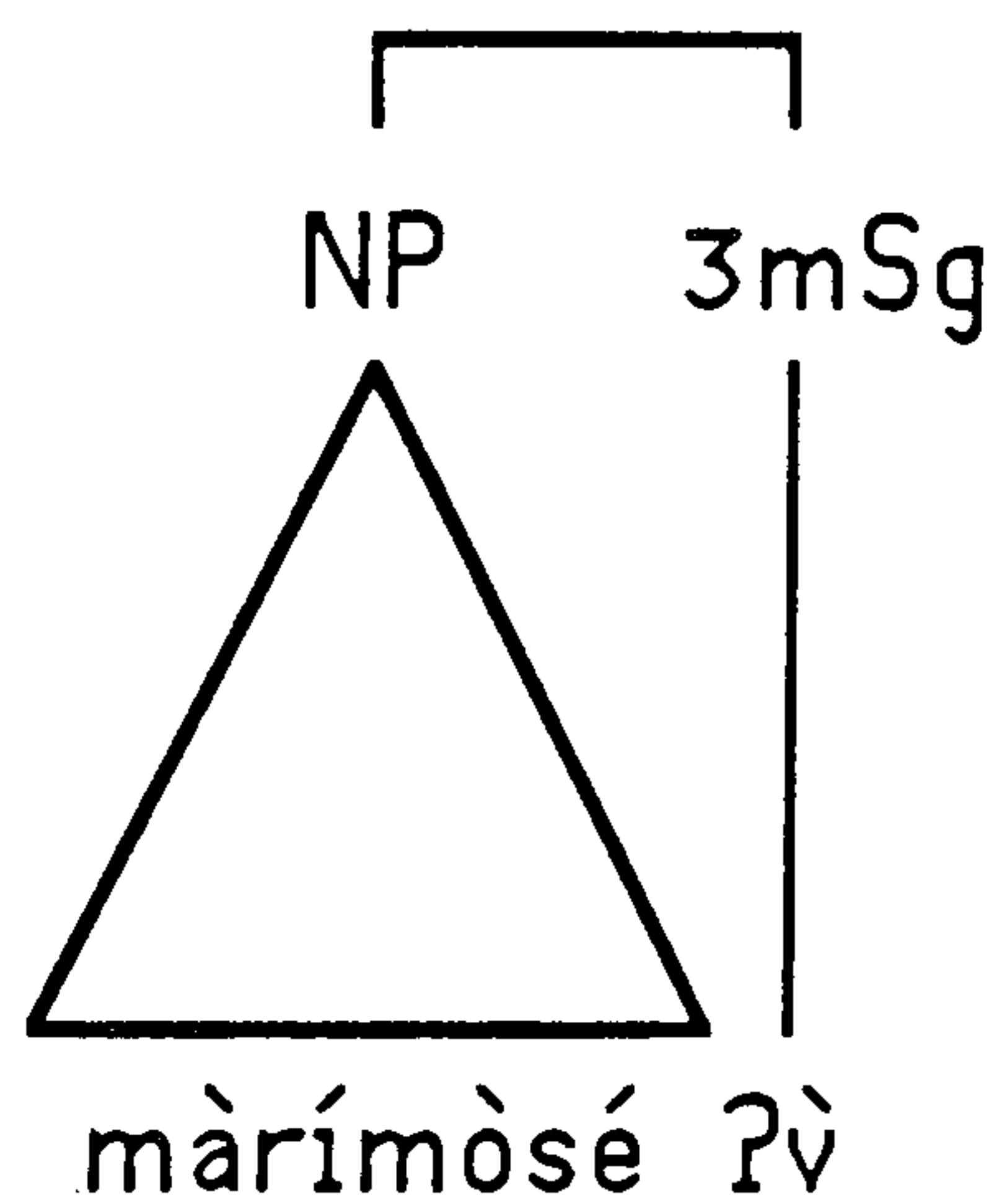
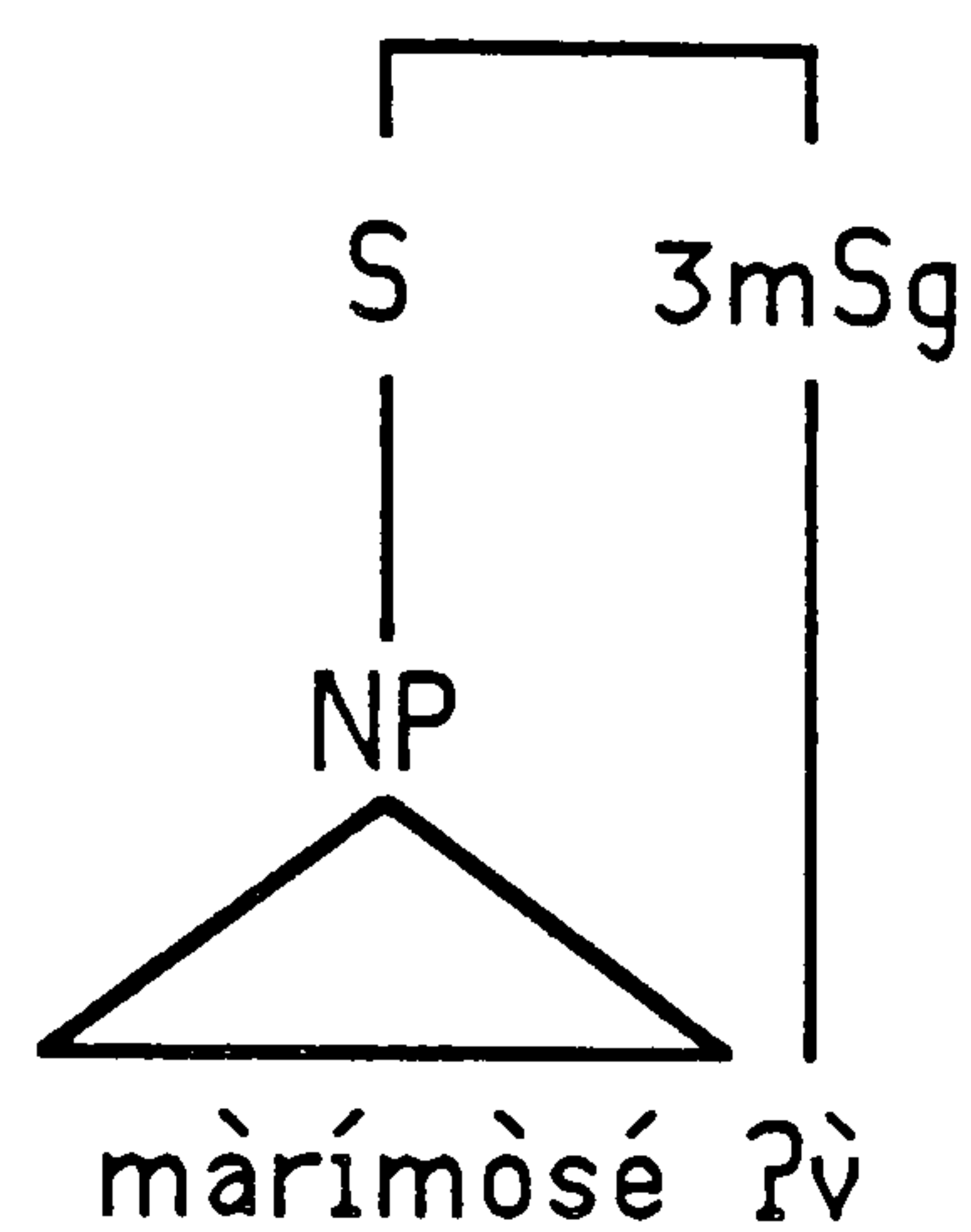
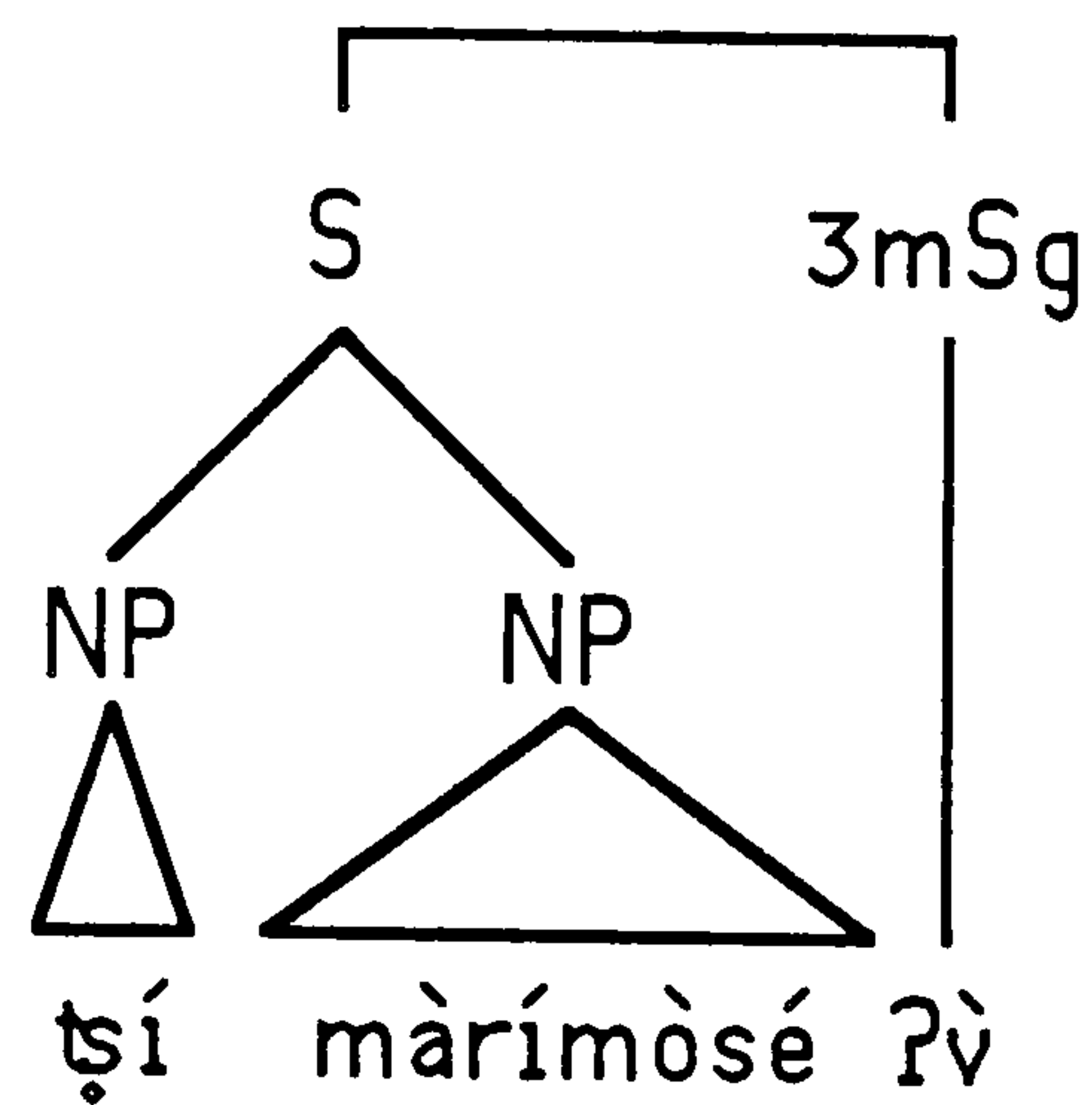
(5.46)



This has enabled us to return to an earlier construction and to suggest that the ʔỳ that it shows and whose presence was invoked

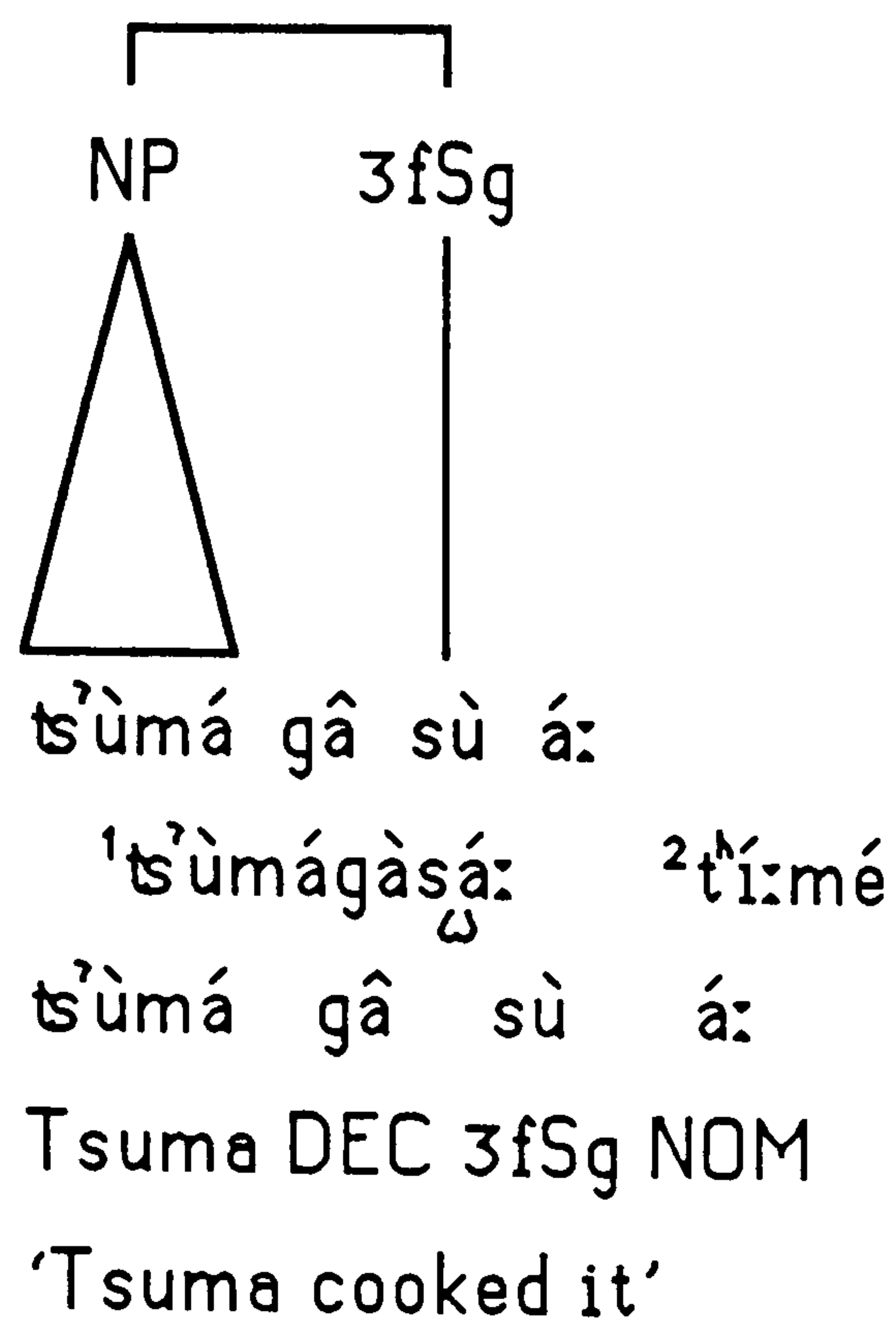
to explain the high toned nominal pgn series, is also a 3mSg marker. (5.47) refers to this.

(5.47)



With gâ declarative, the usage is the same; when it follows an NP, a pgn is always present either nominal and agreeing with the preceding noun, or, if gâ is suffixed to a unit other than the subject in the basic sentence type, a subject pgn which agrees with the subject.

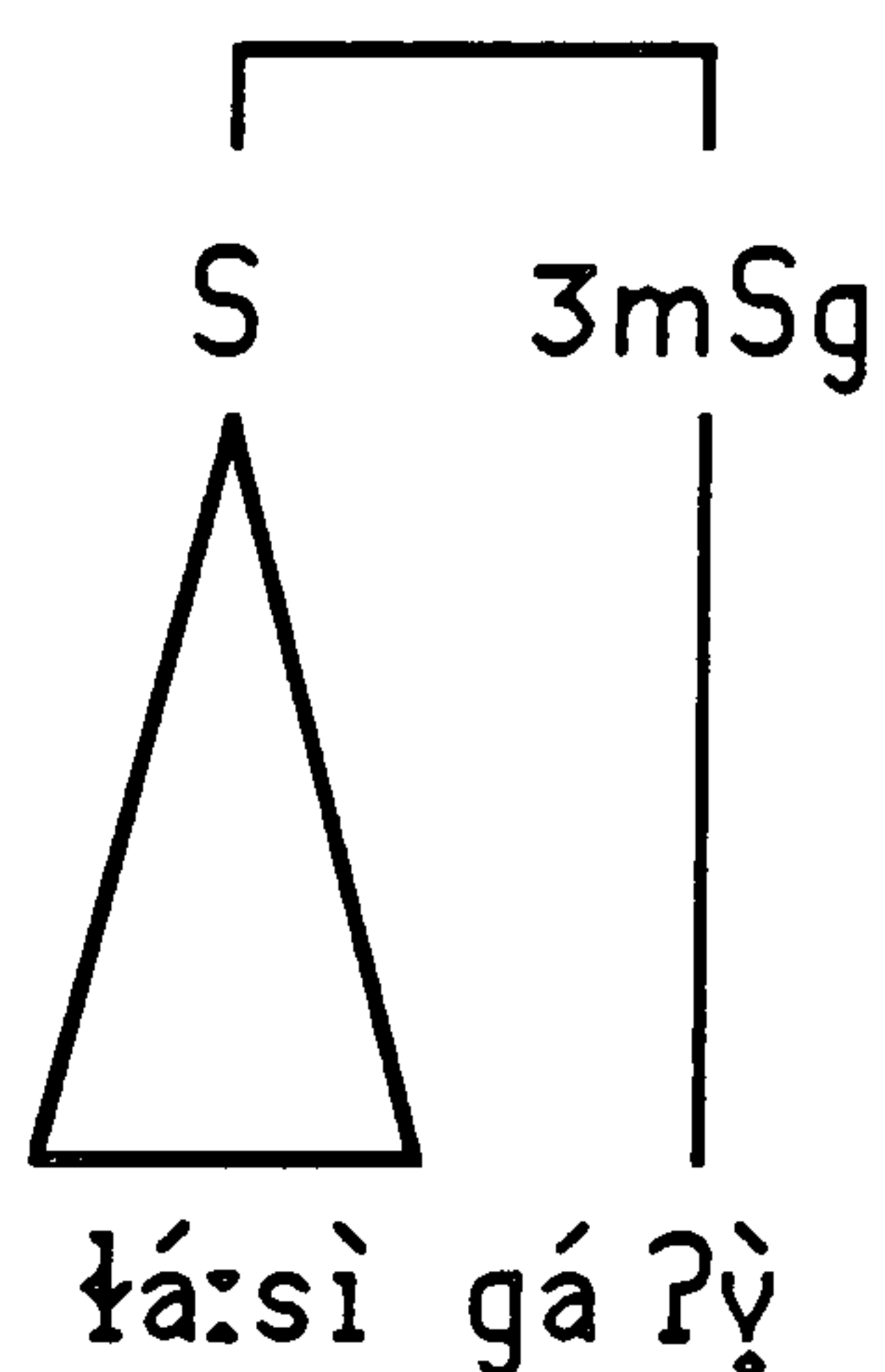
(5.48)



1s'ó bá gâ sà 2t'í: mé  
s'ó bá gâ sà  
fish DEC 3fSg  
'she cooked the fish'

But when it is used after an NP+NP sentence, the following pgn morpheme agrees with the whole sentence, as in (5.49).

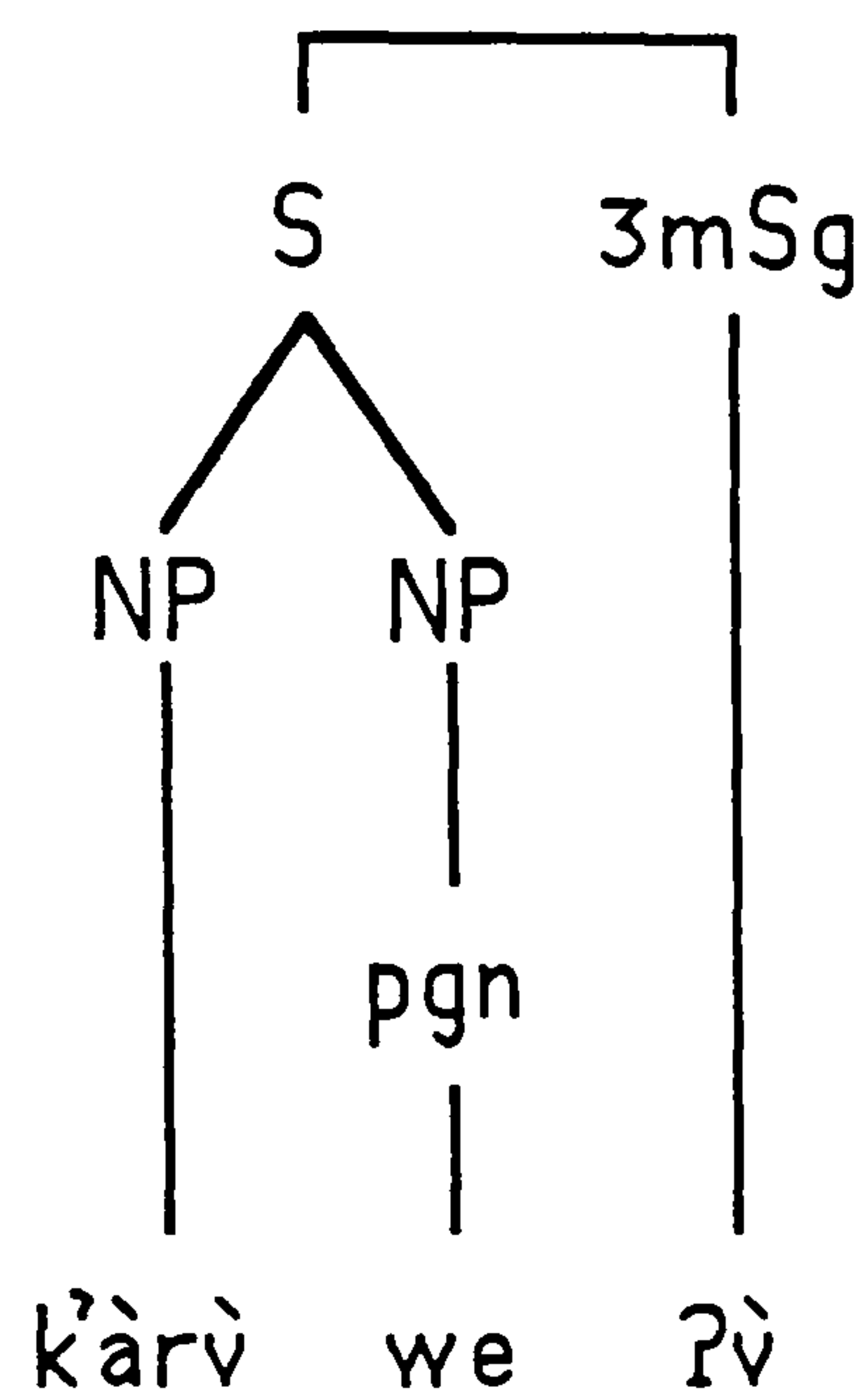
(5.49).



The list of nouns which retain what seems to be a trace of a pgn suffix showed both high and low tones on the suffixes, even in ɣèméséz, (mSg) ɣèmésú, (fSg) ɣòmósò, (Pl) 'human being', which possibly (following Dempwolff 1916) derive from a construction

with -sí- which always today has the low tone series. (The Žu/'hōasi "sometimes called themselves the owners of the N/um - a spiritual healing power", (Marshall and Ritchie 1984); Snyman 1975 has n|ōm 'medisyne'.) These high tones suggest that perhaps a ʔ̀v̄ might have been used with nouns that consist of nothing more than a noun stem and a nominal pgn suffix. In that case, the noun in Sandawe is a derived category. The derivation of k'arě: 'youth' is:

(5.50)

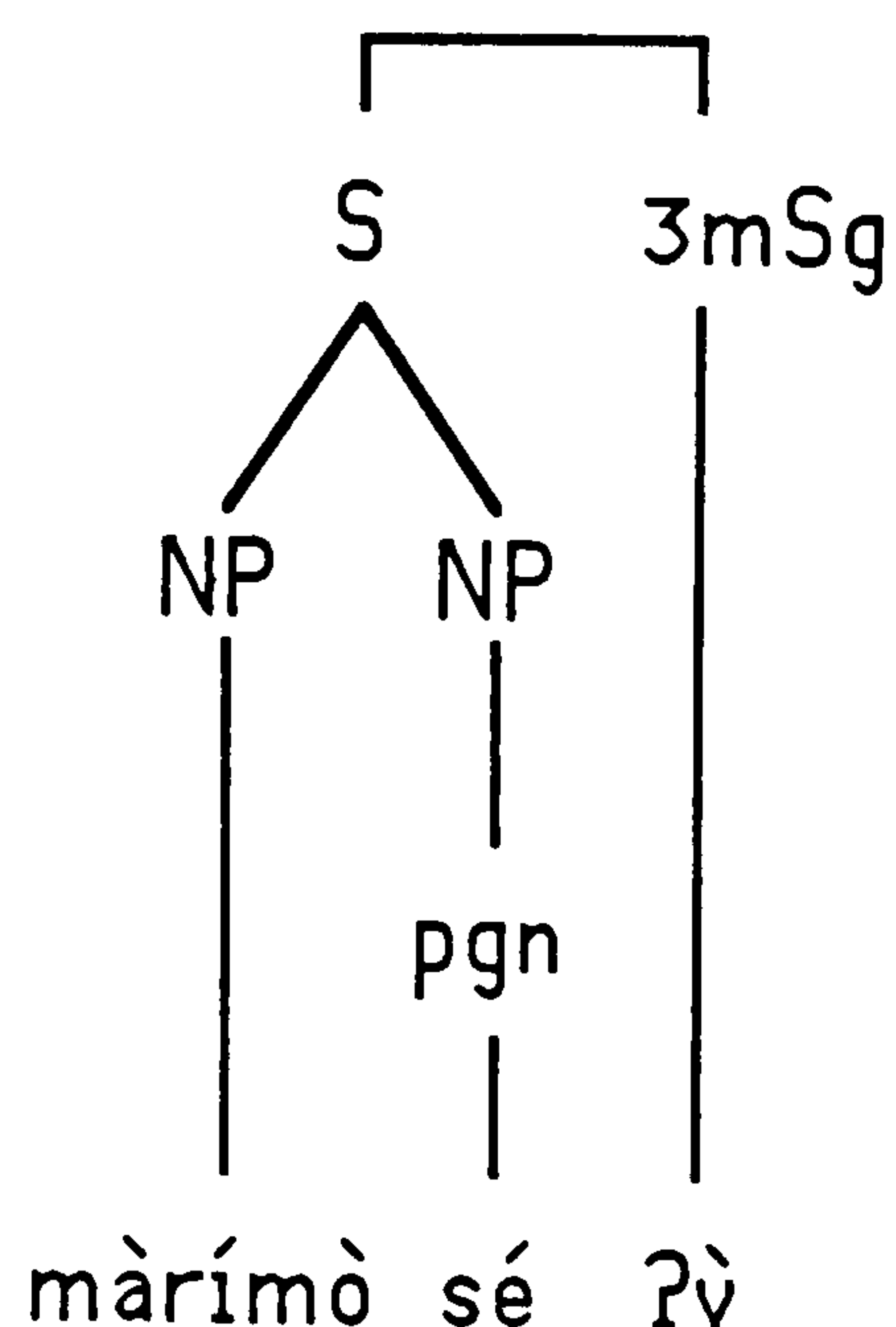


This type of structure is of course a better historical origin for those nominal constructions which are capable of being interpreted as sentences, as is illustrated in (5.51).

Looking at Nama, Haacke 1977 (referring to Haacke 1976 which I have not seen) reached the same conclusion about the structure of nouns. "The surface category noun, consisting of a lexical stem ... plus a grammatical suffix the pgn, ... is a derived category in Nama." The way in which this conclusion has been reached from Sandawe data is different from that in which Haacke arrived at it, and it affords an explanation of what the Nama à of the oblique case is. (Haacke's oblique is Hagman's subordinative.) It is properly a third person marker, unspecified for gender.



(5.51)



In as much as I have been rummaging about and turning over pieces at seeming random, I may have completed a jigsaw with pieces from two or more different puzzles. But the finished picture which I have is this. Noun stem - pgn suffix (in Sandawe the nominal pgn suffix) had originally a copular meaning, so Nama ?áóp, now functioning as a noun, derives from something which can be translated 'he is a man'. The subordinative (oblique) ?áópà is a nominalisation of this: 'it, he is a man' or 'the thing which (masculine) is a man' in which what I reconstruct as \*?à, with third person meaning, is the unembedded head of the NP. (These translations differ from those Haacke 1977 gives.) On other occasions in Sandawe, I took the \*?à as being apposed to the whole proposition: -à (<\*?à) màrímòsé, 'it is that I am a teacher'.

In its oblique (subordinative) use and its copular use, in Kxoe the reflex of \*?à has the form ?à; in its pgn use, ? is elided and at times automatic tonal rules will require the à to have high tone, producing a suffix which is identical to the nominative suffix. In Nama, the oblique use has à and the pgn has ?ì; the copular use has ?à. In Sandawe the two forms with and without the glottal stop have acquired different identities, ?à being specifically plural and à being singular, these are in the subject pgn series. The form ?v has

a third person reference to sentences and in one construction to 3mSg nouns. The remains of the oblique use of the reflex of \*ʔà are seen in the high tone on some of the few remaining third person nominal suffixes on nouns and in the lower level of syntactic tone that a verb has after an object, and, by extension, any NP. In the form ʔí, it appears as a fossil in a couple of places, without specification of gender.

There is internal evidence to support the reconstruction of the underlying form of this morpheme in Sandawe as ʔà (as well as the existence of the ʔà 3Pl in the subject pgn series). Besides gâ, the morpheme I have labeled declarative has another form gê. One of the most frequent uses of this morpheme is for it to be followed by ʔỳ. Bearing in mind the way in which voiceless vowels can give the vowel of the preceding syllable their quality, gêʔà could result in gáʔỳ, and the vowel of gá then could be generalised to all uses of gê. Note that ʔà and ʔí are historically tonally conditioned allomorphs in Sandawe.

There could be a further extension of the explanatory power of \*ʔà. Is this marker of nominalisation also the source of the Sandawe nominative á: and the à/á of the nominative in Kxoe? In order to admit this possibility, a two-stage nominalisation process would have to be envisaged. The use of \*ʔà was first with the subject perhaps giving a cleft type of construction. It was in this construction that what became pgn markers, probably originally pronouns, as Haacke suggests they are in Nama, first became closely associated with noun stems. The ʔ of \*ʔà deleted and à became integrated into the phonological structure of the word in Kxoe; its integration is shown by it taking a high tone where a word-final high is required, that is, where there would otherwise be no high tone in the word. Sandawe has very few noun stems which seem likely to be Khoisan and which have only low tones; if,

and I have no synchronic data to support this, Sandawe also had a final tone raising rule and if the á allomorph became generalised, then the nominative á: is explained. The next stage was for the association of pgn marker and noun also to be thought desirable with nouns other than subject: the \*ʔà construction was used again, giving the Kxoe oblique ʔà and assisting the formation of syntactic tone in Sandawe. All nominalisations with \*ʔà in Nama resulted in one form, the subordinative. An NP in the undemoted subject position did not have \*ʔà, but now appears with ké, the declarative particle. The resemblance between this ké and the Nama verb kái 'become' and the Sandawe declaratives gâ and gê and a third, less frequent, ḳé:, is surely not fortuitous, but rather fuel for the same fire I have tried to kindle here.

The form quoted earlier

(5.52) ʔisâjp̣õ:p̣ò 'you are the one who steals,'

also has the meaning 'you are the one who will steal', although I have also recorded forms without the j. The form

(5.53) ʔisâjp̣ò 'you're a thief'

also exists, as does the whole paradigm with j̣ and I take both the irrealis and these forms with j̣ as etymological doublets rather than being forms which happen to fall together when the suffix ẽ̀ is added. The forms ʔi and ʔa of the putative 3Sg marker were taken above as being tonally conditioned, the former with a high, the latter with a low tone. If this conditioning were not tonal but arbitrary, then it is possible that this present j̣ could also derive from a 3Sg marker,

- (5.54)    ʔisâjpò 'you are he (who) steals'  
           ʔisá 'steal'  
           j < ʔi '3Sg and Pl'  
           pò '2Sg'

Freeing the alternation of ʔi and ʔa from the tonal conditioning would also allow the interpretation of

- (5.55)    ʔádúkù 'to help'

as 'to do something for':

- (5.56)    ʔá '3c, it'  
           dú 'do' cf Žu/õasi dù 'doen (iets ---), skep, vorm maak, fabriseer,...' (Snyman 1975)  
           kù 'for'

There are two pgn suffix series in Sandawe, and, the nominal pgn series being fairly obviously related in form to the freestanding pronouns, the subject pgn series has been considered above the older; in that series there is no marker of masculine. The presumed cognates of the Central Khoisan masculine marker, typically in Sandawe -we, appear only in the newer, innovating nominal pgn series. In the Central Khoisan languages the older ʔv form with no connotations of gender, appears alongside masculine m/pi forms in the same paradigm; these languages have only one pgn series. I have interpreted the Sandawe data as suggesting that, in the subject pgn series, the feminine s is used together with the third person (not specifically masculine) à from \*ʔà; in the nominal pgn series, s appears together with the third person (not specifically masculine) w/u. If the nominal gender is a derived

category and the feminine s used in addition to a marker of person, it might be inferred that pre-*proto-Eastern-Khoisan* was a language in which nominal gender did not have such an overt place in the grammar.

The origin of the basic clause structure in the Eastern Khoisan languages can now be summarised. Pre-*proto-Eastern-Khoisan* had what were probably a series of independent pronouns which formed the basis for the later pgn systems. Pre-*proto-Eastern-Khoisan* can be assumed to have SVO sequence. The internal evidence for this is the fossilisation of this sequence; Sandawe and the Central Khoisan languages have pronominal object markers following the verb. It is also the sequence in the other Khoisan languages. This was changed, probably as a result of contact with Afroasiatic languages, to SOV. Fronting was used in the clause to bring an item into focus and this was associated with a cleft construction which used a cognate of the present day Nama verb *káí* as a copula. This copula was followed by the pronominal subject of the verb of the clause which followed. This pronominal subject became integrated into the tonal structure of the fronted item plus *káí*; the whole complex became one phonological word.

A process of relativisation, using the 3Sg marker *?à* as a universal relative, created nominal forms which were marked by using pgn markers in the embedded sentence. Gender and number marking in nominals is a feature of Afroasiatic languages; the use of pgn markers in nominals in Eastern Khoisan brought about a situation<sup>6</sup> in which not only gender and number were marked, but also person. In Sandawe, two distinct pgn series were evolved, one used with nominals, the other as the subject marker in the basic clause. The former has a close formal relationship to the series which has become the present day independent pronoun.

## C MORPHEME STRUCTURE AND TONE

In order to appreciate the situation in Sandawe, the way in which other Khoisan languages structure their morphemes and sound is stated. I rely on the data of those scholars who have worked on those languages, and on their interpretations of that data. But I also interpret their data anew, especially for Northern Khoisan, where the analysis in subsection C2 below reveals a structuring which has not hitherto been reported.

## 1 Southern Khoisan

Attention in this section is on the structure of the morpheme and the use of tone. The first two sections interpret the situation in Southern and Northern Khoisan. Their tonal systems are seen to derive historically from systems with but two tonal values. After a review of the situation in Nama, subsection 4 shows how the structure in these languages relates to the Sandawe morpheme.

Of the several languages which are considered to be Southern Khoisan, only one of the few remaining alive has been adequately described tonally. It is !xóõ, as described by Traill 1985a. All the discussion of patterns in Southern Khoisan is based on Traill's work.

My description of Sandawe above has taken the mora as the domain in which is chosen one of the two tones, high and low. Traill's description of !xóõ shows a different state of affairs. He identifies four tonal patterns.

These tonal patterns have a domain of one, two or three syllables. Traill considers the forms in (5.57) to be monosyllabic,

(5.57) KV:

KV<sub>i</sub>V<sub>j</sub>

KVN

(5.58) KVCV

KV?V

KV?N

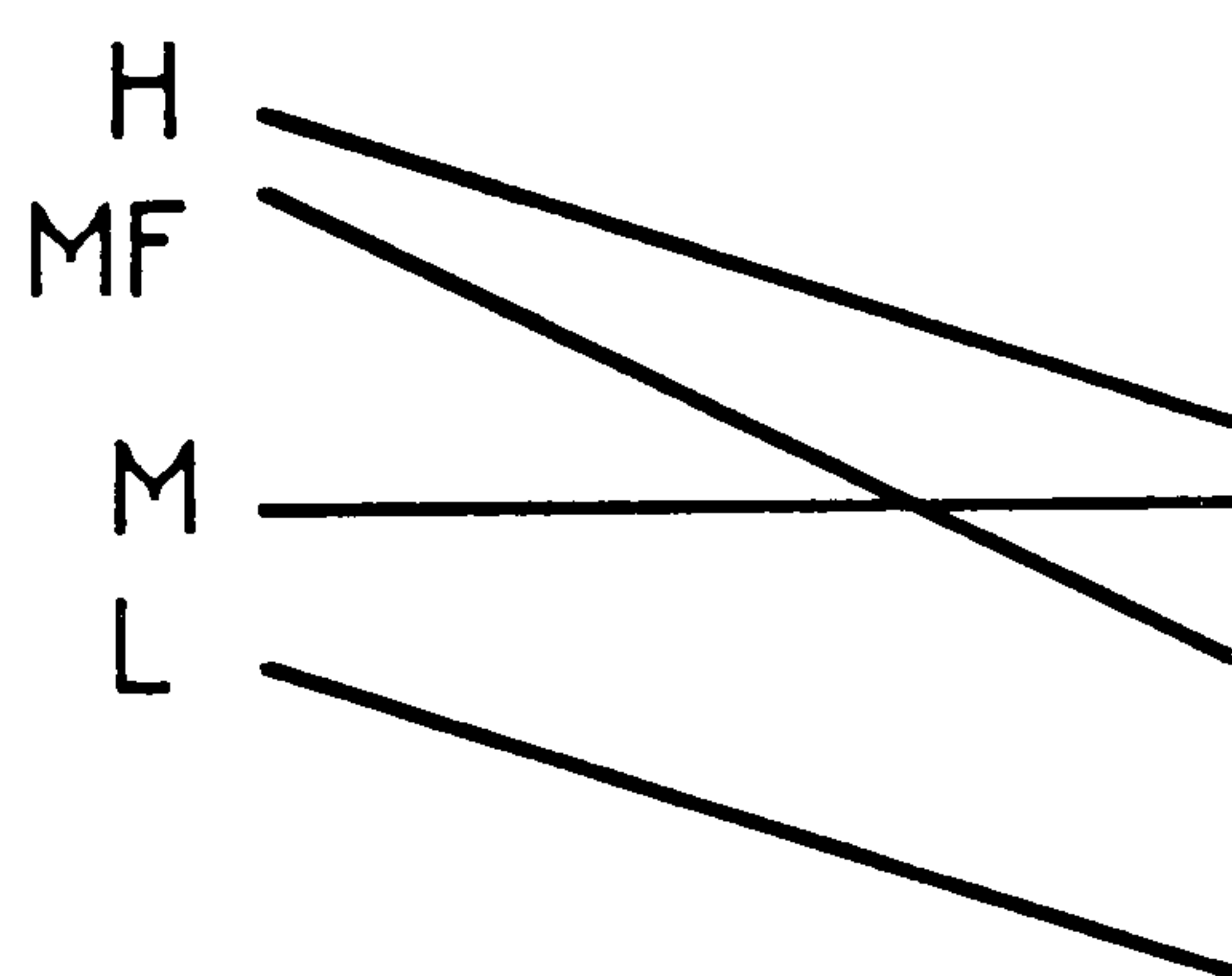
KV?CV

(5.59) KV?VCV

those in (5.58) to be bisyllabic, and (5.59), a variant of the last quoted bisyllabic pattern, to be trisyllabic. Traill is careful to specify that this statement of the syllabic correlates of tone is phonetic, but it is still not clear what status the syllable has for him in the language.

There are four tonal patterns to be found on these sequences of syllables. He gives a diagram of the pitches which are to be found in sequences which do not have any depressor effects (of the vowel colourings), which he arrives at by averaging several contours of each pitch from the same speaker. Excluding the initial rise, which is 'a low-level phonetic detail', (p31), they are as shown in (5.60).

(5.60)



Traill marks the four pitch patterns as follows:

- (5.61)
- ´ H (high)
  - M (mid-level)
  - ^ MF (mid-falling)
  - ` L (low)

Traill does not wish to decompose the pitches which represent the tonal patterns into sequences of level pitches. A facile approach would assume that, whatever the pitch pattern, within the sequences of segmentals given above, that pattern has



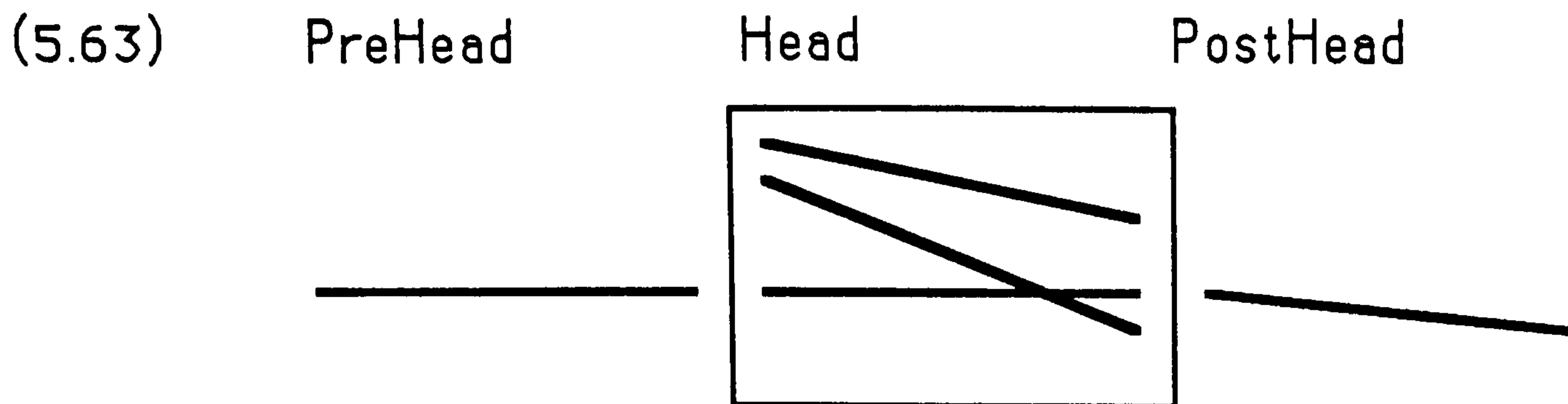
been distorted from a hypothetical 'true' by lowering the final point just under 10Hz, (according to his measurements), and the pitches could be reinterpreted as sequences of level pitches as follows:

(5.62)	H (high)	hh
	M (mid-level)	lh
	MF (mid-falling)	hl
	L (low)	ll

Traill draws attention to two major pitch phenomena in Ixóõ. The first is the tone on the forms of a verb which precedes the noun which is its object; the second is the tone on forms which follow the noun with which they agree.

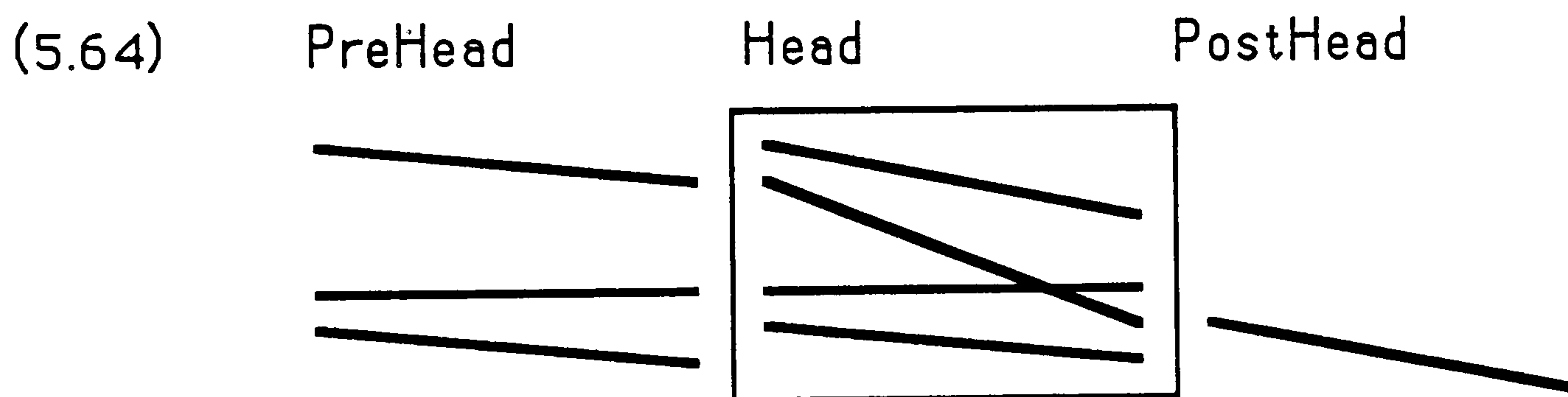
There are two classes of noun; each class triggers a different tonal behaviour. In tone class 1, (TC11), are found nouns with one of three of Traill's four tones; the tone which does not appear in TC11 is L. In the facile approach to tone, the only sequences which occur in TC11 are those which contain a high tone. Traill 1985a reports a suggestion Maddieson made to him about the origin of these neutralisations and this relied on tonal possibilities associated with the concordial suffix determined by the noun. TC11 nouns are associated with a high toned suffix. As it seems that this was originally also suffixed to the noun, any original noun in this class with a L would have lost that tone pattern when stem and suffix were integrated into one morph. This also explains how the concordially determined positions following a TC11 noun have a generally higher realisation than those following a TC12 noun head.

There are also two classes of verb. In what Traill refers to as the nominalisation, a verb stem has one of the four tones above. When they precede a TC11 noun, in what Traill call the PreHead position, all of these four tones are neutralised to a mid tone.



It is only when verbs precede a TC12 noun that the distinction between the two classes of verbs is evident.

When verbs precede a TC12 noun, the four tones are neutralised to three possibilities. The verb is in PreHead position. These three possibilities are shown in (5.46). The alternations between the pitch on a verb which precedes a TC1 2 head and the pitch that verb has in its nominalisation are stated in Traill's table 19, (p49), which is reproduced in (5.65).



(5.65)

Pre-head form	Pitch with TC1 2 head on nominalisation	
yV 'fear'	H	H
?  nahV 'tie up'	M	M
!ga?bV 'pour'	H	M
taV 'feel'	L	M
y V 'put in'	H	MF
nud'yV 'imitate'	L	MF
?alV 'break'	L	L
uV 'grab'	H	L

I believe this is capable of systematisation. The patterns here are that in the first column there are four Hs, three Ls and one M and that in the second column there are two Ls, two MFs, three Ms and one H. If the entries for the second item had been L and H respectively, then there would be two of each tone pattern in the second column, one of which corresponded to an H in the first column, preceding a TCl 2 head, and one of which corresponded to a L in the first column, preceding a TCl 2 head in the first column.

There are therefore two tonal classes of verb. With one class, which I will call verb class A, (VCIA), all four tones are neutralised into a high tone in comparison with the tone of the following noun; with the second class, verb class B, (VCIB), all tones which contain a low in the facile approach are neutralised to a low tone in comparison with the tone of the following noun, the tone which is hh appears as a mid tone in comparison with the tone of the following noun. This can be shown visually as in (5.66). The situation with a Tone Class 1 Head is added for completeness in (5.67).

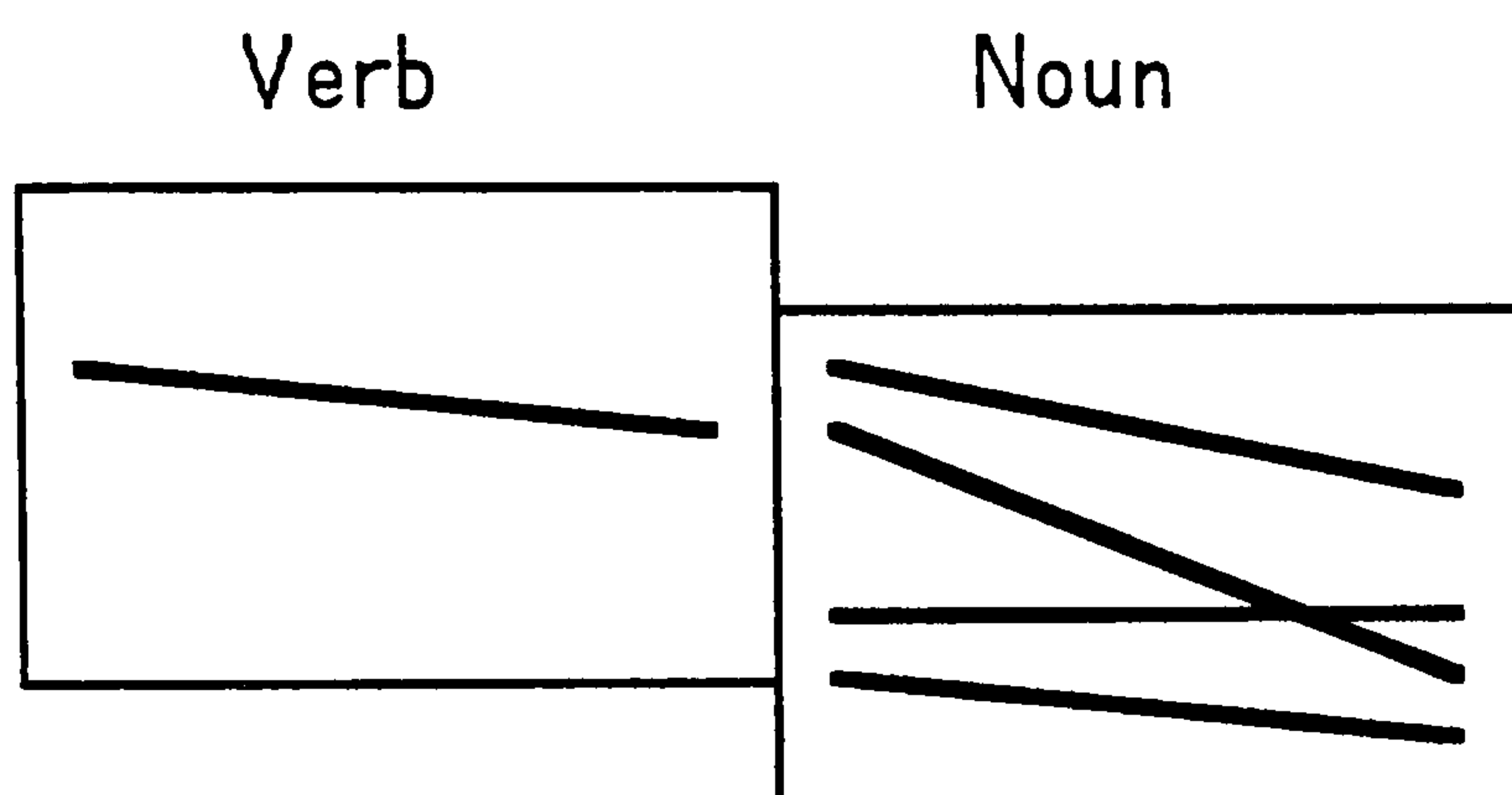
By reducing the tones to a sequence of two phonological units, it is possible to give a phonological status to this statement of neutralisation which, in a four tone system, is only possible by a grouping of tones which has no appeal to their phonological characteristics: in Traill's analysis they have no phonological characteristics, only a phonetic realisation. Similarly, it was seen above that the statement of what tones are found with nouns of tone pattern 1 is also expressible phonologically.

The most likely factor which produces tonal classes is a prior tonal difference. Maddieson's suggestion involves concordial suffixes with a tonal value. Traill himself mentions another factor which could be relevant when he quotes some Aminuis forms which "illustrate a possibility that has been almost lost in the Lone Tree

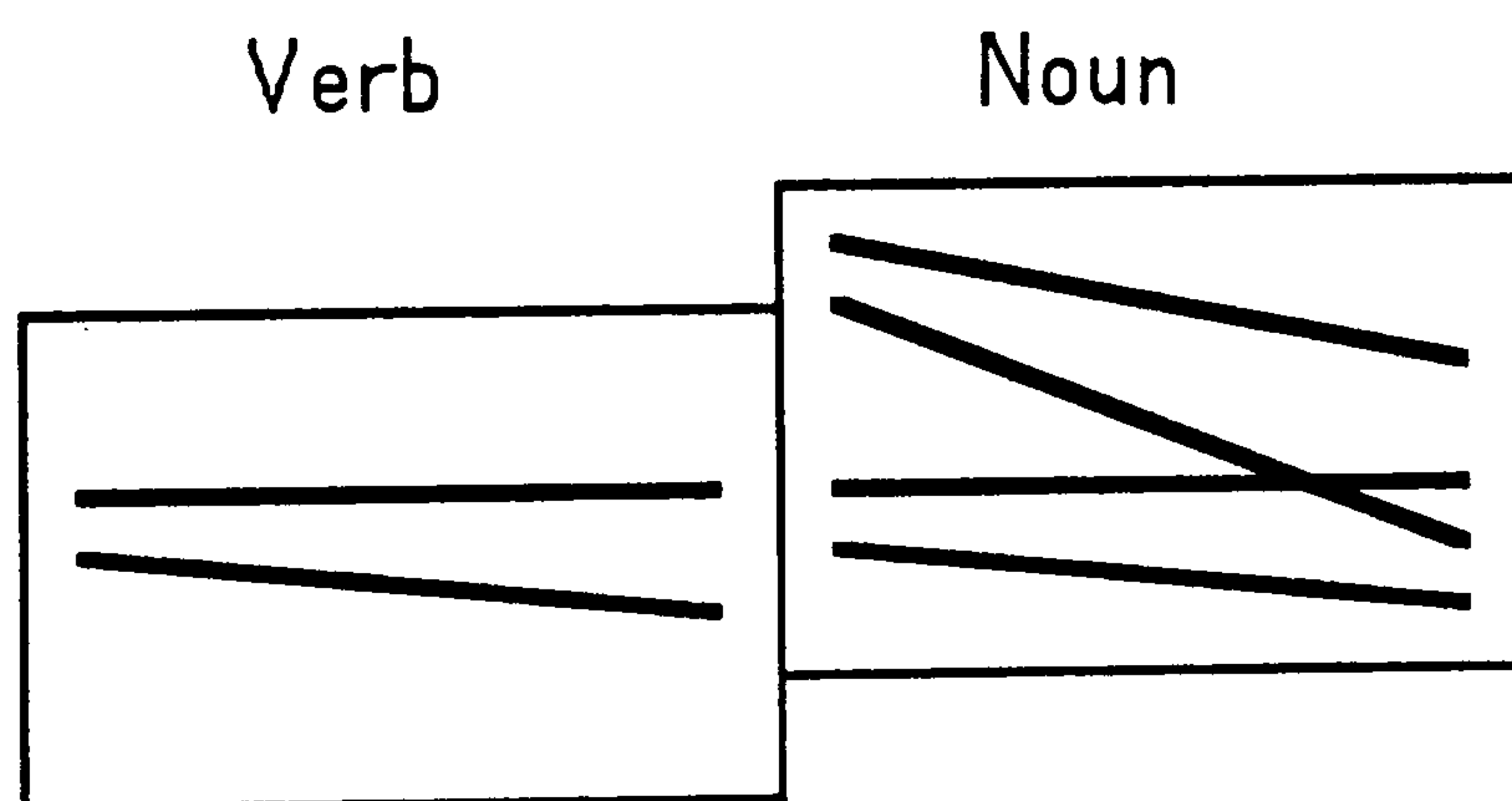
variety, namely that of a noun prefix", (p13). If the division of verbs into two classes suggested above is correct, and it results in a tonal difference in neutralisations, it is a fair assumption that a historical tonal distinction is responsible. This tonal difference is probably best placed at the end of the verb stem, as it has an effect on the relative tonal level of the verb and the following noun.

(5.66)

Verb Class A (with Tone Class 2 Head)

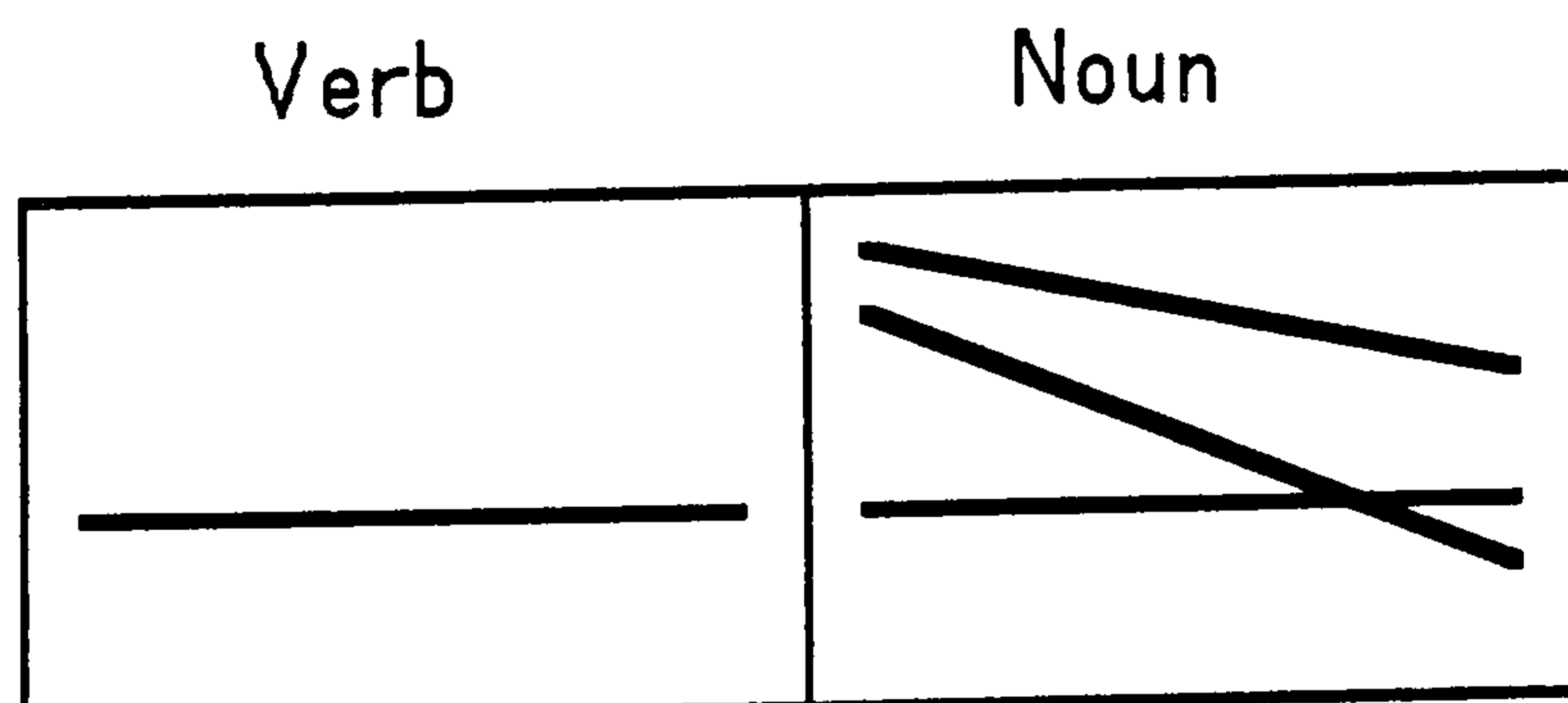


Verb class B (with Tone Class 2 Head)



(5.67)

Verb with Tone Class 1 Head



It is very tempting to see the neutralisations as being the end product of possibly three factors, each of which carried a tone: a suffixal verbal augment, a noun prefix and the concordial suffix. I cannot demonstrate this to my own satisfaction without using several ad hoc suppositions and supposing a relationship between the postulated noun prefix and the concordial class of the noun. I would like to add, as another factor, the possibility that an unaugmented verb stem could have a sequence of two tones rather than restricting it to one as Traill's reporting of Maddieson's proposal suggests. The nature of the verb stem, whether of one syllable or of two, is an old chestnut in the study of Khoisan languages (Beach 1938 devotes a whole chapter to the question), but irrelevant here; even if it were monosyllabic, it could have two choices for tone, as I would suggest the short, monosyllabic, grammatical particles in !xóõ do.

I believe that it would be possible to derive the various tonal phenomena Traill describes by the interaction of only high and low tones. I am assuming here that whatever the optimal way in which the pitch phenomena can be integrated into the overall synchronic statement of the language, which is what Traill is interested in, historically there is the possibility of using just two tones in a construct to explain the present situation. What is characteristic is that the domain of Traill's four tones is neither a syllable nor a morpheme, but it is nevertheless something with a definite phonological structuring, which I shall refer to as a morph. Traill makes it clear that what I am calling a morph may be one or more morphemes; what it is in relation to a syllable I discuss later.

The components of this structuring are listed in (5.68). Every morph must make a choice of the first three components; if component 5(a), the second consonant, is m or n, component 6 may or may not be present, but otherwise the choice of component 5(a)

also implies the choice of component 6. Where only the first four components are present, the vowel is long in lexical stems and short in grammatical stems.

- (5.68)
- 1 Tone pattern (one of four)  
(or, if the analysis into h and l can be extended to a synchronic description:
    - 1 Two places in sequence at each of which one of two tones is chosen)
    - 2 Initial consonant (one of 119)
    - 3 First vowel (one of five)
    - 4 Vowel colouring (pharyngealisation, breathy voicing or gottality: one or two of these may be chosen))
  - 5 EITHER (a) Second consonant (one of six)  
OR (b) Nasality (nasalisation or orality in the morph)
  - 6 Final vowel (one of five)

There are also some interesting cooccurrence phenomena within the morph; Traill states them on pp92-96. Two of them are:

- (5.69)
- 1 Glottalised vowels, breathy voiced vowel and pharyngealised vowels do not cooccur with K<sup>?</sup>  
(includes the Single Glottal Constraint, p92)
  - 2 Breathly voiced vowels and pharyngealised vowels do not cooccur with aspirated clicks, nor with x. s does not cooccur with breathy voiced vowels, but is found with pharyngealised vowels.

Within the limits of the published data it is not possible to interpret these restrictions. Similar constraints in Northern

Khoisan are interpreted in the next section.

· Traill is interested in phonetics and in a phonology which is both watertight synchronically and closely bound to sequence; his discussion of the monosegmental or cluster analysis of clicks does not encompass the possibility that sequential segmentation may in principle be less than desirable. A phonology which takes as basic a stretch longer than the length of a usual segment and which is interested in patterns of sound and sees these as potentially independent of their sequential realisation, a phonology which admits to the possibility that a language may simultaneously display and use more than one system, a phonology, in other words, which has characteristics similar to those of the British school of prosodic phonology, might well have resulted in a different analysis, especially because it has to take into account the way in which the features of a morph correlate with each other. To quote Hill 1966: "to attribute shape to an isolate is more informative than to say it is a sequence of similar items (*similar* in the sense that each item-place is potentially occupied by the same set of alternants. This suggests the principle: ...Where possible, an isolate is rather to be analysed as a shape, with unlike parts, than as a sequence of similar sub-units." (p207).

I believe it quite likely that there are patterns with historical implications beyond the cooccurrence restrictions Traill states, but there is not yet a large body of the !xóõ lexicon available to establish and quantify them. This, however, is possible with Northern Khoisan and the next subsection is devoted to a detailed investigation of the patterns which are observable in the morph in Northern Khoisan.

## 2 Northern Khoisan

This long subsection contains a full analysis of morph structure in Northern Khoisan. In subsection 4 it will be shown how this relates to Sandawe.

It is usually acknowledged that those dialects included under the label Northern Khoisan are closely related, and this subsection considers only the best documented dialect.

It is Žu/'hõasi, which has been extensively worked on by J W Snyman. His analysis, Snyman 1975, postulated a consonant inventory of 89 phonemes, large enough, but well surpassed by !Xóõ, which, under one of the analyses presented by Traill 1985a, can be seen as having 119 consonantal phonematic units. Traill makes the suggestion that this high figure can be reduced by taking many of the units as consonant clusters. If such a solution were possible for Žu/'hõasi, Snyman would have found it. Both these linguists work within a synchronic basis. Can any historical explanation be given for the large number of consonant phonemes in Snyman's description of Žu/'hõasi?

Further, for Žu/'hõasi Snyman establishes four significant tonemes. In an attempt to produce a sketch map of the distribution of significant tonal heights in Africa, (Wedekind 1985), the Khoisan languages, represented by Žu/'hõasi, Nama and ≠hoã, stand out as a minor peak among the languages of Central and Southern Africa. Besides the question of the the advisability of comparing Snyman's four tone heights with the four tones established for ≠hoã by Gruber 1973 (under principles which might give Žu/'hõasi at least six tones), there is another question. Are the four tone heights that are postulated in a phonemic description of Žu/'hõasi historically



the system in the language or is there evidence that something else is to be responsible for the present situation?

The largest corpus of lexical data for Northern Khoisan which is available is the dictionary of J W Snyman. It was published as an appendix to his thesis on the phonology of the language in 1975. This present analysis is based entirely on material in that dictionary. I have had to use dictionaries to get to the English from the Afrikaans and take sole responsibility for any howlers perpetrated in the exercise. Snyman's transcription is phonemic. He marks a pharyngealised vowel with  $\text{.}$  in the sequence 'h does not represent a glottal closure, as it does elsewhere; in 'h the ' indicates a period of silence preceding the articulation of h.

Snyman's dictionary has four sections, the general section (pp1-138), followed by three specialised sections: Proper Names (pp139-141), Bird Names (pp142-147), and Plant Names (pp148-166). This analysis relies on the data in the general section only.

Within the general section there are 3266 headwords. (This includes the two headwords  $n\text{f}\grave{a}i$  'dig (a ditch)' and  $kh\acute{u}i$  (verb) 'to be warm' which have been printed as part of the preceding entry.) Some headwords are followed by entries of compounds or phrases. Different entries under one headword are separated by a semicolon. Occasionally a sentence illustrating usage is given; these are never tonemarked. Sometimes a colon separates these sentences from the rest of the entry, at other times a full stop. All words, whether head words or subentries are tonemarked. There are 3425 such entries in the general section. Snyman identifies four tonemes:

- (5.70)
- ' Hoog
  - ' Middelhoog
  - ` Middellaag
  - Laag

The purpose of the present exercise is to consider the phonological structure of the freestanding morph in Žu/'hōasi. As tone is part of the structure of morphs and because it is known from other Khoisan languages that compounding can perturb tone, compounds will have to be identified and excluded from the initial data to be studied.

Some of the headwords are preceded by a hyphen indicating (presumably) that they are bound morphemes and have no independent existence outside their use as an element of a compound, or as a suffix. There is one entry given as the first element of a compound (tátàré- 'quickly'). There are 41 of these entries with hyphens. One item which is prehyphenated is not listed as a headword: (-glúwá '-juice, -water', entered under glú 'water') so there are 42 elements of compounds. Three other headwords which are not listed with a hyphen nevertheless have their use in compounds illustrated. Where words have specifically been used to illustrate uses of bound morphemes in compounds, they have not been counted as entries. Usually these illustrative examples do not have tones marked but one noun and six affixes:

- (5.71)      nɸù 'glans penis'  
               -||hàm 'through'  
               -tšūtšūrìsì 'imitation, model'  
               -nɸàré 'flock, herd'  
               -n|ówá 'thin'  
               -gǎ'áná 'liquid'  
               tátàré- 'quickly'

have examples which are fully marked for tone, 10 in all. Of the 10, six also appear as lexical items alphabetised by their first letter in Snyman's orthography. For four of these, the tone marking differs between the two entries

- (5.72) zògà'ánà under g. 'honey'  
 zògā'ànà under z  
 gùmìn|òwá under n| 'thin cow'  
 gúmin|òwá under g  
 |'hùtsùtsùrisì under ts 'doll'  
 |'hùtsùtsùrisì under |'h  
 ts'amànlù under n| 'bird's egg'  
 ts'amànlù under ts'

Snyman's work has been done with care and meticulousness. These discrepancies do not arise from mistakes of recording but arise from the conflicting demands of the surface tones and the underlying tones: in each pair of examples each morph retains the same relative pitch pattern. Two thirds of the compounds whose tone marking it is possible to check show such discrepancies. This is another reason for delaying a consideration of tone in compounds. The 41 bound morphemes were excluded from the corpus studied.

As well as these bound morphemes, entries consisting of two words, that is, separated by a space, 173 in all, were not used.

Of the remaining entries, those which I considered to be unlikely to be compounds or unassimilated borrowings were mainly those conforming to the skeleta chosen in Snyman 1975, his 'Die Fonologie van Žu/'hōasi'. The following abbreviations are used:

- (5.73)
- |   |                        |
|---|------------------------|
| K | any consonant          |
| V | any vowel              |
| C | b, r, m and n          |
| N | any nasal consonant    |
| X | any click consonant    |
| Z | any nonclick consonant |
| ? | glottal stop           |

The skeleta are:

(5.74) KV  
KVV  
KVCV  
KVVCV  
KVNN  
KVN  
KV?V  
KV<sub>1</sub>?V<sub>1</sub>CV  
KVN?N

Four forms with no vowel, showing only nasal consonants, were also included in the corpus. The word morph as I use it in this analysis of Žu/hõasi is defined by these skeleta.

I did not accept nasalisation of a vowel cooccurring with the presence of a C, nor did I accept words in which more than one vowel was marked as pressed, that is pharyngealised. There were 1956 entries conforming to these canonical forms. The 1956 entries consisted of 1283 entries with a click initial and 673 entries with non click initial consonants. Some entries were the same morph used as a noun or as a verb and some seemingly distinct morphemes shared one identical shape. In what follows each distinctive shape was counted only once.

Morphs with an initial click are treated first; then an interpretation of the results of this part of the investigation is given.

The 1283 click initial entries included 176 which were second or third entries of the same form and so the total number of forms to be considered is 1107. The distribution of segmental skeleta and initial click accompaniment is shown in Table V.1.

---

Table V.1

Click accompaniment, segmental skeleta; X- initial

	XV	XVV	XVCV	XVVCV	XVNN	XVN	XV?V	XV?CV	XVN?N
X	20	76	63	3	4	15	17	9	4
Xh	7	15	21	1	0	3	0	0	0
Xx	11	35	43	4	1	9	0	0	0
X'	19	34	54	3	0	15	0	0	0
X'h	17	34	29	3	3	10	0	0	0
Xx'	5	20	19	0	0	6	0	0	0
gX	23	50	32	0	4	13	20	7	4
gXh	2	7	1	0	0	0	0	0	0
gXx	4	5	10	0	1	2	0	0	0
gXx'	4	11	6	0	1	1	0	1	1
nX	24	54	51	4	7	22	21	18	10
nX'h	2	25	17	1	0	9	0	0	0

---

This table shows that those skeleta including -ʔ- are of a limited distribution with respect to click accompaniment. It is explicit in Snyman 1975 that a complete glottal stop is not involved; the symbol -ʔ- is nevertheless retained here. In those forms which Snyman writes with the skeleton KV?VCV, the middle vowel is predictable, tongue height and backness from the first vowel and tone from the last vowel. This middle vowel is not considered further and the skeleton is quoted without it. In the skeleton KVN?N the tone on the first nasal is that of the vowel; the quality of that nasal is that of the final nasal. So Table V.2 quotes all skeleta as having only two significant tones; it shows that these skeleta have a very limited number of tonal possibilities.

---

Table V.2

Tone, pharyngealisation, initial click accompaniment; skeleta with -ʔ-, X- initial

	˘	˘˘
X	9:3	7:10
gX	24:7	0:0
nX	13:10	13:13
gXx'	2:0	0:0

In this table, and wherever .: appears within this subsection, the figure to the left of .: is that of morphs without pharyngealisation, that to the right is the number of morphs with pharyngealisation. lò'òbà 'to be neat' is clearly anomalous.

---

Beside the one word with an aberrant tone pattern, another oddity in this table is the presence of gXx' as initial consonant. Its presence with skeleta including -ʔ- gives forms which have glottality located in two places in the morph. The other thing to be noted is the absolute failure of the tone pattern ˘˘ to correlate with gX as initial consonant.

One general characteristic of morphs in Žu/'hõasi can be seen from an inspection of forms in XVʔV: V<sub>1</sub> can only be a, o or u. n|è'è 'to be envious' alone occurs to contravene this rule and must be taken as anomalous. Furthermore, u and o at V<sub>1</sub> are in complementary distribution: if V<sub>1</sub> is free, that is, not pharyngealised, u only occurs if the V<sub>2</sub> is i or u, otherwise o appears. If V<sub>1</sub> is pharyngealised only the quality o is possible. There is a two way system operating at

$V_1$  the terms of which will be symbolised when necessary by  $\alpha$  (open unrounded) and  $\omega$  (closer rounded). If  $V_1$  is oral, all five vowels are found at  $V_2$ ; if  $V_1$  is nasalised, only i, a or u is found at  $V_2$ . This same restricted set of vowels possible at  $V_2$  in skeleta with  $-ʔ-$  is found after m and n as C in morphs of the structure  $KVʔVCV$ . This pattern is taken to hold throughout the language. It seems possible that the smaller number of vowels at  $V_2$  after nasality and the existence of forms with the skeleta  $KVN$  and  $KVNN$  together might form a larger system with a full five vowel series at  $V$ ; this possibility is not pursued further here. Wherever a vowel other than a regular realisation of  $\alpha$  or  $\omega$  appears at  $V_1$ , it is considered to be a matter for comment. Likewise, if either e or o appears as  $V$  after a nasalised vowel or m or n at C, it is also a matter for comment.

To return to Table V.1, the only other gap which it shows which looks as if it may be systemic is that  $KVVCV$  does not occur with click accompaniments which include non nasalised voicing. Looking at  $KVVCV$  forms, only r and n were found at C, and V was a. All four tone patterns were involved but no other internal patterning of the occurrences was found. The place of  $KVVCV$  forms becomes clear once  $KVCV$  forms have been considered.

It has been clear that although Snyman is forced to posit four level tonemic pitch heights, the sequences in which they appear are limited. Table V.2 shows the occurrence of different sequences against each click initial; a perhaps more useful summary of this table by click accompaniment alone is to be found in Table V.7. It will be seen that only seven of the possible sixteen sequences of tonemes appears. Three of these sequences together (´´, ¨¨, and ´¨) account for less than 7% of the total.

---

Table V.3

Initial click, tone; XVCV skeleton

	''	''	''	''	--	--	''
	1	1	4	2	4	1	0
‡	0	6	5	0	0	1	0
!	0	8	7	0	7	1	1
	1	2	7	0	4	0	0
h	0	2	1	0	0	1	0
‡h	0	3	4	1	0	0	0
!h	0	5	3	0	0	0	0
h	0	0	1	0	0	0	0
x	0	2	7	0	0	1	0
‡x	0	2	5	0	2	1	0
!x	0	4	6	0	1	0	1
x	0	3	8	0	0	0	0
'	0	3	4	2	2	0	0
‡'	0	5	7	0	0	1	0
!'	0	6	7	1	0	0	0
'	0	7	4	2	2	0	1
'h	0	1	0	0	2	0	0
‡'h	0	2	3	0	5	2	0
!'h	0	2	6	0	1	0	0
'h	0	2	2	1	0	0	0



	''	''	''	''	''	''	''
x'	0	1	2	0	0	0	0
‡x'	0	4	2	0	0	0	0
!x'	1	3	2	0	0	0	0
x'	0	2	2	0	0	0	0
g	0	2	2	1	0	0	0
g‡	0	2	0	2	0	0	0
g!	0	5	2	4	1	1	0
g	0	5	2	2	0	1	0
g h	0	0	0	0	0	0	0
g‡h	0	0	0	0	0	0	0
g!h	0	1	0	0	0	0	0
g  h	0	0	0	0	0	0	0
g x	0	0	1	0	0	0	0
g‡x	0	0	0	3	0	0	0
g!x	0	1	1	3	0	0	0
g  x	0	0	0	1	0	0	0
g x'	0	0	0	1	0	0	0
g‡x'	0	0	0	0	1	0	0
g!x'	0	1	1	1	1	0	0
g  x'	0	0	0	0	0	0	0
n	0	1	3	3	4	0	0
n‡	0	2	4	2	2	2	0
n!	1	3	5	0	7	2	0
n	0	0	7	0	3	0	0

	''	''	''	''	''	''	''
n h	0	0	0	2	0	0	0
n h	0	0	1	0	1	0	0
n h	0	0	1	2	4	1	0
n  h	0	0	1	0	4	0	0

---

A check was made to see if there was any correlation between CV sequences and tone patterns. This is shown in Table V.4. There does not seem to be any correlation between the final syllable and the tone pattern. The table shows some features which hold for other skeleta; these features are really only validated by

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Table V.4

CV, tone; XVCV skeleton

Pharyngealised vowels at V<sub>1</sub> shown after .:

	''	''	''	''	''	''	''
bi	0	9	6	4	2	2	0
be	0	7	11	1	5	2	0
ba	0	5	14.:1	4	6	1	0
bo	0	6	4	1	1	1	0
bu	1	5	8	5	3	1	0
mi	1	8	1.:1	0	2	1	0
me	0	0	0	0	0	0	0
ma	0	8	12.:1	1	3	1	0
mo	0	0	0	0	0	0	1
mu	0	0	0	0	0	0	0

ri	1	8	19	5.:1	3.:1	2	0
re	0	12	8	2	9	1	0
ra	0	2	7.:2	1	2	0	2
ro	0	5	9.:1	2	5	0	0
ru	1	7	10	3	3.:1	2	0
ni	0	11	9.:1	5	5.:2	0	0
ne	0	0	0	0	0	0	0
na	0	1	2	1	2.:1	1	0
no	0	0	0	0	0	0	0
nu	0	5	3	0	2	1	0

---

larger figures than the above table can show, but the totality of attestations is not shown for reasons of space. The absence of the final vowels e and o after a nasal is shown: this has already been commented upon; the absence of mu can also be seen. The tone pattern ´´ occurs only when the final vowel is i or u. And finally, the presence of a pharyngealised first vowel is associated only with the three tone patterns ``, `´ and -`.

Next, sequences of V<sub>2</sub> and CV were checked. Morphs with a pharyngealised vowel were excluded from this table.

---

Table V.5

V<sub>1</sub>, CV<sub>2</sub>; skeleta without -ʔ- and without pharyngealisation

	bi	be	ba	bo	bu
a	15	17	16	6	12
o	0	9	14	7	0
u	8	0	0	0	11

	mi	me	ma	mo	mu
a	7	0	11	0	0
o	0	0	7	0	0
u	6	0	7	1	0

	ri	re	ra	ro	ru
a	22	19	11	6	17
o	0	13	1	15	0
u	16	0	2	0	9

	ni	ne	na	no	nu
a	18	0	6	0	8
o	0	0	1	0	0
u	12	0	0	0	3

---

The anomalies are the sequences -uma, -umo and -ura. The one occurrence of -mo correlated with a tone pattern '̀; this tone pattern is rare. One of the occurrences of -ura also showed this tone pattern, and it should best be considered a secondary phenomenon.

The situation with -ma is fluid. o or u at  $V_1$  correlates neither with click type or tone pattern, and there is one doublet, !hùmà 'be deaf' and !òmà 'be blocked (as an ear), be deaf', and I consider both as competing phonetic variants of a form with an underlying  $\omega$  at  $V_1$ . But the poor figure for -ora and -ona compared with that for -oba and -oma show that this is where the KVVCV forms should be placed. The two forms in -ora and -ona both show potential cognates in -oara and -oana (5.75), although the initial consonant in the first pair does stretch the credibility a little far. Forms in -oara and -oana are systemically -ora and -ona and actual

forms in -ora and -ona are considered competing forms in the same slot. It was noticed earlier that no XVVCV form has a voiced non nasal click at X. This seems to be an accidental gap.

Returning to the table showing the correlation between click

- (5.75)      !x'ónà 'turn up the nose'  
               nɸ'hòanà 'turn up the nose'
- ||'òrà 'give birth, bear'  
               ||'òanà 'carry (two bundles on the two points of a  
    carrying stick over the shoulders)'

---

Table V.6

`' and -`, click accompaniment; XVVCV skeleton

	total	
	⌘	forms
gXh	0	1
Xx'	0	19
Xh	5	21
Xx	7	43
X'	17	54
X	27	63
X'h	31	29
gX	33	32
nX	41	51
gXx'	67	6
gXx	70	10
nX'h	76	17

---

accompaniment and tone in XVCV skeleta, Table V.3, some accompaniments prefer not to be associated with the tone sequences `´ and -`. The percentages of occurrences with these tone patterns is shown in Table V.6. The second figure shows the total number of morphs with each click accompaniment.

Except for the uncommon gXh, voicing, whether nasalised or oral, in the click accompaniment correlates well with the two tone patterns, `´ and -`. But what is more pertinent is the low occurrence of Xx', Xh, Xx and X' with these. Table V.7 summarises

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Table V.7

Click accompaniment, pharyngealisation, tone pattern; XVCV skeleton

	`´	´´	`´	´´	-`	--	´´	
X	2	17	21.:2	2	14.:1	3	1	
Xh	0	10	9	1	0	1	0	
Xx	0	11	26	0	3	2	1	
X'	0	21	21.:1	5	4	1	1	
X'h	0	7	11	1	8	2	0	
Xx'	1	10	8	0	0	0	0	
gX	0	14	4.:2	8.:1	1	2	0	
gXh	0	1	0	0	0	0	0	
gXx	0	1	2	7	0	0	0	
gXx'	0	1	1	2	2	0	0	
nX	1	6	17.:2	5	14.:2	4	0	
nX'h	0	0	3	4	7.:2	1	0	
Total		4	99	123.:7	35.:1	53.:5	16	3

---

Table V.1, but also gives separate figures for free vowels at  $V_1$  and for pharyngealised vowels at  $V_1$ .

Not only is the number of pharyngealised vowels at  $V_1$  in this skeleton, XVCV, too small for any pattern to be established, it is small compared with the frequency of occurrence of pharyngealisation in skeleta with medial -ʔ-, of the tone patterns that show pharyngealisation, 6% as against 39%. Figures on the incidence of pharyngealisation for all skeleta are shown in Tables V.8 and V.9. Instead of giving complete tables for each of the other skeleta with initial click which have not yet been treated, summaries are given showing the incidence of pharyngealisation, in

---

Table V.8

Click accompaniment, tone, pharyngealisation; skeleta without -ʔ-, X- initial

	ʔ	·	· ·	· · ·	· · · ·	· · · · ·	· · · · · ·
X	7	34	51.:6	6	46.:5	21.:4	1
Xh	2	24	18	1	1	1	0
Xx	3	31	56	2	6	4	1
X'	4	46	58.:1	5	6.:1	4	1
X'h	3	23	32	4	19.:1	13	0
Xx'	2	23	25	0	0	0	0
gX	5	36	20.:13	22.:1	7	18	0
gXh	0	5	3	2	0	0	0
gXx	0	5	5	12	0	0	0
gXx'	0	5	3	12	4	0	0
nX	4	31	32.:20	11.:2	35.:6	20	0
nX'h	0	3	14.:1	10.:1	14.:2	9	0

---

Table.V.8 showing click accompaniments against tone pattern and in Table V.9 skeleton type against tone pattern.

---

Table V.9

Skeleton, pharyngealisation, tone pattern; X- initial

	'	'	`	''	-`	-	''
XV	7	54	44:11			21:1	
XVV	18	75	97:16	46:3	68:8	33:2	
XVCV	4	99	123:7	35:1	53:5	16	3
XVVCV	4	9		2:2	2		
XVNN				6	15		
XVN	1	34	44:7			18:1	
XV?V				27:13	12:6		
XV?C				12:4	5:13		1
XVN?N			9:3	3:4			

---

The tentative interpretation of these patterns which follows rests on one assumption and two observations. The assumption is that at the basis of the surface tonal system lies a system with a two way pitch contrast, high and low, which is chosen for twice in each morph. The first observation is that pharyngealisation of V<sub>1</sub> never cooccurs with a click accompaniment which shows velarisation; this means that either they are terms within the same system and contrast, or that they are allophones for which a conditioning environment should exist. The second observation is that clicks with a glottalic accompaniment do not usually appear in skeleta with a medial -ʔ-; there is also a strong correlation of X<sup>ʔ</sup> with the tone patterns '' and ``; skeleta with medial -ʔ- show

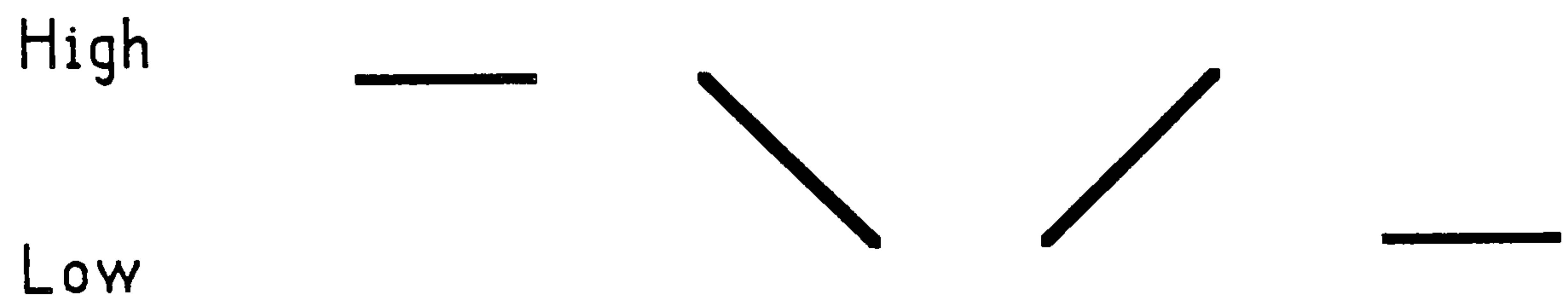


either ` ' or - `.

Besides these glottalic accompaniments, there are others which eschew ` ' and - `. Those patterns which tone phenomena correlate with are to be found nearer to the beginning of the morph and it can be taken that the feature with which they correlate is at the beginning of the tonal pattern. I take it that ' and ` share an underlying initial tone which is high and that the underlying initial tone of - ` and - ` is a low tone. The second surface tones of each pair are distinct and in each pair I take the ' to represent an underlyingly high tone and a ` to represent an underlyingly low tone

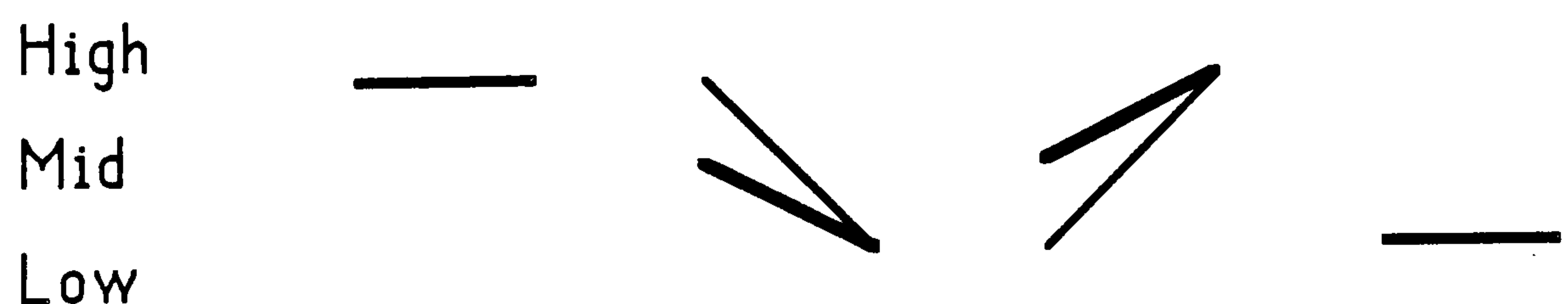
Surface tones can be derived from these underlying tones by the application of two rules. Four sequences of two tones are possible in morphs which choose for tone in two places. They are diagrammed below.

(5.76)



The first rule brings the starting point of a gliding tone (high to low and low to high) halfway towards the pitch of its end point, creating a phonetically mid starting point for both of them.

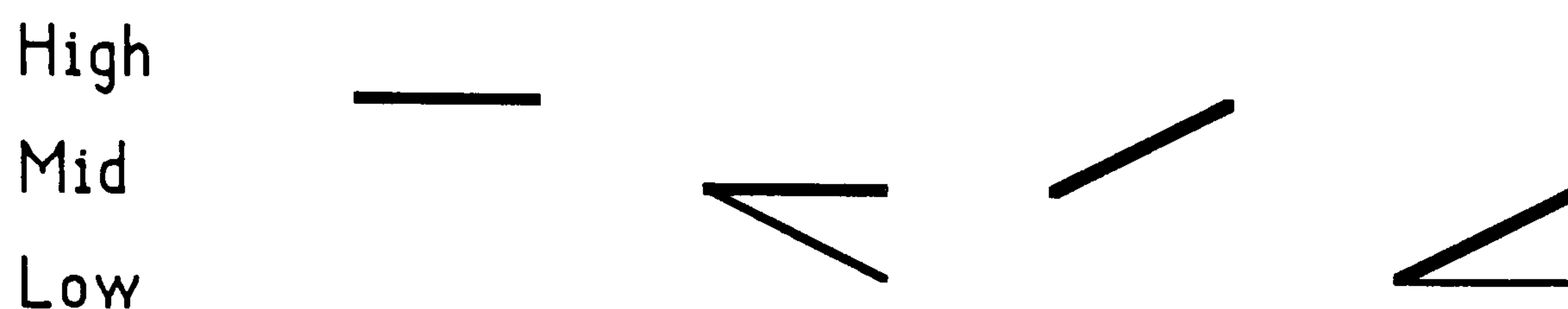
(5.77)



The second rule prevents any pitch contour ending in a low tone; any

final low tone is raised to mid. This rule I call the No Final Low rule; it has an analogue in Kxoe, and Nama also does not have pitch contours ending low. Its application gives the four pitch outlines which are heard on the surface.

(5.78)



High in the above diagrams is equivalent to Snyman's middelhoog tone; his hoog tone is therefore perhaps better thought of as an extra-high tone.

The assumption that the surface patterns ' ' and `` share an initial underlying high tone allows a glottal stop as part of a click accompaniment and the incomplete glottal stop -ʔ- to be realisations of one and the same thing, what will be called glottalisation. Where glottalisation occurs together with an initial underlyingly high tone, it surfaces as part of the click efflux; with an initial underlying low tone it appears as an intervocalic -ʔ-. This is parallel to the Single Glottal Constraint of !Xóõ (Traill 1985a) which, as has also been noted above, 'disallows a glottalized vowel in the same stem as an ejected consonant or a click followed by [ʔ]' (p92).

The same assumption that ' ' and `` share an initial high tone also gives an environment for the occurrence of velarisation as part of the click accompaniment when voicing is not involved: it only occurs with an initial underlying high. But pharyngealisation, while not cooccurring with a click accompaniment which involves velarisation, nevertheless does occur on some morphs with the tone pattern ``. When pharyngealisation occurs with glottalisation in

the form of a medial -ʔ-, only patterns with an underlyingly low initial tone, (´ and -´) occur. But when glottalisation is not present, some pharyngealised vowels appear on morphs with a ´´ tone pattern. The number of occurrences of pharyngealisation with the different tone patterns is shown in Table V.10; XV(V) and XVN with ´ are listed under ´´, and with ´ are listed under ´´.

Table V.10

Tone pattern on forms with pharyngealisation; skeleta without -ʔ-, X- initial

	´´	´´	-´	--
XV(V)	27	3	8	3
XV(V)CV	7	1	5	0
XVN(N)	7	0	0	1
Total	41	4	13	4

I am prepared to take these figures as indicating that pharyngealisation has a lowering effect on a following high tone; this means that with a pharyngealised vowel, ´´ is equivalent to ´´ in a morph without pharyngealisation, that is an underlying sequence of a low tone and a high tone. (Elsewhere the surface sequence ´´ is taken to represent an underlying sequence of a high tone and a low tone. ´´ is thus an ambiguous tone pattern; Traill 1985a, p53, in discussing tone in !Xòõ, raised the possibility of such ambiguous tones to account for tonal phenomena in the language, but considered another solution preferable there.) Likewise I would suggest that the tone pattern ´´ is a variety of ´´. There is thus tension between tone lowering in collocation with



(5.80)		Lab	Alv	Zero
	Oral	b	r	Ø
	Nasal	m	n	~

This analysis suggests that the canonical morph form in Žu/'hōasi for morphs which show a click in initial position, with the exception so far of those which have an accompaniment which contains h or 'h, has the following components:

- (5.81)
- 1 First tone (´high or `low)
  - 2 Initial place of articulation (with clicks: ɀ, Ɂ, ɂ and Ƀ)
  - 3 Initial voicing/nasality specification ( ̤ (voiceless) ̥ (voiced), and ̦ (nasal))
  - 4 Glottality (ʔ or Ø)
  - 5 First vowel quality (α or ω)
  - 6 Narrowing (χ or Ø)
  - 7 Velum position for second consonant (Oral or Nasal)
  - 8 Place of articulation for second consonant (B (Labial), D (Alveolar) or Ø (Zero))
  - 9 Final tone (´high or `low)
  - 10 Final vowel quality (i, e, a, o or u)

Some morphs choose for the first six components, some for the first nine (in which case 7 is Nasal) and some for all.

The components as listed above are not the ultimate distinctive feature components but what seem convenient units for present purposes. When quoting them, I use the following two dimensional display in an attempt to avoid seeming to imply that any original or underlying sequence is known; the two components

whose position seems most problematic are glottality and narrowing.

(5.82)

1	4	7	9
2	5	8	10
3	6		

Using this type of display, the morph glò'òró 'onion' would appear as

(5.83)

`	ʔ	0	'
c	ω	D	o
.	χ		

The problem of the underlying sequence of the components of the canonical morph is well illustrated with narrowing. Associating narrowing with a change in the tone of the second vowel seems to run counter to the observation that pharyngealisation occurs on the first vowel and that its alloform, velarisation, occurs with the initial segment of the morph.

As well as the problem of underlying sequence, this analysis does not have anything to suggest about the status of those click accompaniments which Snyman transcribes with an h or a 'h. Before commenting on these two problems, the situation with morphs with an initial segment which is not a click is considered.

The dictionary has 673 morphs without an initial click and which conform to the canonical shape. Of these, 94 duplicate another entry and therefore 579 forms are considered in the following tables. It was not as easy to place the nonclick consonants into groups so the correlation of skeleta and initial consonant type in Table V.11 uses a fairly conservative set of

---

Table V.11

Initial consonant class, skeleton; Z- initial

	ZV	ZVV	ZVCV	ZVNN	ZVN	ZV?
ts',tš'	6	3	3	0	2	0
kx'	3	9	8	0	1	0
tx'	1	0	6	0	1	0
VlsPl+h	5	7	19	0	1	0
VlsAf+h	6	3	3	0	0	0
VlsPl	18	26	39	3	7	20
VlsAf	14	7	10	2	2	9
VdPl	13	13	40	0	6	20
VdPl+h	4	3	3	0	1	0
dsh,dšh	2	4	0	0	0	0
ds',dš'	2	4	1	0	0	0
tx	2	1	5	0	1	0
tsx,dšx	1	5	5	0	2	0
dx	1	1	2	0	0	0
dzx,džx	1	1	4	0	0	0
z,ž	11	10	9	2	3	9
s,š	12	9	17	0	4	0
x	2	7	16	2	1	0
h	4	2	2	0	1	4
N	6	6	13	0	2	5
r	1	0	0	0	0	0
SV	4	3	2	0	0	0
∅	6	2	6	0	0	0

---

groupings of initial consonants. In that table, all skeleta with a medial -ʔ- are subsumed under ZVʔ. The four forms with no vowels, having nasals only in their make up, are not allocated a place in that, or subsequent, tables.

By their occurrence in skeleta with an medial -ʔ- the two voiceless affricates ts and tš can be grouped with the voiceless plosives and the two voiced fricatives, z and ž, can be considered systematically affricates and therefore, similarly, grouped with the voiced plosives. z and ž are thus completely different from the two voiceless fricatives, s and š, which do not cooccur with -ʔ-. Consonants appearing with a medial -ʔ- are:

(5.84)

					h
p	t	ts	tš	k	
b	d	dz	dž	g	
m	n				

Excepting the h, the system resembles that of the click consonants, in that each systemic place of articulation, P, T, TS, TŠ and K, (to use symbols intended to refer to place of articulation only) appearing either as a voiceless plosive, a voiced plosive or with nasality. The absence of TS, TŠ, and K with nasality is to be considered systemic, the combination of nasality and a click influx results in a plosive, but the combination of nasality and one of the presently considered places of articulation results in a nasal, and a shorter series of nasal consonants is not unusual. The status of h is discussed later.

Similarly dsh and dšh are to be considered as patterning with bh, dh and gh, but ds' and dš' have no b', d' or g' with which to be associated. There is no real ejective row, which would be p', t', ts', tš' and k'; only ts' and tš' are present. tx' and kx' are the only



ejectives with velar friction: knowing that velar ejectives in the geographical area that Žu/'hõasi finds itself are often characterised by velar friction, and in view of the occurrence of h and x as distinctive click accompaniments, tx' and kx' were kept separate but s and š were taken together in Table V.13.

Firstly the correlations with skeleta with medial -ʔ- are given in Table V.12, in a form identical to that of Table V.2.

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Table V.12

Tone, pharyngealisation, initial consonant class; skeleta with -ʔ-, Z- initial

	ˊ	ˋ
h	0.:2	0.:1
VlsPl	11.:6	1.:11
VdPl	9.:4	9.:7
N	1.:2	1.:1

hò'òbà 'talk, make a noise' is anomalous tonally.

---

With click initial morphs a voiced click was found to be incompatible with ˋ; this restriction does not hold with an initial voiced nonclick consonant. But there is an equally clear avoidance of forms with an initial voiceless plosive without a pharyngealised vowel in this tone pattern! h appears with a pharyngealised vowel but inspection of the dictionary shows that there are no instances of hY which are not followed by -ʔ-. A few items do not show the canonical sequence of vowels. These are quoted in (5.85).

- (5.85) gè'e 'sing'  
 dì'i 'be cheerful'

Table V.13 shows the occurrence of initial nonclick consonant.

---

Table V.13

Nonclick initial class, pharyngealisation, tone; skeleta without -ʔ-,  
 Z- initial

	ʼ	ˀ	ˁ	˂	˃	˄	˅	ˆ
tʼ,ʃʼ	1	5	7	0	1	0	0	0
kʼ	1	6	13	1	0	0	0	0
tʰ	0	2	5	0	0	1	0	0
dʃʼ,dʃʰ	0	0	3	3	0	0	1	0
VlsPl	3	28	32.:4	7.:5	22.:7	13.:5	2	0
VdPl	1	21	24.:2	10.:2	20.:4	15.:5	3	0
VlsPl+h	2	14	11	4	7	6	0	0
VdPl+h	0	6	2	3	4	2	0	0
VlsPl+x	0	8	10	0	1	2	1	0
VdPl+x	0	1	2	6	1	0	0	0
s,ʃ	0	8	19	5	5	4	1	0
x	0	11	9	0	6	2	0	0
h	0	2	3	3	0	1	0	0
N	0	6	10.:3	2.:1	2.:1	1	1	0
r	0	1	0	0	0	0	0	0
SV	0	2	2	0	3.:1	1	0	0
∅	0	4	9	1	0	0	0	0
Total	3	84	101.:5	34.:3	49.:6	34.:5	6	0

---

classes plotted against tone pattern and includes figures for forms with pharyngealised vowels in the same way as in Table V.8, to which it corresponds.

From Table V.13 the situation with VlsPl' and VlsPlx' is such that any occurrence of these two initials with an initial low needs explanation. tx'ā 'be weak, be without strength', could show lowering of its tone under the influence of the narrowing realised as x and indeed it seems to have a cognate in tx'àm 'to be soft', but kx'àrè 'support (the head with the hand)' and ts'ārì 'add, increase' are suspect.

It seems possible to compare some click accompaniments and the categories of the previous table. This is done in Table V.14.

In the eight instances in Table V.14 where there seems to be a comparison between Z and X, some trends are visible. VdPl, and particularly VdPl+h, have more representation with a low initial tone than have gX and gXh. h, in fact, following a nonclick initial is much more frequent with an initial low tone than is h as a click accompaniment: VlsPl is similar to X and VlsPl+x is similar to Xx, but VlsPl+h is more heavily represented with low tone initial than is Xh. An interpretation of this might be forthcoming if a study of cognates within the language shows probable direction and conditions of sound change.

The patterning of morphs with pharyngealised first vowel in stems with X and Z is not very similar. Compare Tables V.10 and V.15. Nevertheless, I am still prepared to take `` as being underlyingly low high when the first vowel is pharyngealised, because of the situation with X- initial morphs. What, as has been mentioned, seems odd is the assumption that pharyngealisation of the first vowel is associated with a lowering of the pitch on the second vowel. This is one of the phenomena which need explanation. It will be necessary to consider narrowing and glottality together.

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Table V.14

Initial consonant, initial \*tone; skeleta without -ʔ-

	*´	*`	*´	ʔ	*`
X	98	82	54		46
VlsPl	67	59	53		47
Xh	44	3	94		6
VlsPl+h	27	17	61		39
Xx	90	12	88		12
VlsPl+x	18	3	86		14
X´	109	16	87		13
VlsPl´	13	1	93		7
Xx´	50	0	100		0
VlsPl+x´	27	2	93		7
gX	74	48	61		39
VdPl	48	56	46		54
gXh	8	2	80		20
VdPl+h	8	9	47		53
nX	87	74	54		46
N	19	6	76		24

\*´ subsumes ´´, ´´ and ´´; \*` subsumes `´, `´ and `´.

---

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Table V.15

Tone pattern on forms with pharyngealisation; skeleta without -ʔ-,  
Z- initial

	˘˘	˘˙	-˘	--
ZV(V)	5	4	4	7
ZV(V)CV	2	3	9	0
ZVN(N)	2	1	0	3
Total	9	8	13	10

---

There are a few forms which consist of one of the canonical morph shapes plus a further syllable whose consonant is h or x. These can be compared in some cases with a similar form which does not have this extra final syllable, but which has a pharyngealised or a velarised first consonant.

- (5.86) g||ùbùxù 'carrying skin, car seat, saddle'  
g||òbà 'carrying skin, car seat, saddle'
- ||'àixà 'be rich'  
||'àe 'desire, want'
- ||'àesi 'control (n)'  
||x'àeyà 'share (something with somebody)'
- kàohá 'boss, leader'  
kàoxà 'boss, leader'  
kx'ào 'boss'
- |'ùrihā 'be dirty'  
|x'ùri 'be dirty'

kámáhà 'first'  
 kámáxà 'first'  
 kx'áišè 'beginning'

If these forms are archaic forms, it seems as if the focus of narrowing has moved forward in the word and produced a velarised consonant or a pharyngealised first vowel. But the final position of narrowing allows the lowering of the second vowel in canonical morph shapes to be more readily understandable. In case the glottalisation which appears in kx'áišè and kx'ào is seem as a stumbling block, I would suggest that the absence of k' and of kx is the reason: they seem to be inexplicable gaps. kx appears in the dictionary once from Tswana kg and once as a deglottalised kx' in a reduplicated form kxùbùkx'ùbù 'to walk or run with a wobbling motion'. Another doublet which shows the relationship of kx' and k followed by a pharyngealised vowel is

(5.87) kx'àrù 'arrow poison'  
 kàè 'arrow poison'

In such cases it is not clear whether the glottality should be considered as part of the common form or not. Compare the two forms

(5.88) kòbù 'blister'  
 kò'òbu 'blister'

This is part of the problem of why there are so many more pharyngealised vowels with -ʔ- than there are in skeleta without it. Does pharyngealisation promote the generation of -ʔ- or is pharyngealisation lost more readily without it? The

interrelationship between pharyngealisation, laryngealisation and glottality needs further study.

There are examples to suggest that sometimes pharyngealisation may be lost or correspond to another realisation of narrowing. One possible etymology unites the four following forms:

- (5.89)      wā̀rà 'unload (a vehicle)'  
              òrè 'unpack'  
              xòxòrè 'scrape out (a pipe with a knife)'  
              xòe 'dig (for water)'

All of these can be derived from a stem

- (5.90)      `    Ø    0  
              Ø    ω    D  
              .    χ

The first form quoted has an underlying suffix à. -ora regularly gives -oara after a consonant; here the same thing has happened after no initial consonant and the form is interpreted by Snyman as having an initial w. χ is realised as pharyngealisation on the first syllable. The other three forms have an underlying final é. The presence of χ lowers this and these forms all have `` or ` . In òrè this lowering is the only trace of the presence of χ but in the other two forms it is retained as velar friction and interpreted as a velar fricative in Snyman's analysis. The existence of a form !hōarā 'unload' may indicate that the stem has been declicked, but this involves more than I can consider here.

It is possible to use a broader brush in painting this picture. Throughout the dictionary there are forms which seem to show that

it would be pleasant if there was a greater equivalence between certain click accompaniments, pharyngealisation, tone lowering and h and x.

(5.91) n||ō'òbè 'bottle'  
n||ō'òbò 'wade, walk in water'  
n||òrà 'press out (liquid from something)'  
n||'hūrù 'aloe (sp)'  
n||'hō'òrù 'aloe zebrina and other species' (in plant name section)

ɬx'àrì 'urinate (euphemistic, for humans)'  
ɬ'òrò 'urinate (for animals)'

!hòarà 'beat out (iron)'  
!xòarà 'run down (with a vehicle)'

!hāo 'soak (in a liquid)'  
!xàbà 'sauce'

n!hòm 'anus, large intestine'  
n!òm 'anus, large intestine'

gɬhǎi 'wipe (the mouth with the bare hand)'  
gɬxàri 'rub off dirt (so that it comes off in little rolls),  
wipe out, rub out with an eraser'  
gɬhù 'dry off, wipe off, clean (a baby of faeces), wipe  
out, rub out'

džxǎdžxǎa 'be thin (like paper or material)'  
žām 'emaciated, starving'



g|x'òì 'have an erection'

-g|ō 'male'

g|òḗ 'polygamy'

!xòmm 'eat (tubers or roots)'

g|ō 'eat (crumbly or ground food)'

tháu 'ash (of tobacco)'

tó 'ash (of fire)'

n|ōrì 'stir (tea or coffee)'

n|hōa 'stir (porridge)'

n|hòm 'press together (tobacco or clay into a ball), to  
be curled up, lie (in a curled up position)'

n|òmì 'twist (a person's arm), roll up (tobacco with  
paper to make a cigarette), wring (a cloth)'

||hàré 'put (something in the thatch to keep it there)'

||xánú 'put (a stick in the hat or hair)'

žānì 'helicopter toy'

džxàni 'dance (like men)'

n||à'ari 'sjambok'

n||hàri 'sjambok'

The absence of click and accompaniments which might be transcribed as nXx and nXx', I think facilitates the suggestion that h might well be an alloform of narrowing, just and velarisation and pharyngealisation are alloforms of narrowing. I do not find it possible to state precisely for example how the two existing clicks

Xx and Xh are to be associated with a hypothetically possible X, gX and nX with narrowing and initial high tone, or if indeed any such correlation might be made, but there is the possibility. Similarly, glottalisation and initial high tone together with the three possibilities X, gX and nX corresponds to only X' in the data.

There are pointers to suggest that the fricatives s and š are also part and parcel of the realisation of χ. If these are to be attributable to the underlying pattern in the phonology which has been suggested so far, then it is unlikely that they should be initial consonants because the principle is that initial consonants should be capable of appearing both with ʔ and with χ, and with both. But s and š do not appear with glottality and they do not appear with any form of narrowing. In one set of forms s, š and h are competing forms

- (5.92)      wǎahè 'all'  
               wǎàsì 'all'  
               wèšè 'all'

I suggest that they are just this, competing forms, alternative realisations of χ. This would facilitate an etymological connection between

- (5.93)      xámi 'grind (grain)'  
               xǒi 'grind (grain)'  
               xǔin!ùmà 'grinding stone'  
               sǎ 'body powder'  
               šǎišàni 'rub (between the palms of the hands)'  
  
               sòrò 'cheekbeard'  
               xò 'temple (of head)'

xõanà 'cook (to be at the boiling point)'

sõanà 'to be overripe'

šòe 'take out, extract (something), undress, unload'

wārà 'unload' and the previous examples in (5.89)

Given that -si is a common plural marker, it might also be possible to connect -mà, (diminutive singular), and -mhí, (diminutive plural), by, to use rather a crude formula, \*màxi, (but it does not explain the nasalisation in the plural, nor the high tone).

The fact that initial s and š do not appear with glottality seems a stumbling block, and no examples can be produced to suggest that ts and tš could sometimes be alloforms of s and š, that is, of narrowing, when glottality is present. But what appears when glottality and narrowing cooccur without any initial place of articulation is h as the first consonant and the first vowel is pharyngealised. For example:

(5.94) hàʔaré 'go for water'

h is thus entirely predictable and can be omitted from the chart of initial consonants which can have skeleta with -ʔ- associated with them. Ø has to be allowed as a choice in component 2, Initial Place of Articulation, and if Ø is chosen in 2 then the voicing/nasality specification in 3 will be voiceless.

The association of narrowing with a realisation involving friction then opens the possibility of the etymological connection between the following sets of morphs:

(5.95) tsānì 'be teasing, be spiteful'

tā'anà 'be teasing, be spiteful'

tō̄ 'cut open(an animal's stomach)'  
tṑnì 'open (eyelids)'  
txùrù 'open'  
tšṑnì 'peel (a soft skin)'  
tšxò 'flay, swell'

and, less easily,

(5.96) tsà 'grind (a roasted nut)'  
xàmi 'grind' and the series quoted above (5.93)

Some forms do not conform to the idealised pattern suggested here, and these would have to be accounted for. For example, there is one form which shows the click accompaniment x cooccurring with what has been analysed as an initial low tone:

(5.97) †xā̀nì and †xā̀nù 'book, paper, letter'

This is clearly a loan.

The prevoiced ejectives are another anomaly as an ejective consonant does not normally collocate with an underlyingly low tone, but this is often found with the prevoiced ejectives. Take as an example

(5.98) ds'òò 'hartebeest'

There is voicing at the beginning and there is glottality; the underlying tone pattern is low high. For this, the underlying representation would be as in (5.99).

(5.99)    ʼ    ?    0  
           TS   ω    Ø    o  
           .    Ø

What has been suggested above as the regular phonetic representation of such a formula would be the nonexistent \*zò'ò. But the dictionary actually has a form zũ'ù which is also glossed as hartebeest. The two recorded forms, with different suffixes, seem to be competing forms of the realisation of the same stem, that with a prevoiced ejective a minority form. Another possible cognate series would be seen in the set

(5.100)    zā'à 'blood'  
               zā'arà 'quench'  
               dš'ì 'be damp'

where the last entry could be derived from something like

(5.101)    ʼ    ?    0    '  
           TS   α    Ø    i  
           .    χ

Forms in ZV may have i or e as their vowel (as well as a, o or u, which alone are found in XV forms). This is best taken as the V<sub>2</sub> and giving the underlying form an α which is deleted. No X- initial form may undergo such deletion. What is common to all three of the morphs quoted above is:

(5.102)    ʼ    ?    0  
           TS   α  
           .    χ

to which it might be possible to attach a meaning. But these two forms with prevoiced ejective are the only two for which within Snyman's dictionary I have been able to find possible cognate forms with the majority realisation of the underlying formula.

Finally let me quote

- (5.103)    zǎ̀owà 'maiden'  
               dshàù-mà 'girl'

The stem of both these forms can be associated with the formula:

- (5.104)    `    Ø    0    ´  
               TS    α    Ø    u  
               .    χ

where it only needs to be noted that in the second word χ has a devoicing effect on the fricative part of dz and to suggest that contiguity with a pharyngealised vowel has resulted in u appearing as o in the first word. In zǎ̀owà the nasality of the diminutive suffix has moved to the left where it appears as nasalisation. The plurals are

- (5.105)    zǎ̀owàsì  
               dshàù-mhǐ́

One thing which emerges from the analysis of !Xóõ and Žu/'hõasi in this subsection and the previous subsection, is that the optimal unit to use in stating how sound is organised in these two languages is the morph. Although it can look as if it has a disyllabic structure,  $KV_1CV_2$ , there seems to be no point in talking about syllables. The organisational function which the syllable has

in the sound system of many languages, is assumed by the morph in at least these two South African Khoisan languages. This analysis can be extended to Nama.

### 3 Central Khoisan

Although I have suggested that the closest linguistic relatives of Sandawe are the Central Khoisan languages, I do not wish to spend much space on them here. The reason is that they are the subject of ongoing research by Voßen, who has a large and reliable data base. Preliminary reports of his research have been published in Voßen 1984, 1985 1986a and 1986b. Kxoe has one point of contact with Northern Khoisan in the No Final Low rule mentioned in the preceding section and has been shown in subsection A2 of this chapter to have an associative construction which seems to use tone levels in a way similar to Sandawe. There is no detailed work on tone in morpheme structure in Central Khoisan published, except the work of Beach 1938 on Nama. I will repeat his conclusions.

Canonical morph structure is often quoted as something like  $KV_1CV_2$ . There is none of the interaction of voice quality and glottality with other components of morph structure, as far as existing analyses are concerned, but the different sets of vowels that can stand at  $V_1$  and at  $V_2$  and the different sets of consonants that can stand at K and at C are enough to cast doubt upon the use of talking about KV syllables for Nama.

Beach notes six major tone patterns. By comparison with !ora, Korana, he concludes that historically they can be derived from four. He posits an original distinction between voiced and voiceless initials. With two of the tone patterns, this distinction of voicing was neutralised without leaving any tonal effects. With the other two tone patterns, the voiced initials caused the lowering of the initial pitch; on the neutralisation of voicing this produced a tonemicisation of the pitch patterns. The two pairs of original tone



patterns can be seen as each having one feature towards their beginning in common, the unaffected pair a high tone and the affected pair a low tone. Whereas the original voicing status of morphs with an original high tone cannot be retrieved from internal comparison only, those morphs with original low tone betray their original voicing. To extend his analysis, the Nama morph chooses for tone in two places in sequence; at each place either a high or a low underlying tone is chosen. Köhler 1947 has criticised Beach's analysis, pointing out that there is the possibility that tone has affected the nature of the initial segment, but I accept Beach's analysis. Winter 1981a also has his reservations; he compares Nama and Kxoe, but his analysis does not rest upon any internal analysis of tone in Kxoe. Because I believe that solid comparative work should follow an exhaustive exercise in internal reconstruction, such as I have tried to start for Northern Khoisan in subsection C2 of this chapter, I would prefer to await more data before attempting to evaluate his doubts.

Hagman 1977 decomposes the six tone patterns into sequences of two tones. At the first place in a morph, high, mid or low can be chosen; in the second place only high, and mid are found in his analysis. This resembles the result of the No Final Low rule of Northern Khoisan. Kxoe also has a No Final Low rule as has been mentioned above, (Elderkin 1987, analysing data in Köhler 1981). If Nama and Kxoe are typical of Central Khoisan, then Central and Northern Khoisan share this rule which Southern Khoisan, on the evidence of the description of !xóõ in Traill 1985a, does not have.

#### 4 Sandawe

The above sections have suggested that, from the evidence of those language for which adequate data is available, Khoisan is characterised by a morph structure which chooses for one of two tones in two places. In this section I wish to examine the probable shape of the Sandawe morph in that part of the lexicon which is derived from Khoisan. This will be done in two ways, by trying to interpret some of the data in Chapter IV from a historical perspective, and by examining some potential cognates between Žu/'hōasi and Sandawe.

As a matter of principle, I believe in squeezing all the information from an internal reconstruction before searching wordlists and dictionaries for cognates. I am acutely aware that the lexical data base that I am using for Sandawe, less than 2,000 items, is not adequate because of the 'beträchtlichen Fremdeinfluß' (Köhler 1973-74 p190); the 3266 head words in Snyman 1975, from which 1686 canonical forms were selected seem to have been satisfactory, because of the internal consistency of Žu/'hōasi. 5,000 Sandawe items might have revealed a little more, and the publication of ten Raa's lexical material will serve as a basis for this. The potential cognates presented are especially those which relate to narrowing in Žu/'hōasi, which will be seen as potentially the source of the greatest difference between the morph structures in Sandawe and the Southern African Khoisan languages.

In section A and B of this chapter, I hoped to show that, in Sandawe, the syntactic use of tone in sentences and in phrases could be related to Central Khoisan, and also that the realisation of some grammatical morphemes also bore comparison with those

languages. Nama and Kxoe were used as examples of Central Khoisan languages for this purpose. The reason for the comparison of the structure of lexical items with a Northern Khoisan language, *ǃu/’hōasi*, is twofold. Firstly, it is the availability of an adequate data base in Snyman 1975, and secondly of its analysis in subsection C2 above; I do not have as much consistent, reliable lexical data on any Central Khoisan language available. If, as I, and Köhler, suspect, Sandawe is to be classified with the Central Khoisan languages, then the comparison of Sandawe and Central Khoisan must follow solid comparative work on Central Khoisan. It follows that any comparison between Sandawe and Northern Khoisan will have to be later reviewed after this solid comparative work.

In Chapter IV it was seen that verbs in *é* had only m,n,r,w and x as  $K_2$ . The relation between m,n,w and r and the system at C in *ǃu/’hōasi* is immediate. But in the other verbs, the list in (4.13) shows no instance of w or r; instead |p|, |t|, |k|, and ? appear. In an analysis of Kxoe verb tone patterns in Elderkin 1987, I found that the presence of a suffix seemed to prevent the loss of a C in the verb stem; where there was no suffix the consonant was lost. I would suggest that this is what happened in Sandawe also. But when the remainder of the verbs is taken, a fuller set of consonants appears. Conflating the two sets gives (5.106).

(5.106)

			x
	p	t	k ?
	w	r	
	m	n	

A velar consonant at  $K_2$  is not known from the phonologies of the South African Khoisan languages, though Southern Khoisan, as

evinced by !xóõ, has three places of articulation at K<sub>2</sub>, the third being palatal if nasal [ɲ] or a glide [j], or alveo-palatal if a plosive, [dʲ] when voiced.

It was the addition of the two units x and ʔ that leads back to the structure of the morph in Žu/'hõasi, where it was possible to isolate glottality and narrowing as two components of morph structure. Interesting too was the restriction in these examples of the occurrence of x to an initial X' and of ʔ to an initial X̣. The addition of x and ʔ to the core system of verb stems leads back to the nonverbs: do x and ʔ also have a place in these? As far as ʔ is concerned, in stems with X-, there were no examples, but x showed in the forms with two vowel qualities in (5.107).

(5.107)	ɕǎ:xĩ:	'bridge of nose and above'
	ɕǎ:xũ:	'pori'
	ɕǒ:xà	'type of valley'
	ʒǎ:xá	'insipid'

Three have an initial X̣ and only the fourth an initial X', as have the verbal examples. Length on the V<sub>1</sub> can be attributed to the tone - all rising tones are long - and length on the V<sub>2</sub>, in the first two examples, can be attributed to the nasalisation of the vowel; all these forms therefore can be considered basically KVKV. Whereas all verbs with x as K<sub>2</sub> have ' ', these four nouns share an initial rising tone.

At this point it is expedient to jump from internal reconstruction to comparison. The small number of examples in the Sandawe data to hand do not really seem to allow any further investigation into the structural position of x and ʔ, although any restriction on their appearance according to the type of the initial click might have led to the result that is suggested by comparison.

Or to put it personally, my experience of Žu/'hōasi lead me to know what I would like to find, but I do not know if without that experience I would have ventured the same suggestion as I do now.

And that is that these medial occurrences of x are structurally realisations of narrowing.

ǀǎ:xǐ: , 'bridge of nose and above', if it were to be treated as a Žu/hōasi morph, would give the following structure:

(5.108)    ǀ    Ø    N    ǀ  
           c    α    Ø    i  
           ~    χ

ǀh/hōasi nǀhào 'forhead voorkop, gesig' could give

(5.109)    ǀ    Ø    0    ǀ  
           c    α    Ø    o  
           ~    χ

and there are several other entries in Snyman 1975 which seem probably to derive from the same stem.

(5.110)    nǀháu 'frons'  
           ǀhó 'slape (van die kop)'  
           ǀxǎi 'neusbrug'  
           ǀxǎnú 'neuskanal'  
           nǀǎxǎrá 'velum' (non canonical skeleton)

Secondly, ǀǎ:xǎ, 'insipid', could be interpreted as displayed in (5.111). I find this item comparable to Žu/hōasi ǀǎbàsi, 'swakheid, kragteloosheid', in which the suffix si has contributed to the

(5.111)     ˘    ʔ    0    ˘  
               ɓ    ω    Ø    a  
               ˘    ɣ

inherent structure of the morph in Sandawe under the principle that all friction is the same and is related to narrowing. Compare also Žu/hõasi ||xùrì||xùrì, 'swakheid, kragteloosheid', where there is, inexplicably, no occurrence of glottality.

For these two of the nouns there are possible Žu/hõasi cognates, and one of the verbs also has a possible cognate. ɓúʔú 'to sprout, to flower', could be symbolised as:

(5.112)     ˘    ʔ  
               ɓ    ω  
               ˘    Ø

This is comparable to Žu: ||'òrà 'give birth, bear' and ||'òaná 'carry (two bundles on the two points of a carrying stick over the shoulders)'; these share:

(5.113)     ˘    ʔ  
               ɓ    ω    D    a  
               ˘    Ø

The possibility that these two roots are cognate allows a demonstration that in Žu/hõasi the voice onset/nasality choices have been neutralised with an initial underlying high tone; something which could only be suspected by considering the symmetry of the system in Žu/hõasi. Heikkinen 1986, who has some Western Žu/hõasi forms which have ʔn||- initial forms corresponding to n||- in the dialect Snyman studied, quotes this

root with n||-, but Bleek 1956 quotes Lloyd 1870-82 as giving ||nʔabba 'to carry a young child with its head in the left hand, its legs passing out under the left arm behind'

By noticing the occurrence of x and ʔ in Sandawe verbs and comparing this with the situation in Žu/hõasi, it was possible to find some potential cognates. Although the sample is small, it is possible to suggest that the cooccurrence of x with the initial click accompaniments X' and X̣ is not fortuitous. The next question is what happens when narrowing is associated with the other click accompaniments. The following potential cognates suggest that <sup>h</sup> in Sandawe as a click accompaniment may be the equivalent of χ, narrowing, in Žu/hõasi.

- (5.114) c'énà 'snore' Žu/hõasi: glxùnì 'snore'  
 ʔàṭá 'foot, leg' Žu/hõasi ||xàri 'run'

But of greater interest is the implication of the following three potential cognates:

- (5.115) c'úp'á 'ash' Žu/hõasi n'hõbà 'ash'  
 ʔùp'á 'blow' Žu/hõasi n'hũi 'breathe', n|ǒi 'snot, clear nose'  
 ʔǎ:t'à 'have diarrhoea' Žu/hõasi nʔ'hāò 'fall'

It seems possible that the preservation of a plosive at K<sub>2</sub> is associated with what I have called in Žu/hõasi narrowing and the possibility yet to be explored is that even instances of Ḳ as K<sub>2</sub> are the result of the interaction of plosive preservation and the consonant cooccurrence restriction which operate in the language. I have been unable to pursue this.

But I would like to return to one of the Sandawe words quoted

in (5.107).  $\text{ɔ̌:xà}$  'type of valley' translates into a display as follows.

(5.116)

	∅	0	`
c	ω	∅	a
-	χ		

I have omitted the first tonal specification.  $\text{ɔ̌â}$  'river' has the components in (5.117)

(5.117)

	´	∅	0	`
c	ω	∅	a	
-	∅			

In Sandawe there is a suffix  $\text{sí}$  'having'; it forms a nominal. I believe that  $\text{ɔ̌:xà}$  'type of valley', (I did not elicit what characteristics it has in fieldwork), is something which has a river. The suffix  $\text{sí}$  is of very frequent occurrence in Sandawe and has been found in placenames.

(5.118)  $\text{ts}^{\text{á}}\text{é:sê}$  'having salt water (Dar es Salaam)'  
 $\text{ɔ̌:m̄sê}$  'place just south of Kwa Mtoro'

$\text{ɔ̌:xà}$  is a type of valley because it is the place of the river. Just as the plural suffix  $\text{sí}$  in  $\text{Žu/hōasi}$  combine with the diminutive  $\text{mà}$  to give a form with narrowing, the progenitor of the Sandawe  $\text{sí}$  'having' suffix has entered the stem to which it is suffixed.

This gives a relationship between  $\text{K}^{\text{á}}$  and  $\text{K}^{\text{á}}:\text{K}^{\text{á}}$ .

At the present moment I have no interlanguage etymologies to support this identification, but there is one felicity which at last I am able to enjoy. The association of  $\text{ts}^{\text{á}}$  'water' with the first



morpheme of ts'ǎ:kù 'at home' which had seemed obvious to everybody, except myself, and even accepted by the speakers of Sandawe themselves (there is a text about this in ten Raa 1969b), now needs no convoluted explanation such as I tried to give in Elderkin 1983b, but is now safer because both forms have the same historical initial tone. The remainder of the pitch contours on these words is not yet clear to me. This also allows the two forms çâ 'moonlight' and çǎ:wôsô 'moon' also to be related to each other, and makes sense of a remark against ɰ'ia 'dikdik' in my records, which notes that Nd Augustine uses this word with the tone pattern ˘ ˘. The frequency of this tone pattern is attributable to its being, under circumstances yet to be fully worked out, relatable to ˘ ˘.

Although the cooccurrence of narrowing and ɰ seems to have been sometimes retained in Sandawe as ɰVʔ-, the loss of the distinction between ɰ' and ɰ, in Žu/hõasi in association with an underlyingly high tone, is as possible starting point for the situation out of which accidental nasality developed in Central Khoisan and East African click languages.

As far as can be observed from the published data available, and from my field notes on the language, Hadza shows no problem in analysis; the nasality is entirely predictable and is not capable of being associated with any phonological unit. Hadza had prenasalised pulmonic airstream consonants, both voiceless and voiced. The nasality of these cannot be associated with the previous syllable as a syllable final phenomenon, because prenasalised consonants only appear word initially:

- (5.119)      ʔkolo 'heart'  
               ᵐbugida 'wild dog'

although it must be admitted that both types of prenasalised plosive are loan phenomena and that the voiceless prenasalised plosives are rare and poorly integrated into the system (Elderkin 1978). It is not possible to establish a syllable final unit with a nasal as its realisation. Thus what other researchers write as han!ʼa or hanla, 'stone', can be written as haçʼa and the nasality left to be predicted, and considered a phonetic characteristic of syllables preceding Xʼ.

Dahalo shows only one click influx which has one of two accompaniments. Elderkin 1976 writes these as ɽ and m̥, but now I would use ɽʼ and ɽ̥. Both of these are found in initial position in a word. That work fails to appreciate the nature of accidental nasalisation such as is being treated here and all clicks between vowels were written as m̥. This is wrong. The stem ɽam̥- 'to lick', for example, is ɽaɽʼ- and mèmèṽè 'slowly' is mèɽʼèṽè, but I have not been able to spend time with an informant to check the other medial clicks to see if there are any instances of ɽ̥ between vowels. In this language syllable structure is KV(F) where F is either ɽ, or ɽ̥, which is a premature anticipation of the closure of the consonant initial in the following syllable, or n, a nasal consonant homorganic to the consonant initial in the following syllable. Is the nasal segment preceding a medial ɽʼ to be considered as an instance of n or is it, as in Hadza, better left entirely to the phonetic specification and not part of the phonology? It is possible that the actual phonetic realisation would answer this question but I have not been able to listen to it intensively. There are prenasalised segments in Dahalo, and there are sequences of n and plosive. The former have a voiced plosive release; n is never followed by a voiced plosive release, and the two phenomena are phonetically different. However, I would need to go back to the field and work with an informant to see if the accidental nasality before ɽʼ were an

identical to the realisation of *n*, comparable to the nasality in prenasalisation, or if it were something else. It can be automatically specified as a phonetic phenomenon, but if its realisation were identical to that of a component of syllable structure, the problem of its status would arise. Its presence, rather than its status is relevant here.

Beach 1938 and Ladefoged and Traill 1984 report the same phenomenon for Nama, where  $\chi^h$  also shows it. Here, unlike Hadza, there are syllable final nasal phenomena in the language, but none involving *ŋ*, so here again, it can be left to the phonetics to automatically specify this accidental nasality.

$\chi^h$  does not have preceding nasality in !Xóõ, the Southern Khoisan language which has the fullest phonetic description, (Ladefoged and Traill, 1984; Traill 1985a); the situation in Northern Khoisan as far as accidental nasality is concerned has not been retrieved from the published data.

Accidental nasality in Sandawe has been described in subsection E2 of Chapter II above. If a functional reason for the occurrence of this nasality is to be sought for Sandawe, it must be connected with the presence of a glottalised click, not with the presence of glottalisation alone, because this nasality does not occur before an ejective, nor with the presence of a click, because other click accompaniments are not preceded by this nasalisation. A possible explanation could be this. The glottis has to close in order for the glottalised accompaniment to take place. If this takes place before the production of the influx, the result would be perceived as

(5.120) [máʔ<sup>1</sup>ʔà]

where [ʔ<sup>1</sup>] indicates the closure of the glottal stop and [ʔ] after the

click symbol its release. This might possible be interpreted phonologically as

(5.121) máʔ.ɨ̀à

although, as has been stated above in Chapter II, a syllable initial glottal stop preceeding a voiceless vowel is audibly released. If so, it is important for the closing of the glottis to be delayed until the last possible moment. So the back of the tongue has to make a closure with the velum before the airflow is stopped by the glottal closure. Continued voicing thus would produce

(5.122) [máɹgɨ̀ʔà]

But this is not what happens as the period of prevoicing is accompanied by opening of the velic passage and thus a nasal sound is produced. There are at least two possible explanations of this opening of the velic passage. Firstly, it avoids a sound that might be interpreted as g, in the same way as [ʔ] might be interpreted as ʔ. As ŋ is not a syllable initial consonant in Sandawe, [ŋ] might be less susceptible of interpretation as a syllable initial consonant. Secondly, by letting air escape through the nose instead of building up pressure in a closed pharynx, it may eliminate some sort of audible release of this pressure perhaps at a point which would obstruct the glottalised nature of the accompaniment. Neither of these explanations are compelling because it is possible to produce Xʔ without any nasality as happens in !xóõ. If the velic passage were always open for Xʔ whether after silence or after a vowel, that is if the specification for the state of the velic passage which was queried in the chart in section B1 of Chapter II were 'open', then synchronically there would be no problem. But as it is perfectly

possible to produce  $V^?X^?V$ , as happens in !Xóõ, why do a large number of languages prefer the accidental nasality?

If the system historically underlying the present one in Sandawe were that which has been analysed for Žu/hõasi, then  $X^?$ ,  $X^?$  and  $X^?$  could have fallen together in Sandawe as  $X^?$ , as I have suggested that they did in Žu/hõasi in association with an underlyingly high tone, and in the process of this,  $X^?$  after a vowel retained the prevoiced characteristic of  $*X^?$  and  $*X^?$ , and the nasality of  $*X^?$ . This incorporation of nasality into the specification of  $X^?$  was not paralleled when the  $X^?$  units, the aspirated clicks, were produced from starred forms with narrowing, although in Nama, there is optional preceding accidental nasality before  $X^?$ , (Beach 1938, Ladefoged and Traill 1984).

But as  $X^?$  probably persists in Sandawe also in the guise of  $X^?V^?$ , either both processes cooccur or there is another factor which leads to the preferring of  $X^?V^?$ . The presence of this seemingly unmotivated nasality may then demonstrate that those languages which display it, share a common origin for those parts of their vocabulary with clicks.

Some of this is clearly speculation. I justify the practice of speculation in that there will be some cases in which such speculation is not susceptible of subsequent proof or disproof because the data has died with the languages. Enough data will be forthcoming on the Central Khoisan languages to assess the present speculation. The result of that assessment will be pertinent in estimating the probability of the validity of any speculation not capable of assessment against data.

In all of this section on Sandawe, have tried to suggest the similarity between the underlying systems in Sandawe and in Žu/hõasi by comparing the two systems. Although I have quoted some suggestive cognate sets, I have not been able to present a

copious and reasoned statement of regular correspondences, and I am specifically aware that there is no documentation of tonal correspondences. I found no evidence of tonogenesis in Žu/hōasi and none in Sandawe either. I take it that the question of the origin of the use of distinctive pitch in Sandawe as a fact of morpheme structure will lie in the depths of the history of the Khoisan languages. From a historical point of view, the minor peak of tonal distinctions the Khoisan languages showed in Wedekind 1985 is a mirage. It is only in the relationship of Nama to the remainder of Central Khoisan that a putative underlying three height tone system has been proposed (Winter 1981). If further data should show that this also could be related to a two tone system, all Khoisan would have such an underlying system. If that were so, the Khoisan languages are not so aberrant tonally after all; what is interesting is how the present surface forms came to be.

But one way in which the South African Khoisan languages do stand out typologically is that the unit over which phonological patterns can be seen is the morph and not, as in Sandawe, and as in possibly the majority of the world's languages, the syllable. KV in the South African Khoisan languages seems to have no status other than as mediated by the morph. The display of the 'underlying' syllable in Sandawe given in section B of Chapter IV is directly relatable to the morph. Consonant in Sandawe is  $K_1$  in the morph, labiovelarisation (either  $\emptyset$  or  $\omega$ ) is  $V_1$  (either  $\alpha$  or  $\omega$ ),  $V_1$  and  $V_2$  are relatable to the two morae in the Sandawe syllable. The compression of the morph into the syllable is not only due to the tendency to shorten morphs (which had also been noted in Kxoe), but also to be attributed to the massive foreign influence which Sandawe has undergone.

## D CLASSIFICATION

In this chapter I have tried to show that parallels in Central Khoisan languages indicate that the use of pitch in clauses and phrases in Sandawe is likely to have arisen between the time of proto Eastern Khoisan and the present day. The Nama-Kxoe-Sandawe link is strong in clause structure and group structure and in the phonetic shape of grammatical morphemes, especially the pgn markers. For the lexical use of pitch, until there is a larger tonemarked lexical data base available for Central Khoisan, I would not want to attempt to reconstruct proto Central Khoisan or proto Eastern Khoisan. There is however a good tonemarked dictionary for Northern Khoisan available and in analysing this it was possible to suggest a relationship between some items in Sandawe and Žu/hōasi. Lexical tone is a part of the inheritance from Common Khoisan.

The evidence for Eastern Khoisan is a typological similarity at phonetic, lexical, morphological and syntactic levels, and the similarity of the form of some grammatical morphemes. The acceptance of Eastern Khoisan leads to a weakening of Greenberg's demonstration that a gender based system of nominal classification is a pan Khoisan phenomenon. Westphal had rejected the Sandawe-Hottentot 'larger unit' for reasons which were related to his extremely atomistic view of classification. But Greenberg 1963 was the opposite of atomistic, and yet he also rejected a strong link between Sandawe and Central Khoisan. In rejecting the nonlinguistic and insulting parts of the Hamitic hypothesis, he overemphasised the coherence of the South African Khoisan languages. For example, he quotes the similarity of tense markers

in Central, North and South Khoisan; Sandawe has none. It was an advantage for his argument for gender not to be criterial. As his classification stands, all his three major branches of Khoisan (Hadza, Sandawe and South African Khoisan) have gender; therefore it was a common heritage: North and South Khoisan lost it. It seems that Hadza is unlikely to be Khoisan (Elderkin 1982) and that Sandawe is more likely to be grouped with Central Khoisan. Gender would then be a characteristic of only one of three coordinate branches of Khoisan. Further, the conclusions of Haacke 1977 and of Section B2 of this chapter set the scene for the creation of "gender". The evidence from Sandawe shows that while *s* in *-sà* (3fSg) and *-su* (3fSg) is a specifically feminine marker, labiality in *-m̀*, and *-ẁ*, (3mSg) and *-su* (3fSg) is a third person marker and not a specifically masculine marker. Ehret 1986 believes that "There has been a tendency toward acceptance of the Sandawe connection, at least with respect to the Central Khoisan subgroup, but for the wrong kind of reason, one suspects: the presence of sex gender marking, the much better publication of Sandawe and Khoikhoi evidence, and the like." (p105). It seems now that the only reason for not accepting this connection is the absence of a worked through comparison of lexical morphemes with evidence of common innovations. This is in contrast to the situation for Hadza where the only evidence for a Khoisan attribution are those lexical similarities which have been noted. It is as well to quote the comments of one scholar of Australian languages "...little should be inferred about the subgrouping of languages in Australia from vocabulary comparisons. Vocabulary is of course important but it is only one factor, to be considered in conjunction with grammatical and phonological comparison. ... It is hard to distinguish genetic-based from borrowed correspondences; but there is no evidence that basic items are less liable to be



borrowed than non-basic terms in Australian languages.” (Dixon 1980 p254). For Khoisan languages should we assume the premises of lexicostatistics, or the findings of Australian comparativists? Or should we assume nothing and see what our situation is?

## ENVOI

Khoisan languages present difficulties for some theories of phonology, but they do not represent a fundamentally different type of language structure. The challenge lies in the formulation of a concept of phonology which will accommodate their richness.

Two factors seem to have contributed to their complexity. One is the adoption of a unit of patterning larger than what is generally thought of as a syllable. This does not hinder the realisation of one phonological component at different places and in different ways. The second is the nature of the click itself, which leaves the velum, the pharynx, the glottis, and, (unless [ǀ] is being produced), the lips to operate simultaneously, and to take on the function of the realisation of phonological components which perhaps have their historical source farther to the right. Narrowing and glottality appear to be just two such components.

Sandawe is phonologically one of the less complex of the Khoisan languages. Ten Raa 1987 quotes Prof A N Tucker as saying "Sandawe phonetics is hell." If that defines hell, many of us would not worry too much about leading a moral life.

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### Abbreviations

- AAP* Afrikanistische Arbeitspapiere  
*ALC* African Languages and Cultures  
*BA* Bibliotheca Africana  
*BHLS* Bushman and Hottentot Linguistic Studies  
This forms a series together with *KLS* :  
*BHLS* I (ed. A Traill) 1975 being A S I Communication Number 2, African Studies Institute, University of the Witwatersrand Johannesburg (reprinted 1978 where the date of first publication is given (incorrectly) as 1974)  
*BHLS* II (ed. J W Snyman) 1977 being *Miscellanea Congregalia* 2, University of South Africa, Muckleneukrant, Pretoria  
*KLS* III (ed. A Traill) 1977 being A S I Communication Number 6, African Studies Institute, University of the Witwatersrand Johannesburg  
*BHLS* IV (ed. J W Snyman) 1979 being *Miscellanea Congregalia* 8, University of South Africa, Muckleneukrant, Pretoria  
*KLS* V (ed. A Traill) 1979 Department of Linguistics, University of the Witwatersrand Johannesburg  
*BHLS* VI (ed. J W Snyman) 1980 being *Miscellanea Congregalia* 16, University of South Africa, Muckleneukrant, Pretoria  
*BNR* Botswana Notes and Records  
*BSOAS* Bulletin of the School of Oriental and African Studies  
*JAL* Journal of African Languages

*KLS* Khoisan Linguistic Studies See BHLS above  
*KSIG* Khoisan Special Interest Group  
*MSOS* Mitteilungen des Seminars für Orientalische Sprachen  
*SAL* Studies in African Linguistics  
*SATA* Suid-Afrikaanse Tydskrif vir Afrikatale / South African  
 Journal of African Languages  
*SUGIA* Sprache und Geschichte in Afrika  
*QFK* Quellen für Khoisan-Forschung  
*TNR* Tanganyika Notes and Records later: Tanzania Notes and  
 Records  
*ZfürP* Zeitschrift für Phonetik

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