THE CONSONANTS OF KITHARAKA

by

KITHAKA WA MBERIA

JUNE, 1981

A dissertation submitted
in partial fulfilment
for the degree of Master of Arts
in General Linguistics
in the University of Nairobi
This dissertation is my original work and has not been submitted in any university.

KITHAKA WA MBERIA

This dissertation has been written under our supervision.

MRS. LYNETTE NYAGGAH

DR. KAREGA MUTAHI
ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to all those who in one way or the other assisted me in the course of writing this dissertation. To them all I give my heart-felt thanks.

I would specifically like to thank my supervisors Mrs. Lynette Nyaggah and Dr. Karega Mutahi who unselfishly provided me with an invaluable source of guidance, advice, and of course criticism. I also benefited from suggestions and criticism from the members of the academic staff in the Department of Linguistics and African Languages who attended student seminars in which my work was discussed. I thank them all for their assistance.

The spirit of friendship and co-operation which was characteristic of my classmates for all the time that we were together provided a good atmosphere conducive for the writing of this dissertation. For this reason, I owe them many thanks.

A number of friends in the university constantly wished me success and were a source of inspiration and strength. I genuinely appreciate their encouragement and best-wishes.
Finally, but not last, I thank Mrs. Joyce Muthama who did not merely type this dissertation but actually typed it so well.
This study tries to analyze and describe one aspect of the grammar of Kitharaka, an aspect that may appropriately be called 'consonantal phonology'. The study is carried out within the theoretical framework of Natural Generative Phonology.

The study begins with a chapter on the introduction to the language and its speakers. The actual analysis begins in Chapter Two. In this chapter we try to determine the underlying consonants in Kitharaka. The consonants are classified into five sets: voiceless stops, prenasalized voiced stops, voiced fricatives, liquid, and glides. Chapter Three discusses the role of markedness in determining the (underlying) consonant inventory of Kitharaka. A question is raised as to whether, in the case of Kitharaka consonant inventory, considerations of 'symmetry' do not override those of 'markedness'. Chapter Four deals with consonant processes under the subheadings of: homorganic nasal assimilation, continuant strengthening, /k/ dissimilation (a form of Dahl's Law), identical consonant deletion, and /t/ deletion. Chapter Five discusses stem reanalysis in some verbs and derivational nouns formed from
such verbs. It is argued that stem reanalysis resulted in prefix replacement and that the new prefix was extended to borrowed words by analogy.

Chapter Six, which is the conclusion to the study, includes: summary of the findings, remarks on areas that require further investigation; and, the practical significance of the study.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgements</td>
<td>iii</td>
</tr>
<tr>
<td>Abstract</td>
<td>v</td>
</tr>
<tr>
<td>Symbols Used in the Study</td>
<td>ix</td>
</tr>
<tr>
<td><strong>1.0</strong> Introduction</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Background Information</td>
<td>1</td>
</tr>
<tr>
<td>1.2 The Scope of the Study</td>
<td>5</td>
</tr>
<tr>
<td>1.3 The Objectives of the Study</td>
<td>6</td>
</tr>
<tr>
<td>1.4 Methodology</td>
<td>8</td>
</tr>
<tr>
<td>1.5 Theoretical Framework</td>
<td>12</td>
</tr>
<tr>
<td>1.6 Significance of the Study</td>
<td>17</td>
</tr>
<tr>
<td>Footnotes</td>
<td>18</td>
</tr>
<tr>
<td><strong>2.0</strong> The Underlying Segments</td>
<td>20</td>
</tr>
<tr>
<td>2.1 The Voiced Fricatives</td>
<td>20</td>
</tr>
<tr>
<td>2.2 The Voiceless Stops</td>
<td>22</td>
</tr>
<tr>
<td>2.3 The Prenasalized Voiced Stops</td>
<td>23</td>
</tr>
<tr>
<td>2.4 The Nasals</td>
<td>25</td>
</tr>
<tr>
<td>2.5 The Liquid</td>
<td>26</td>
</tr>
<tr>
<td>2.6 The Glides</td>
<td>27</td>
</tr>
<tr>
<td>2.7 Further Justification for the Consonant Inventory</td>
<td></td>
</tr>
<tr>
<td>2.8 The Consonants in Distinctive Features</td>
<td>36</td>
</tr>
<tr>
<td>Footnotes</td>
<td>40</td>
</tr>
<tr>
<td><strong>3.0</strong> The Consonant Inventory and the Theory of Markedness</td>
<td>42</td>
</tr>
<tr>
<td>Footnote</td>
<td>45</td>
</tr>
<tr>
<td>SYMBOL</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>p</td>
<td>voiceless bilabial stop</td>
</tr>
<tr>
<td>t</td>
<td>voiceless alveolar stop</td>
</tr>
<tr>
<td>c</td>
<td>voiceless palatal stop</td>
</tr>
<tr>
<td>k</td>
<td>voiceless velar stop</td>
</tr>
<tr>
<td>b</td>
<td>voiced bilabial stop</td>
</tr>
<tr>
<td>d</td>
<td>voiced alveolar stop</td>
</tr>
<tr>
<td>j</td>
<td>voiced palatal stop</td>
</tr>
<tr>
<td>g</td>
<td>voiced velar stop</td>
</tr>
<tr>
<td>mb</td>
<td>prenasalized voiced bilabial stop</td>
</tr>
<tr>
<td>nd</td>
<td>prenasalized voiced alveolar stop</td>
</tr>
<tr>
<td>nj</td>
<td>prenasalized voiced palatal stop</td>
</tr>
<tr>
<td>ts</td>
<td>voiceless Palatal affricate</td>
</tr>
<tr>
<td>dz</td>
<td>voiced Palatal affricate</td>
</tr>
<tr>
<td>β</td>
<td>voiced bilabial fricative</td>
</tr>
<tr>
<td>s</td>
<td>voiced inter-dental fricative</td>
</tr>
<tr>
<td>r</td>
<td>non-lateral alveolar liquid</td>
</tr>
<tr>
<td>j</td>
<td>voiced palatal fricative</td>
</tr>
<tr>
<td>r</td>
<td>voiced velar fricative</td>
</tr>
<tr>
<td>m</td>
<td>bilabial nasal</td>
</tr>
<tr>
<td>n</td>
<td>alveolar nasal</td>
</tr>
<tr>
<td>ɾ</td>
<td>palatal nasal</td>
</tr>
<tr>
<td>ɳ</td>
<td>velar nasal</td>
</tr>
<tr>
<td>m</td>
<td>voiceless bilabial nasal</td>
</tr>
<tr>
<td>n</td>
<td>voiceless alveolar nasal</td>
</tr>
<tr>
<td>SYMBOL</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>p</td>
<td>voiceless palatal nasal</td>
</tr>
<tr>
<td>η</td>
<td>voiceless velar nasal</td>
</tr>
<tr>
<td>y</td>
<td>palatal glide</td>
</tr>
<tr>
<td>w</td>
<td>velar glide</td>
</tr>
<tr>
<td>i</td>
<td>high front vowel</td>
</tr>
<tr>
<td>e</td>
<td>tense, mid front vowel</td>
</tr>
<tr>
<td>ë</td>
<td>non-tense, mid front vowel</td>
</tr>
<tr>
<td>a</td>
<td>low vowel</td>
</tr>
<tr>
<td>ñ</td>
<td>non-tense, mid back vowel</td>
</tr>
<tr>
<td>o</td>
<td>tense, mid back vowel</td>
</tr>
<tr>
<td>u</td>
<td>high back vowel</td>
</tr>
</tbody>
</table>
1.0 INTRODUCTION

1.1 BACKGROUND INFORMATION.

The majority of the speakers of Kitharaka live in the Meru District while others live in Kitui District. Tharaka Division which is wholly inhabited by Atharaka is in the south-east of Meru District. Not all the Atharaka of Meru live within Tharaka Division; they also occupy two sub-locations outside the division. These are Kajuki and Mutino sub-locations of Nithi and Mwimbi divisions respectively.

The Atharaka are both agriculturalists and pastoralists. They keep cattle, goats and sheep. Three settlement schemes: Nkondi, Tunyai and Irereni are the key farming areas where food-crops such as millet, maize, green-grams and peas are grown. The major cash-crop is cotton. Outside the three settlement schemes one finds subsistence farming and selling of cattle and goats is the main source of income.

Like several other areas of Eastern Province the area inhabited by Atharaka is sparsely populated. The following table shows how Atharaka are distributed over the area they occupy (see pp.2). According to these figures the density of population for the area under consideration is approximately 28 people per square kilometre. The density of population inside
<table>
<thead>
<tr>
<th>PLACE</th>
<th>AREA (SQ. KM.)</th>
<th>POPULATION</th>
<th>DENSITY/SQ. KM.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH THARAKA</td>
<td>800</td>
<td>17,105</td>
<td>21</td>
</tr>
<tr>
<td>SOUTH THARAKA</td>
<td>700</td>
<td>33,413</td>
<td>48</td>
</tr>
<tr>
<td>KAJUKI &amp; MUTINO</td>
<td>300</td>
<td>7,413</td>
<td>25</td>
</tr>
<tr>
<td>THAGICU</td>
<td>391</td>
<td>6,069</td>
<td>16</td>
</tr>
</tbody>
</table>

POPULATION DISTRIBUTION OF ATHARAKA

Tharaka Division is, however, higher than this with about 30 people per square kilometre. The three settlement schemes mentioned above are the most densely populated areas in the division. The population of the division in 1969 was 37,031 people. The figure had risen to 50,518 people in 1979. The difference between the figures for the two population census-takings shows that over the ten years period there was an annual population growth rate of about 3.6%

Following on the foot-steps of the colonial administrators Kitharaka has been considered by some people as a variety of Kimeru. The language is however distinct from Kimeru despite their structural and lexical similarity. The two could be referred to as
dialects of the same language - whose name we would have to invent - if one uses only the vague criterion of 'mutual intelligibility'. We are not willing to use this criterion because we feel it is inadequate. How intelligible, for example, should two speech-systems be for one to conclude that they are 'mutually intelligible'? Nobody calls Kikuyu and Kikamba dialects of the same language although they are probably more 'mutually intelligible' than the Kingwana and Kiamu dialects of Kiswahili. Such cases demonstrate how inadequate the criterion is in deciding on the status of speech-systems.

Another criterion of deciding whether a speech-system is to be called a language or a dialect is the one based on political considerations. For example, the various related languages spoken in China are labelled 'dialects of Chinese' for political strategy and nationalistic reasons. The political criterion has also been used in the case of Dutch and German. Although they are 'mutually intelligible' they are called by different names and considered different languages because, we think, they lie on different sides of a political border. This criterion is not applicable to the case of Kitharaka and Kimeru.

We propose a third criterion that incorporates the notion of 'mutual intelligibility', political considerations, as well as the opinion of the people regarding the status of their speech-system. Inherent
in our criterion is the vagueness of 'mutual intelligibility' but we feel that, this notion, together with political considerations and people's opinion, gives the criterion enough credibility to be maintained. It seems to us that it is this criterion that has been implicitly alluded to in categorizing Kikuyu, Kikamba, Kimeru and Kiembu as different languages. If only the notion of 'mutual intelligibility' is considered it would probably be implausible not to regard all the four as dialects of the same language. We shall use the criterion we have proposed above to argue that Kitharaka is not a dialect of Kimeru but a language distinct from it.

Neither Atharaka nor Ameru consider Kitharaka and Kimeru to be the same language. Their observation in this regard and the fact that the two peoples do not have a very recent shared history makes us consider the two speech-systems as different languages although they are 'mutually intelligible'. Fadiman (1936) describes the history of the Ameru from the coast to their present home in Meru District. Atharaka are not part of the group he describes. He writes:

Before the colonial era, the name 'Meru' referred only to five of the present nine sections: the Igembe, Tigania, Imati, Miutini and Igoji. British administrators, however chose to include the Tharaka who
live on the adjoining eastern plains and later the Mwimbi, Muthambi and Chuka who border the Meru to the south.

Guthrie noticed the distinction between Kitharaka and Kimeru and classified them under different code numbers. Under his Kikuyu-Kamba group he has the following classification:

- E50 Kikuyu-Kamba Group
- E51 Gekoyo (Kikuyu) (K.)
- E52 Embu (K.)
- E53 Mero (K.)
- E54 Saraka (K.) [Kitharaka]
- E55 Kamba (K.)
- E56 Daiso (Sengeju) (T.T.)

We feel that there is enough support for the view that Kitharaka is distinct from Kimeru. We shall hold this view in this study.

1.2 THE SCOPE OF THE STUDY

In this study we intend to deal with only one aspect of the grammar of Kitharaka, an aspect which may be appropriately called 'consonantal phonology'. We should point out, however, that no aspect of a grammar is wholly independent of other aspects of that grammar. In our case, for example, it is possible that the behaviour of a consonant in some phonological process can only be adequately explained by taking into account the influence
of the adjacent vowel, grammatical boundary, grammatical category of the morpheme in which the consonant occurs, or even the presence of tone on the preceding or the following vowel. It is for this reason that, although our concern is to study consonants, we may occasionally mention other aspects of Kitharaka grammar.

1.3 THE OBJECTIVES OF THE STUDY

In this study we hope to establish the underlying consonantal segments. In the two studies known to us that have been done on Kitharaka, namely Lindblom (1914) and Mberia (1979) a trial was made to determine the segments of the language. We are, however, of the opinion that the two studies failed to achieve the goal. Lindblom's consonant system consists of surface segments some of which do not exist in the language at all. For instance, he claims that the language has the voiceless dental fricative ț. As far as we are aware, the language does not have this sound. Lindblom's work is also inadequate in another respect. He analysed the prenasalized voiced stops of the language as nasal-obstruent clusters. It is one of our objectives to rectify the foregoing shortcomings in the analysis of the language.

I now do not agree with the underlying consonant system that I advocated in Mberia (1979). I claimed, for example, that the language has an underlying
affricate /ts/ which is phonetically realized \(\text{dz}\) after a nasal and as [ts] elsewhere. I am now of the opinion that the language does not have any affricate and that what was mistaken for a /ts/ is the voiceless palatal stop /c/. I also analysed the prenasalized voiced stops as nasal-obstruent clusters. In our present study we hope to correct these errors.

Another objective of this study is to explore the role of 'markedness' in the 'consonantal phonology' of Kitharaka. We shall try to find out whether the claims made by the generative proponents of the 'theory of markedness' are supported or refuted by empirical evidence from Kitharaka. It has been claimed, for example, that a sound inventory (of a language) which has marked segments should also have the less marked segments; (see Chomsky and Halle 1968, Hyman 1975). We shall investigate whether the claim is supported by Kitharaka consonant inventory.

We shall try to find out the various phonological processes involving the consonants of Kitharaka. We shall do this by comparing segments in the underlying representation with those of the phonetic representation. The various rules that govern phonological processes linking the two representations will be discussed.

Preliminary investigation tend to show that there has been stem reanalysis in some verbs. Such verbs also
give an impression that stem reanalysis resulted in prefix replacement. We shall investigate these two issues in an effort to determine: whether stem reanalysis has actually taken place; and, the true nature of prefix replacement if indeed the phenomenon exists in the language.

1.4 METHODOLOGY

I will consult with other speakers of Kitharaka in compiling the data for the study. I will do this especially for the unclear and marginal cases of the data where my intuitions may differ from that of other speakers. Although I am a native speaker of Kitharaka this counter-checking of some of the data is necessary because one is never a very good informant to himself.

No devices such as tape-recorders, language laboratory equipment or computer will be used in the analysis of the data.

1.5 LITERATURE REVIEW

Nothing much has been done on Kitharaka. The only studies on the language that we are aware of are: Lindblom (1914): "Outline of A Tharaka Grammar" and Mberia (1979): "The Morphology of Kitharaka Nominal Word". Lindblom's article tries to cover Kitharaka as a whole (with the exception of supra-segmental phonology). It is not surprising, therefore, that the article is too sketchy. He handles Phonology in only four pages. Of
these four two and a half pages are devoted to the description of the consonants. Some of his claims are clearly incorrect. In section (1.3) above we cited the case for the fricative 9 which Lindblom posits for the language but which is actually not a sound of Kitharaka. Lindblom does not even say whether his set of consonants represents the underlying or phonetic segments. Owing to the large number of his consonants, we feel he was dealing with the phonetic representation. His consonant system does not, however, correspond to the segments that are actually found in the phonetic representation of Kitharaka.

In my work entitled 'The Morphology of Kitharaka Nominal Word' I dealt with only a small area of the language. I studied morphology within the narrow scope of the nouns. I discussed, among other things, phonological processes and the morphophonemic alternations that result from those processes. I formulated rules to formally represent the changes. The work is lacking in details. I did not, for instance, discuss the naturalness of the various rules that I formulated. I excluded all factors other than phonetic conditioning from rule environments. This omission of non-phonetic motivation in rules is a deficiency in the work in that many phonological phenomena cannot be adequately accounted for in purely phonetic terms.
Studies have been done on languages (genetically) related to Kitharaka, specifically Kikuyu and Kikamba. Among these studies the most relevant for our purposes are: Mutahi (1977): The Dialects of Southern Mt. Kenya; and Maundu (1980): Reconstruction of Kikamba Sounds. Mutahi's and Maundu's studies are unpublished doctoral thesis and M.A. dissertation respectively. Maundu discusses the role of analogy in relation to the presence of /l/ in Kikamba phonology. He argues that some of the present day l's in Kikamba have been 'mistakenly' introduced in positions where other segments had been deleted historically. Since l is the segment that is most prone to deletion in Kikamba (and indeed in other Bantu languages) speakers of Kikamba felt that all positions where a sound had been lost was previously occupied by /l/. They introduced /l/ in all such positions. It is true that some of those 'vacant' positions had previously been occupied by /l/. Of importance here, however, is the fact that not only was /l/ reintroduced where it had been deleted historically but that it was also extended by analogy to other 'vacant' positions. Maundu's treatment of /l/ is of interest to us from a theoretical point of view. As we will show below, there is a phenomenon in Kitharaka that seems to require analysis in terms of the notion of analogy.
In Kitharaka there are alternations such as:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infinitive^5</td>
<td>1st Person</td>
<td></td>
</tr>
<tr>
<td></td>
<td>singular</td>
<td></td>
</tr>
<tr>
<td></td>
<td>subjunctive</td>
<td></td>
</tr>
<tr>
<td>koîna</td>
<td>mbînte</td>
<td>'sing'</td>
</tr>
<tr>
<td>koînda</td>
<td>mbêndête</td>
<td>'love/like'</td>
</tr>
<tr>
<td>koînga</td>
<td>mbingête</td>
<td>'close'</td>
</tr>
<tr>
<td>koîta</td>
<td>mbêtêt</td>
<td>'call'</td>
</tr>
<tr>
<td>koîna</td>
<td>mbontê</td>
<td>'see'</td>
</tr>
</tbody>
</table>

In column A all verb stems begin with a vowel. All forms in column B have a voiced bilabial stop in the stem-initial position. Some languages (genetically) related to Kitharaka have infinitives such as /koîna/ and /koînga/. Such forms are found in Kichuka. Such forms suggest that probably Kitharaka had voiced bilabial fricatives in at least some of the forms of column A. The [b] of the corresponding forms in column B can be accounted for in terms of a continuant strengthening rule that hardens /β/ to a [b] after a nasal consonant. If Kitharaka had forms such as /koîna/ and /koînga/ correspondences of lexical items such as those shown below existed in the language:

<table>
<thead>
<tr>
<th>A_1</th>
<th>B_1</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infinitive</td>
<td>1st pers. sg.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>subjunctive</td>
<td></td>
</tr>
<tr>
<td>koîna</td>
<td>mbînte</td>
<td>'sing'</td>
</tr>
<tr>
<td>koînga</td>
<td>mbingête</td>
<td>'close'</td>
</tr>
</tbody>
</table>
The β's of column A were then deleted probably because they were in an intervocalic position whereas the bilabials in column B were retained. Supposing that this account of bilabial obstruents is correct, does it explain the origin of [b] in all forms given in column B? Was there any time in the history of Kitharaka when there was a form /ko eta/, for example? If not, how does one account for the presence of [b] in mbet? To resolve this issue we may have to resort to the notion of analogical extension.

We find Mutahi's discussion of the status of the Kikuyu glides of interest for the purposes of our study. His arguments in this respect give us a clue on the glides of central Kenya Bantu languages. Put differently, his analysis gives us a good starting point for the analysis of the glides in Kitharaka. This is especially true from a theoretical point of view.

1.6 THEORETICAL FRAMEWORK

Our discussion on the 'consonants of Kitharaka' will be within the framework of Natural Generative Phonology (NGP). NGP is a model of Phonological description that is more constrained than Transformational Generative Phonology. It takes as its area of study the interaction between phonology and morphology. In the words of one of its most
distinguished proponents, Joan Hooper, NGP is a 'theory of morphophonology'. For the purposes of this study, the basic principles of NGP are given below:

All the underlying forms must have some surface manifestation. Lack of any surface instance of a supposedly underlying form implies that the form is unjustifiable and hence cannot be maintained; in other words, it is not an underlying form at all. The rules advocated by NGP are less abstract than those allowed in Transformational Generative Phonology. According to the True Generalization Condition the rules of Phonology that native speakers formulate relate surface forms to other surface forms. Consequently, such rules cannot be abstract.

The theory recognizes different rule categories. They are: those rules that are phonetically conditioned (P-rules); morphophonemic rules (Mp-rules); morphological spell-out and word formation rules; and via rules. P-rules are specifiable in purely phonetic terms, that is, they make use of phonological features that have intrinsic phonetic content. They take into account phonological boundaries, namely the syllable boundary and the pause. Syllabification rules, that is, rules that assign syllable boundaries to a string of morphemes, are
P-rules are natural and unsuppressable. Put differently, they apply whenever their structural description is met. Consequently, they have no exceptions. They describe processes governed by the physical properties of the vocal tract. It is worthwhile pointing out, however, that emerging P-rules may apply invariably whereby non-phonetic factors block their application in some cases.

The second category of the rules of phonology is that of morphophonemic rules (MP-rules). Unlike P-rules whose environments are described in phonetic terms, the environments of MP-rules are described in morphosyntactic or lexical terms. In other words, MP-rules make reference to morphological or syntactic information such as morpheme boundaries, morpheme classes and lexical groups. These rules take part in the sound-meaning correspondence of an individual language; they are, therefore, language specific. It is not surprising that MP-rules cannot be universal since there is nothing universal about morpheme boundaries or lexical classes. These rules have the characteristic of being quite arbitrary from a phonological point of view. Unlike P-rules they are likely to have exceptions.

Another set of rules within the phonological
component of grammar consists of sandhi rules. These rules resemble MP-rules in that they take word-boundary into account. Word-boundaries are not determined in phonetic terms. They are determined quite arbitrary by the syntax and semantics of a language. On the other hand, sandhi rules resemble P-rules in that a word-boundary has the potential to coincide with either a syllable boundary or a pause. When a word-boundary coincides with a phonological boundary - that is a syllable boundary or a pause - sandhi rules behave like P-rules. Thus, like P-rules, sandhi rules may be regular, productive and unsuppressable.

Via rules express phonological relationship between two (or more) forms in a situation whereby none of the forms can be justifiably said to be derived from the other synchronically. For instance, although there is definitely a phonological relationship between the English words 'drink' and 'drench' it would be unjustifiable to claim that 'drench' is derived from 'drink', or the vice versa, through a synchronic phonological rule. Such a relationship as exists between these two forms is expressed through a via rule.

The last category of the rules of phonology consists of morphological spell-out rules. These rules give phonological shape or phonological
realization to abstract morphemes. Closely related to these rules are the word-formation rules that specify the order and the type of morphological elements that can constitute a word.

In addition to the True Generalization Condition NGP has the No-Ordering Condition. According to this condition rules should not be extrinsically ordered. Instead, they should apply whenever their structural descriptions are satisfied. This requirement - that rules should only be intrinsically ordered - eliminates the kind of abstractness that results from extrinsic ordering of rules.

We would like to point out that the model of our discussion is Natural Generative Phonology as formulated by Hooper in her Ph.D. dissertation (1973) and published in 1976 under the title Introduction to Natural Generative Phonology. In an article entitled "The Archi-Segment in Natural Generative Phonology" Hooper proposed an extended version of Natural Generative Phonology which allows archi-segments in the underlying representation. In the original formulation of Natural Generative Phonology, which is the theoretical-framework of our study, archi-segments are disallowed in the underlying representation.
1.7 SIGNIFICANCE OF THE STUDY

We hope our study will be significant in two respects. First, the findings of the study will be a contribution to Bantu Phonology. The more languages we study within a given language family the more knowledge we gather concerning the language family. Such knowledge may then act as a starting point for the analysis of the unstudied or less studied languages within the particular language family.

The second significance of our study has to do with the practical application of the findings. Kitharaka has not been coded mainly because it has been regarded as one of the dialects of Kimeru. Presently the speakers of Kitharaka use books written in the 'standard dialect' of Kimeru. It was argued in section (1.1) that Kitharaka is distinct from Kimeru. For this reason there is a need for the standardization and coding of the language. Our study could be used as a basis for the orthography. Such an orthography and subsequent writing of reading materials will go a long way in making adult education a success in Tharaka as well as lessening the burden on lower primary school pupils who are taught not only how to read and write but actually a second language in the name of 'standard dialect' of Kimeru.
FOOTNOTES

1. 'Atharaka' is the name for the native speakers of Kitharaka. a- and ki- are the prefixes for the people (class 2) and the language (class 7) respectively.

2. The native speakers of Kimeru call themselves 'Ameru' and not 'Meru' as one so often finds in books.

3. The article is found in Journal of African History; XIV, 1(1973) pp. 9-27.

4. The square brackets do not imply a phonetic transcription. We have used them to indicate that by '§araka' Guthrie was referring to Kitharaka.

5. /ko/ is the infinitive marker. 1st pers. sing. is normally marked by /n/ which assimilates to the point of articulation of the following consonant.

6. Since Kitharaka and Kikuyu are (genetically) related one would expect them to have at least some similarities in their phonologies and indeed in other components of grammar.

7. A good example of a P-rule is the palatalization rule found in many languages including Luganda. It is generally of the nature:

\[ C [\text{back}] \rightarrow \ [\text{back}] / - [\text{-back}] \]

8. Syllabification rules assign syllable boundaries to a string of morphemes after a phonological process has interfered with the original syllable boundaries. For example, Kiswahili:

/ku$sanda$ka/ 'to write'

glide formation:

kw$anda$ka

syllabification:

kw$anda$ka.
An example of a MP-rule is the one that voices the English /s/ after a voiced consonant when it functions as the plural or the possessive marker. Put in a different language, English voices /s/ when the segment follows a voiced segment with a morpheme boundary separating the two segments. The rule may be formulated as follows:

\[
C \\
\left[ +\text{ant} \right] \\
\left[ +\text{cor} \right] \\
\left[ -\text{voice} \right] \\
\rightarrow \left[ +\text{voice} \right] / \left[ +\text{voice} \right] + \\
\]

10. Morphological spell-out rules are of the following form:

**Kiswahili:**

(i) INFINITIVE \(\rightarrow\) /KU/

(ii) SUBJUNCTIVE MOOD \(\rightarrow\) /ɛ/

(iii) FUTURE TENSE \(\rightarrow\) /كا/.
2.0 **THE UNDERLYING SEGMENTS.**

In this and subsequent chapters the term 'consonant' is to be understood to refer not only to obstruents, nasals and liquids but also glides. It is necessary to define the term for the purposes of this study because whereas it is quite common for linguists to sub-divide sounds into two major classes - consonants and vowels - it is possible for one to restrict the term 'consonant' to only those sounds that are specified as [t:consonantal]. Since one of the sound categories to be covered in this study - namely glides - is specified as [l: consonantal], definition of 'consonants' is necessary to avoid a possible confusion.

This chapter tries to determine the underlying consonants of Kitharaka. It will form a basis for the subsequent sections of the study in that all the other sections will make reference to the underlying consonants. For instance, in Chapter Four in which we discuss phonological processes, phonological rules will be said to relate the underlying representation (that is, underlying segments) to the surface representation.

2.1 **THE VOICED FRICATIVES**

Kitharaka has three sets of obstruents: voiced fricatives, voiceless stops, and prenasalized voiced stops. In this section we discuss the
first of the three sets. The voiceless stops and
the prenasalized voiced stops will be discussed in
sections (2.2) and (2.3).

The set of voiced fricatives consists of
bilabial, dental, palatal and velar segments, that
is $\beta$, $j$, $j$ and $\gamma$ respectively. These four are the
only obstruent continuants in the language. With
exception of $j$ each of the four segments has two
realizations at the phonetic level. Since phonetic
realizations are discussed in details in Chapter
Four which deals with phonological processes we
need not cite examples here.

Porting the four fricatives as underlying is
justified in that they occur in morphemes in which
they cannot be said to be derived from other
segments. Put differently, the four fricatives are
underlying because they are found in underlying
morphemes as the following examples illustrate:

1. $/\beta\alpha\nu/$ - $[\beta\alpha\nu]$ 'father'
   $/\beta\alpha:\tau\alpha/$ - $[\beta\alpha:\tau\alpha]$ 'thirst'
   $/\rho\delta:\tau\alpha/$ - $[\rho\delta:\tau\alpha]$ 'jaw'
   $/\kappa\alpha\kappa\eta/ - [\kappa\alpha\kappa\eta]$ 'that I laugh'
   $/\kappa\alpha\kappa\eta/ - [\kappa\alpha\kappa\eta]$ 'small hand/arm'
   $/\kappa\alpha\kappa\eta/ - [\kappa\alpha\kappa\eta]$ 'take!'
   $/\kappa\alpha\kappa\eta/ - [\kappa\alpha\kappa\eta]$ 'ear'
   $/\kappa\alpha\kappa\eta/ - [\kappa\alpha\kappa\eta]$ 'acacia tree'
Kitharaka has bilabial, alveolar, palatal and velar voiceless stops, that is, /p,t,c,k/. None of these four has more than one realization at the phonetic level. To use a traditional term, each of the four stops has only one allophone, specifically \([p,t,c,k]\) respectively. The set under discussion is unique in that all the other consonants of the language are voiced.

Like in the case of voiced fricatives the justification for positing the voiceless stops as underlying segments is based on the fact that they are found in the underlying representation of morphemes. Their phonemic³ status is illustrated by the following examples:

2. \(/\text{npurya}/ \rightarrow [\text{mpurya}]\) 'rhino(s)'
\(/\text{yapurya}/ \rightarrow [\text{yapurya}]\) 'small rhino'
\(/\text{ntam}e/ \rightarrow [\text{ntam}e]\) 'small piece(s) of cloth'
\(/\text{yatam}e/ \rightarrow [\text{yatam}e]\) 'small piece of cloth'
\(/\text{nc}ɔ\text{βi}/ \rightarrow [\text{nc}ɔ\text{βi}]\) 'wine'
\(/\text{mac}ɔ\text{βi}/ \rightarrow [\text{mac}ɔ\text{βi}]\) 'small amount of wine'
\(/\text{nkaŋg}a/ \rightarrow [\text{ŋkaŋg}a]\) 'guinea fowl'
\(/\text{akaŋg}a/ \rightarrow [\text{akaŋg}a]\) 'name of a spotted goat'

Among the four segments /p/ is peculiar in terms of its distribution in the lexicon. Its
frequency of occurrence is very low compared to that of the other voiceless stops and indeed all the other consonants of the language.

2.3 THE PRENASALIZED VOICED STOPS

The language has four prenasalized voiced stops, /m̩b, n̩d, ŋ̩j, ŋ̩g/. The four segments are realized at the phonetic level as [m̩b, n̩d, ŋ̩j, ŋ̩g] respectively.

One interesting characteristic of this set of stops is that its members never occur word-initially. On the basis of this observation alone it seems plausible to consider the four segments as phonetic variants of some other segments. However, this aspect of their distribution is not explainable in terms of phonetic variation. Each of the four segments occurs in underlying morphemes as the following examples show:

3. /keramba/ → [keramba]  'báobab fruit'
   /iramba/ → [iramba]  'báobab fruits'
   /moindu/ → [mwindu]  'darkness'
   /kaindu/ → [kaindu]  'name of a black cow'
   /møŋji/ → [møŋji]  'one who digs'
   /eŋja/ → [eŋja]  'dig!'
   /koringa/ → [koringa]  'to beat'
   /toringč/ → [toringč]  'let us beat'
There are only three possible ways of analyzing mb, nd, nj and ng in the above examples. One of these is to argue that mb, nd, nj and ng are sequences of a nasal and a fricative whereby the fricative becomes a stop through a continuant strengthening rule. For this argument to be maintained there must be at least some instances in the language where the morphemes (specifically stems) which have mb, nd, etc. appear with a fricative at the phonetic level. For example, if the [b] in the noun stem kmbt was indeed derived from an underlying /β/ one would expect to find at least some occurrences of the stem in which β surfaces. To extend the argument to other examples, one would expect the stems which have d, j and g to surface occasionally with j, j, and r respectively. None of the stems in examples (3), however, has a phonetic realization which has a phonetic realization which has a fricative. To claim that these stems have underlying fricatives is, therefore, positing underlying segments which do not surface. This is contrary to the requirements of Natural Generative Phonology. For this reason, the argument that mb, nd, nj and ng in the examples given in (3) are nasal-fricative sequences is untenable.

The second possibility is to analyze mb, nd, nj and ng as nasal-stop clusters. The implication
of such an analysis is that Kitharaka has both underlying nasals and underlying voiced stops. Whereas it is true that Kitharaka has underlying m, n, p, and η, it is not true that the language has underlying b, d, j and g. Consequently, an analysis which implies the presence of voiced stops in the language is incorrect. This leads us to the conclusion that mb, nd, nj and ng are not nasal-stop clusters.

The third possibility is to analyze mb, nd, nj and ng as prenasalized voiced stops. Since mb, nd, nj and ng are neither nasal-fricative clusters, nor nasal-stop clusters, we submit that Kitharaka has underlying prenasalized voiced stops in its consonant inventory. We consider mb, nd, nj and ng to be basically obstruents which nevertheless have a nasal on-set or what Armstrong (1967:31) has called a nasal 'kick-off.'

2.4 THE NASALS

Kitharaka has four underlying nasals/m,n,p, η/. With the exception of /n/ each of the nasal segments has only one phonetic realization; in other words, /m, n, η/ are realized phonetically as [m,n,η] respectively. /n/ surfaces not only as [n] but also as [m,m,n,p,η,η,η]. This phonetic variation results from homorganic nasal assimilation as well as assimilation of voice. Both the homorganic
nasal assimilation and the devoicing of /n/ will be discussed in more details in Chapter Four.

Examples to illustrate the two processes will be given in the same section.

Positing four underlying nasal consonants for Kitharaka is justified on the grounds that each of them may be followed by any vowel. Whereas a vowel may influence a consonant, there is no evidence that this happens in Kitharaka. In other words, the language does not have any consonant processes which are motivated by vowels. The following examples show that there are four underlying nasals in Kitharaka:

4. /makɔnɔ/ | [makoŋɔ] | 'snails
/mɔsumɔ/ | [moɾumɔ] | 'fig tree'
/moana/ | [mwana] | 'child, son'
/kanini/ | [kanini] | 'small one, a woman's name'
/konua/ | [konua] | 'to drink'
/jaŋa/ | [jaŋa] | 'ostrich'
/kɔŋa:ra/ | [kwana:ra] | 'to hang out'
/kɔŋna/ | [kɔŋna] | 'to lick'

2.5 THE LIQUID

/r/ is the only liquid in Kitharaka. It is realized on the surface as [d] (through a continuant strengthening rule) when it is preceded by /n/.

Elsewhere it surfaces as [ɾ]. The presence of the
segment in the underlying representation is evidenced by the following examples:

5. /moremi/ - [moremi] 'farmer'
/korera/ - [korera] 'to cry'
/ori\i/ - [ori\i] 'string/rope'
/nr*ɡ/ → [n*ɡ] 'that I cut (compare: kor ga 'to cut).

2.6 THE GLIDES

It is probably useful to begin this subsection by a justification for including glides in the study because they differ from obstruents, nasals and liquids in fundamental aspects especially from a phonetic point of view. In general phonetics, for instance, glides are considered as an intermediary category between consonants (in the sense in which the term includes only obstruents, nasals and liquids) and vowels. A common label for them is semi-vowels. Even the name 'frictionless continuants' has the connotation of an intermediary category.

The major motivation or justification for including this category of sounds in a study devoted to 'the consonants of Kitharaka' is their position and function in the syllable. In Kitharaka, unlike vowels, glides never occur in the syllable-final position. They do, however, like the obstruents,
nasals and the liquid, occur in the syllable-initial position. In other words, unlike vowels, they function as syllable on-set. (Vowels only function as syllable-nucleus). Moreover, in Kitharaka glides do not carry tone just like the obstruents, nasals and the liquid. Whereas we accept the phonetic fact that glides do not properly fit either in the category of vowels or that of consonants (in the narrow sense of the term) we feel that in Kitharaka they are closer to the latter than they are to the former in terms of their function in the phonology.

The language has two glides: /y/ and /w/.

These two glides are realized as [y̞] and [w̞] respectively. The language has a glide-formation rule which results in phonetic merger whereby /y/ merges with /e/ and /w/ merges with /o/. /e/ and /o/ glide to [i̞] and [o̞] respectively. That the language has a glide-formation rule is illustrated by the following examples:

(i) /moanki/ → [mwanki] 'fire'
(ii) /raakwa/ → [rwakwa] 'mine (cl.11)'
(iii) /me̞ri/ → [my̞ri] 'months'
(iv) /e̞atto/ → [yt̞to] 'ours (cl.9)'

The velar glide in the first syllable in (i) and (ii) and the palatal glide in (iii) and (iv) are derived from /o/ and /e/ respectively by a glide-
formation rule. The rule requires that the vowel following /o/ should not be /o/ or /u/, nor should /e/ be followed by /e/ or /i/. Stated formally the glide formation rule is as follows:

7. \[
\begin{array}{c}
\text{[+syl]} \\
\text{-low} \\
\text{-high} \\
\text{+[tense]} \\
\text{[back]}
\end{array} \rightarrow \begin{array}{c}
\text{[+syl]} \\
\text{-[syl]} \\
\text{[back]}
\end{array}
\]

Conditions: (1) 1 and 2 should not be identical
(2) When 1 is /o/ 2 should not be /u/, when 1 is /e/ 2 should not be /i/

If there is evidence showing that all the glides in the language are derived from vowels by the above rule there would be no justification for claiming that Kitharaka has underlying glides. There are, however, examples that show that not all glides are traceable back to a vowel source. There is no way, for instance, in which we could link the palatal glide with an underlying /e/ in the following examples:

8. Kamirye 'let me swallow'
mbokyle 'that I roast'
kwenokya 'to take home'

To successfully maintain that the palatal glide in
the above examples (and other similar words) is derived from /e/ by a rule, one would need to show that the morphemes containing the palatal glide have [e] in the place of [y] in some other occurrences. There are, however, no instances in which the morphemes containing [y] in (8) occur with [e] in the position of the glide. The palatal glide in the three examples is therefore underlying.

Positing /e/ as an underlying segment from which [y] in the above examples is derived would be going against one of the requirements of Natural Generative Phonology. The theory requires that an underlying form must surface, at least in some instances.

One very tempting 'evidence' for one wishing to insist that the palatal glide in (8) is derived from a vowel is that when the forms in (8) are extended by verb suffixes, it may be argued, /i/ appears in the position occupied by [y] in (8). One might then go on to argue that the palatal glide in (8) is derived from /i/. The argument might then be extended to the effect that rule (7) should be written so that it includes not only /e/ and /o/ but also /i/ (and possibly /u/). After verb suffixes are affixed to the forms in (8) we get the new forms in (9).
9. (i) kan ري jy 'let me make (it) to be swallowed'
(ii) mboki jy 'that I cause (it) to be roasted'
(iii) kwenoki jya 'to cause (something else) to be taken home'

It is true that in (9) /i/ occupies the position occupied by [ʏ] in (8). It would seem as though the /i/ —> [ʏ] proponent has proved his case. A close look at (9), however, reveals that the glide in (8) has simply shifted further to the right (relative to the stem) in the forms of (9) and not that it has 'reverted' back to /i/. The i in (9) does not, therefore belong to the same underlying segment with the palatal glide in (8). Furthermore, the i in the forms of (9) belong to the causative morpheme {iʃɪ} and there is no way in which it could be affected by the extended glide-formation rule since the segment is always followed by /ʃ/. Consequently, the /i/ —> [ʏ] account of the palatal glide in (8) is not tenable, it is false. It is therefore not a counter-evidence or counter-argument against our conclusion that Kitharaka has an underlying palatal glide.

In (6)(ii) above we gave the word [rwakwa] as one of the examples. We argued that the velar glide in the first syllable of the word is derived from /o/ by the glide-formation rule. The glide in the second syllable cannot be likewise traced back
to a vowel source. It is an underlying glide. In the light of this evidence there is every justification in concluding that Kitharaka has both underlying palatal and velar glides.

* There are several other examples in which there is no indication that the glides are derived from vowels. Some of these examples are cited below in the hope that they will further support our observation that there are underlying palatal and velar glides in Kitharaka.  

10. (i) mbwe 'fox(es)'
   (ii) mbya 'money'
   (iii) mpyɔ 'cold'
   (iv) mpurya 'rhino(s)'
   (v) kumɛnwa 'to be hated'
   (vi) ntweya 'giraffe(s)'
   (vii) nɔwarĩra 'buck(s)'
   (viii) nɔya 'deer(s)'

With an exception of (10)(v) all the examples have a glide in the noun stems. All of these stems have only one phonetic realization (-the one in which they appear in the examples). This is to say that all these stems are given in their underlying representation (which however happens to be the form in which they surface). Since the stems are in a form identical to their underlying representation all the segments appearing in these
stems are necessarily underlying; for it is true that underlying morphemes consist only of underlyingly segments. The palatal and velar glides appearing in the examples given in (10) are therefore underlying segments.

The glide in konwa is the passive morpheme \( \{w\} \). It is always realized as \([w]\). This is a further empirical evidence that Kitharaka has an underlying velar glide.

Having discussed in turn each of the four categories of consonants - obstruents, nasals, the liquid and glides - we are now in a position to give a phonemic chart for the inventory of Kitharaka consonants. The columns of the chart represent places of articulation whereas the rows represent the manner of articulation.

\[
\begin{array}{llllll}
(11) & p & t & c & k & \\
& mb & nd & pj & ng & \\
& \beta & \ddot{\jmath} & \jmath & \& & \\
m & n & n & \eta & \\
r & y & w & \\
\end{array}
\]

One fact that emerges from the observation of the above phonemic chart is that it is symmetrical. Symmetry in a sound inventory, in our opinion, makes the particular inventory simple for the speakers in that symmetry is an implementation of proportional
relations among segment classes. That 'proportional relations' is a desired notion in languages has been illustrated by studies in analogy (see Antilla 1977, Vennemann 1972, and King 1969). It is on these grounds that we consider the symmetrical pattern of the above inventory to be a kind of an external support for the underlying consonants that we have posited for Kitharaka.

2.7 FURTHER JUSTIFICATION FOR THE CONSONANT INVENTORY

Closely related languages usually have many structural similarities. It is to be expected, for instance, that such languages have sound inventories that are fairly similar, especially if they have been separate languages for a relatively short time. In this subsection we shall give sound inventories for languages that are closely related to Kitharaka. The inventories of all these other languages, namely: Kikuyu, Kimeru, Kiembu, Kimbeere and Kikamba are very much like the inventory for Kitharaka given in (11)⁶.

(12) KIMERU:

<table>
<thead>
<tr>
<th>p</th>
<th>t</th>
<th>c</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>mp</td>
<td>nt</td>
<td>pc</td>
<td>nk</td>
</tr>
<tr>
<td>mb</td>
<td>nd</td>
<td>pj</td>
<td>ng</td>
</tr>
<tr>
<td>β</td>
<td>j</td>
<td>i</td>
<td>r</td>
</tr>
<tr>
<td>m</td>
<td>n</td>
<td>p</td>
<td>η</td>
</tr>
<tr>
<td>r</td>
<td>y</td>
<td>w</td>
<td></td>
</tr>
</tbody>
</table>
(13) KIEMBU:

<table>
<thead>
<tr>
<th>t</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>mb</td>
<td>nd</td>
</tr>
<tr>
<td>v</td>
<td>ə/s</td>
</tr>
<tr>
<td>m</td>
<td>n</td>
</tr>
<tr>
<td>r</td>
<td>ɻ</td>
</tr>
</tbody>
</table>

(14) KIMBEERE:

<table>
<thead>
<tr>
<th>t</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>mb</td>
<td>nd</td>
</tr>
<tr>
<td>v</td>
<td>ə/s</td>
</tr>
<tr>
<td>m</td>
<td>n</td>
</tr>
<tr>
<td>r</td>
<td>ɻ</td>
</tr>
</tbody>
</table>

(15) KIKUYU:

<table>
<thead>
<tr>
<th>t</th>
<th>ʃ</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>mb</td>
<td>nd</td>
<td>nj</td>
</tr>
<tr>
<td>v</td>
<td>ʃ</td>
<td>ʃ</td>
</tr>
<tr>
<td>m</td>
<td>n</td>
<td>ɲ</td>
</tr>
<tr>
<td>r</td>
<td>ɻ</td>
<td>w</td>
</tr>
</tbody>
</table>
It is of particular interest to note that all the five systems given above have prenasalized voiced stops. An equally important aspect of the five systems is that all have both the palatal and the velar glides. We call attention to these two classes because whereas we established all the other consonants in a more or less straight-forward manner, presence of prenasalized stops and glides is not so obvious. It is therefore significant to find that each of the five languages has palatal and velar glides, as well as prenasalized voiced stops.

2.8 THE CONSONANTS IN DISTINCTIVE FEATURES

Probably the clearest method of illustrating the distinctiveness of each of the segments given in (11) is to give a feature matrix for the inventory. In addition to revealing the distinctiveness of each segment relative to all the others, the feature matrix will show which sounds can be grouped
together into natural classes. In any case, we shall need distinctive features for the discussion on phonological processes. The features will help us formalize rules. They will also help us to show the phonetic motivation or 'naturalness' of rules. Introducing features in the study is therefore not 'ad hoc' in any sense.

We shall use the Sound Pattern of English (SPE) system of features. Natural Generative Phonology and the SPE model of analysis do not differ in terms of distinctive features. Using the SPE system of features in this study is therefore not a deviation from our theoretical frame-work:

The consonant inventory in (11) has feature specifications as shown in the feature matrix (17).

<table>
<thead>
<tr>
<th></th>
<th>p</th>
<th>t</th>
<th>c</th>
<th>k</th>
<th>b</th>
<th>th</th>
<th>jh</th>
<th>ng</th>
<th>ß</th>
<th>ß</th>
<th>ß</th>
<th>ß</th>
<th>m</th>
<th>n</th>
<th>ñ</th>
<th>r</th>
<th>y</th>
<th>w</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONS</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>VOC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANT</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>COR</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CONT</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>VOICE-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>NAS</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>HIGH</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>BACK</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Matrix (17) fails to reveal that all the nineteen consonants in (11) are distinct from each other. In other words, the phonemic status of some of the segments is not revealed. Specifically /m̃b, ñd, ɳ̃j, ɳ̃g/ are shown as having identical feature specifications with /m, n, j, η/ respectively. According to (17) the four prenasalized stops are partially specified as follows:

\[
\begin{array}{cccc}
  (18) & /m̃b/ & /ñd/ & /j̃j/ & /ŋ̃g/ \\
  +cons & +cons & +cons & +cons \\
  +ant & +ant & -ant & -ant \\
  -cor & +cor & -cor & -cor \\
  +voice & +voice & +voice & +voice \\
  +nas & +nas & +nas & +nas \\
  -high & -high & +high & +high \\
  -back & -back & -back & +back \\
  \end{array}
\]

The four nasals of the language have the partial specifications given in (19):

\[
\begin{array}{cccc}
  (19) & /m/ & /n/ & /j/ & /ŋ/ \\
  +cons & +cons & +cons & +cons \\
  +ant & +ant & +ant & -ant \\
  -cor & +cor & +cor & -cor \\
  +voice & +voice & +voice & +voice \\
  +nas & +nas & +nas & +nas \\
  -high & -high & +high & +high \\
  -back & -back & -back & +back \\
  \end{array}
\]
As is seen in (18) and (19) each of the prenasalized stops in (18) has identical feature specification with the corresponding nasal in (19). By implication, the matrix makes the wrong claim that the phonology of Kitharaka does not distinguish between nasals and the prenasalized stops.

It seems that the inability for matrix (17) to distinguish between the prenasalized stops and the nasals stems from the inadequacy of the SPE feature system. The feature system is not capable of distinguishing prenasalized consonants from both nasal consonants and oral stops. There is a need to use more than one feature when dealing with nasality. The SPE feature system uses only one feature, [nasal]. Ladefoged (1971) has recognized the need to use more than one feature and has suggested that the feature [prenasal] be used along with the feature [nasal]. The problem of distinguishing prenasalized stops is adequately solved by incorporating the feature [prenasal] in the consonant matrix, as shown in (20) below:
In matrix (20) the nasals are partly specified as [+nasal] and left unspecified for the feature [Prenasal]; (see footnote 1). On the other hand prenasalized stops are specified as [-nasal] and [+prenasal]. This specification correctly reveals the distinctiveness of each segment in the two series.

FOOTNOTES:

1. By 'underlying segments' we mean systematic phonemes and not the 'autonomous phonemes' of the structural school of linguistics.

2. An underlying morpheme is the one which has not undergone any phonological change.

3. See footnote 1.
4. An attempt to write the rule without 'conditions' results in a very cumbersome and inelegant structure.

5. The initial nasal in the examples marks classes 9/10. In (v) /ko/ is the infinitive marker. We have used square brackets because the hormogonic nasal rule has already applied.

6. The sources of the consonant inventories are as follows:

   Kikuyu - Armstrong (1967).
   Kikamba - Ford (1975).
   Kimeru - Marete (personal communication).

7. The feature [Prenasal] is not applicable to nasals because it does not make sense to talk of a 'prenasalized nasal'. The nasals are therefore unspecified for the feature.
3.0 THE CONSONANT INVENTORY AND THE THEORY OF MARKEDNESS.

Our objective in this section is to find out whether the claims made by the 'theory of markedness' are supported by Kitharaka consonant inventory.

According to the generative phonologists, for instance Chomsky and Halle (1968), and Hyman (1975), unmarked segments are generally acquired earlier by children during language acquisition. Unmarked segments are also generally to be found in a sound inventory if that inventory has marked segments. In unconditioned linguistic change marked segments change into unmarked ones.

In the consonant inventory for Kitharaka given in (11) it is shown that the language has four voiceless stops -/p,t,c,k/. These are the most unmarked obstruents in that obstruents are marked for both voicing and continuance. Since the language has /\beta,\delta,\j,j/ the presence of /p,t,c,k/ in the consonant inventory is in line with the prediction made by the theory that unmarked sounds "are.....generally required in the inventory of sounds of a language before marked sounds can be added"; (see Hyman 1975:147). We should remember, however, that affricates are less marked than stops in the palatal region. Whereas Kitharaka has the palatal stop /c/ it does not have a palatal
affricate. In this particular instance, therefore, the inventory of the language does not bear out the prediction of the theory - the prediction that if a language has a palatal stop it will also have a palatal affricate. The issue here is to account for the presence of /c/ in a language that does not have a palatal affricate presumably /tʃ/. Probably the issue could be explained by examining the role of symmetry in determining sound inventories. We will assume that a sound inventory will not have more underlying segments than are necessary for distinguishing meaning within the particular language. By implication, Kitharaka needs only nineteen consonants (as shown in the inventory given in (11)) to differentiate meaning in its vocabulary. With this assumption in mind it is evident that were the language to have /tʃ/ in its sound inventory before having /c/ (as predicted by the theory of markedness) the language would have nineteen consonants before incorporating /c/ into its sound system. If that was the case (20) would be the consonant inventory for the language.
A glance at (21) reveals that the pattern of the inventory is highly assymetrical specifically with regard to the affricate and the voiceless stops. There is only a palatal affricate (although it is phonetically possible to have labial, alveolar and velar affricates). Secondly, there is a 'gap' in the series of the voiceless stops in that whereas there are labial, alveolar and velar voiceless stops there is none in the palatal region. Moreover, the only affricate in the inventory corresponds (in terms of point of articulation) with the 'missing stop'. If the language incorporates /c/ into its sound inventory in preference to /tʃ/ the consonant inventory would be symmetrical in that the language will not only have a complete series of voiceless stops but also it will eliminate the only affricate. This would result in a high degree of symmetry in that the series of the voiceless stops will have proportional relation to the prenasalized voiced stops, the voiced fricatives, and
the nasals. We propose that considerations of symmetry overruled those of 'markedness' in this particular aspect of Kitharaka phonology.

If our proposal is correct, it remains to be investigated as to whether the phonologies of other languages behave in a similar way in respect to the notions of symmetry and markedness. This is an area worthy investigating in that it may be the case that the role of 'markedness' in phonology is less than it has been thought to be.

FOOTNOTE:

1. /tʃ/ is less marked than /dʒ/. If a language has only one palatal affricate we would expect it to be /tʃ/ according to the theory of markedness.
4.0 PHONOLOGICAL PROCESSES

In this chapter we will discuss five phonological processes namely: nasal assimilation, continuant strengthening, /k/ dissimilation, identical consonant deletion, and /t/ deletion. An attempt will be made not only to discuss the nature of the rules expressing these processes, but also the category and scope of the rules. Formal representation of the rules will be given in distinctive features.

4.1 HOMORGANIC NASAL ASSIMILATION

Homorganic nasal assimilation is a process that changes a nasal consonant so that it agrees in point of articulation with the following consonant. It is a regressive assimilation whereby in anticipation of the articulation of the consonant following the nasal, the articulators adjust early so that both the nasal and the following consonant are articulated at the same point.¹

In all cases except word-initially the nasal and the following consonant are already 'homorganic'; that is, they agree in point. The homorganic nasal assimilation is therefore a word-initial phenomenon. The process is illustrated by the following examples:²
The motivation for the homorganic nasal assimilation in Kitharaka (and indeed in other languages) is based on considerations of 'articulatory simplification', (see Antilla 1972:74). The process is the result of an attempt to 'by-pass' some of the articulatory postures. For example, to pronounce [ŋ] in /ŋɔrɔrɛ/ (assuming that the continuant strengthening rule has already applied), requires a complete closure at both the alveolar ridge (for the articulation of [n]) and hard palate (for the articulation of [ɡ]). The process of nasal assimilation which results in [ŋɔrɔŋ] eliminates a closure at the alveolar ridge so that there is only one closure at the hard palate. The result is some economy of effort in the utterance because the number of movements of the articulators is reduced by one. Assimilatory processes try to minimize on the activity of the articulators. This general statement applies equally well to homorganic nasal assimilation. In the words of Abercrombie (1967:135) "the result of the..."
assimilation is to reduce the number, or the extent, of the movements and readjustments which the speech-producing organs have to perform."
The articulatory complexity which would be encountered if the language did not have the nasal assimilation rule is illustrated by the following anotated diagrams of the vocal tract:

(23)

NEUTRAL POSITION OF THE TONGUE AND THE VELUM

From the neutral position of the articulators shown above it would be necessary to make the following adjustments if the nasal did not assimilate: that is, if the sequence [ng] were to be produced:
In all, to pronounce [ng] four articulatory gestures are made by the tongue and the velum.
Assimilation of the nasal to the point of articulation of [ŋ] reduces the articulatory movements from four to three. To produce [ŋɡ] the following gestures are required:

stage 1: (i) raising the back of the tongue to make contact with the hard palate

(ii) simultaneously lowering the velum to make an opening at (5) (for the production of [ŋ]).

stage 2: (iii) raising the velum to make a closure at (5) (for the production of [ɡ]).

(During gesture (iii) the back of the tongue remains in contact with the hard palate). Diagram (24) illustrates the articulation of [ŋɡ].
In this way the speaker succeeds in 'producing some economy of effort in the utterance'; (Abercrombie, 1967:135). This then, is the phonetic motivation for the nasal assimilation.

Since the process of homorganic nasal assimilation is phonetically motivated it is to be expressed by a p-rule. The rule may be formulated as:

(26) $C \xrightarrow{[+\text{nas}]} \begin{array}{c} \text{xant} \\ \text{cor} \\ \text{back} \end{array} \rightarrow \begin{array}{c} \text{xant} \\ \text{cor} \\ \text{back} \end{array}$

Articulatory simplification does not explain why the nasal assimilates to the following consonant and not vice versa. If the language had process such that: $g \rightarrow d/n-$, instead of $n \rightarrow \eta/-g$ the same degree of articulatory simplification would be achieved. The reverse assimilation, that is, $g \rightarrow d/n-$, like the process $n \rightarrow \eta/-g$ reduces the four gestures necessary for producing $[\text{ng}]$ to three:

- stage 1: (i) raising the tip of the tongue to make contact with the alveolar ridge.
- (ii) simultaneously lowering the velum to make an opening at (5) (for the production of $[d]$).
stage 2: (iii) raising the velum to make a complete closure at (5) for the production of [d]).

(During gesture (iii) the tip of the tongue remains in contact with the alveolar ridge).

The reasons for the preference of nasal assimilation over the obstruent assimilation remains to be investigated. There seems to be a universal to the effect that in a situation where a non-nasal consonant differs in point of articulation with a preceding nasal, the later assimilates to the point of the former. Existence of such a linguistic universal would account for the fact that homorganic nasal assimilation is attested in many languages whereas assimilation of a non-nasal consonant to the point of articulation of a nasal is rare if attested at all.

Nasal assimilation in Kitharaka results in phonetic merger. The phonetic variants of /n/ preceding voiced bilabial, palatal and velar obstruents merge with /m n j η/ respectively. The multiple merger is illustrated in figure (27) below:

\[(27)\] UR /m n j η/ PR /m n j η/
By a phonetic merger we mean a situation whereby two underlying segments have identical phonetic realization. This phenomenon is different from phonemic merger whereby two underlying segments become phonetic variants of the same underlying segment; in other words, two underlying segments cease to contrast meaning and the occurrence of each becomes predictable. The two types of merger are further distinguished from each other by the fact that whereas synchronic rules are responsible for phonetic merger, phonemic merger results from a historical process; (see Antilla 1972:70).

It seems that the homorganic nasals are undergoing a historical process of weakening. They are not articulated as strongly as the nasals that are followed by either vowels or glides. Whereas the latter are perceived as clearly as other consonants of the language, homorganic nasals are barely audible. They are devoiced when followed by a voiceless consonant. The nasal devoicing rule may be formulated as:

(28)  

\[
\begin{array}{c}
+C \\
+\text{nas} \\
+\text{cor} \\
\end{array} \rightarrow (-\text{voice}) / - \left[ -\text{voice} \right]
\]
As shown in section (2.2) Kitharaka has four voiceless consonants: /p, t, c, k/. The devoicing of /n/ when it precedes each of these segments results in the following phonetic realizations: [m, n, p, η]. The two rules of homorganic nasal assimilation and nasal devoicing result in eight different realizations of /n/ at the phonetic level. Diagrammatically /n/ and all its phonetic variants may be represented as:

(29)

One way of accounting for the motivation for nasal reduction is to consider the role of analogy. It was noted in section (2.3) that Kitharaka has prenasalized stops. Phonetically, these stops are co-articulations of a reduced nasal and an obstruent. Analogical extension might have extended the phonetic realization of the prenasalized stops to the nasal-stop sequences. This hypothesis would account for the unreduced articulation of /n/ in the sequence [nd]. Reduction of the nasals takes place only when the nasal is followed by a stop. This implies that when a nasal is followed by a
continuant, the continuant strengthening rule, which changes continuants into stops, has to apply before nasal reduction takes place. In the case of /n/, /#/ does not strengthen to a stop, and hence, nasal reduction does not take place.

4.2 CONTINUANT STRENGTHENING

We noted in section (2.1) that Kitharaka has five voiced continuants: /β, δ, r, j, γ/. With the exception of /δ/, all these continuants strengthen into stops when they are preceded by /n/. The process of continuant strengthening may be represented diagrammatically as:

\[
\begin{array}{c}
\begin{array}{c}
\beta \\
r \\
j \\
g \\
\end{array}
\end{array}
\rightarrow
\begin{array}{c}
\begin{array}{c}
b \\
d \\
j \\
g \\
\end{array}
\end{array}/n\
\]

and it is expressed by rule (30'):

\[
(30')
C \\
[+cont] \rightarrow [-cont]/ [+nas] -
\]

Condition: The continuant should be [+son] if it is also [+cor].

The 'directionality' of the above process is not necessarily obvious. It may be the case that the language has a stop weakening rule and not a
continuant strengthening rule. In other words, the reverse of (30), that is:

\[
\begin{align*}
\text{b} & \quad \beta \\
\text{d} & \quad r \\
\text{i} & \quad j, \gamma \\
\text{g} & \quad \gamma
\end{align*}
\]

might be the correct representation of the native speaker's competence. Because (31) cannot be ruled out on any 'a priori' grounds we need to provide some justification for maintaining that the language has rule (30') in its phonology.

For the purposes of such a justification we need to examine the claims made by (30) and (31) regarding the underlying representation in the language. (30) makes the claim that Kitharaka has underlying /\beta, r, j, \gamma/ and that these segments are realized as [b, d, j, g] respectively when preceded by /n/. On the other hand (31) makes the claim that the language has underlying /b, d, j, g/ and that these segments are realized as [\beta, r, j, \gamma] respectively when they are preceded either by a pause or a vowel. The claim made by (31) is incorrect in that Kitharaka does not have underlying voiced stops; (see Chapter Two). On the other hand, (30) makes a correct claim that the language has voiced continuants. Accordingly, we
Continuant strengthening is a phonetically motivated process. Like nasal assimilation, strengthening of continuants is motivated by considerations of articulatory simplification. For example, the articulation of the sequence [nr] requires that the tip of the tongue makes contact with the alveolar ridge with a simultaneous lowering of the velum. Then, the velum is raised so as to block air from escaping through the nasal cavity, simultaneously making intermittent contact between the alveolar ridge and the tip of the tongue. Strengthening of /r/ into [d] is motivated by the desire to avoid this last articulatory gesture — that is, the tapping of the tip of the tongue on the alveolar ridge. To produce [nd] requires only one continuous contact between the tip of the tongue and the alveolar ridge. Hence, the change of /r/ to [d] after /n/ reduces the movements of the tip of the tongue and is therefore a simplification of articulation.

Strengthening of /θ, j, ɹ/ into [b, j, ɣ] (respectively) when preceded by a nasal also results in articulatory simplification. To produce the sequence [ŋɹ] for example, the back of the tongue make contact with the hard palate for the
articulation of [ŋ] and then adjust to a fricative-position\(^7\) for the articulation of [θ]. On the hand, to produce the sequence [ŋθ] the adjustment of the back of the tongue to a fricative-position is avoided. In a similar manner, hardening of /β/ to [b] and /j/ to [j] after [m] and [n] respectively avoids making adjustment for the fricative.

It was noted in section (2.1) that /d/ is the only continuant that does not strengthen in Kitharaka. Consequently, [nd] is the only nasal-fricative sequence in the language. The grammar would be simpler if the language had the process represented diagrammatically in (32).

(32)

\[
\begin{align*}
\beta & \quad \rightarrow \\
\delta & \\
\gamma & \\
j & \\
y & \\
\end{align*}
\]

\[\begin{align*}
b & \\
d & \\
d & \\
j & \\
g & \\
\end{align*}\]

\[\hat{n}\]

In features (32) may be rewritten as (32')

(32')

\[\begin{align*}
C & \\
\text{[+cont]} & \rightarrow \text{[-cont]} / \text{[+nas]} \\
\end{align*}\]

As seen from the greater number of segments affected, (32) is more general than (30). The greater complexity of (30) stems not only from its less generality (in terms of
the number of segments affected) but also from the fact that it does not apply to /d/ although it applies to /r/ both of which are [+ant] and [+cor]. It is this latter aspect of (30) that necessitates the use of a 'condition' in (30'). Whereas the generality of rule (30') would be less than that of rule (32') its complexity would nevertheless be reduced if it failed to apply to both /d/ and /r/. If the rule did not apply to any of the two segments it could be possible to write it without the use of a condition; thus:

\[
(30'') \quad C \\
\begin{array}{c}
\uptext{+cont} \\
\text{-cor}
\end{array} \rightarrow \begin{array}{c}
\text{-cont} \\
\text{[+nas]}
\end{array}
\]

The question that suggests itself at this point is: why did the language prefer to have rule (30') which is less general and more complex than both (32') and (30'')?

A look at (32) reveals that if the scope of the continuant strengthening rule was extended so as to include the strengthening of /d/ into [d] there would be a phonetic merger between /d/ and /r/ because both of them would be realized as [d]. Such a merger would result in homophonous forms as exemplified below:
All the above examples have identical surface realizations. Put differently, the surface form \( [ndtkt] \) has a three-way ambiguity. Whereas it is possible to disambiguate the word for 'aeroplane' from the context since it is a noun and the other two words are verbs, there is no possibility of distinguishing each of the latter two from each other because they occur in the same context. It is probably to avoid this kind of homophony and ambiguity that the continuant strengthening rule is blocked from extending to /\( \ddash /\).

Generally, homophony is undesirable in grammars because it is contrary to Humboldt's Universal or the principle of one form - one meaning correspondence; (see Vennemann 1972, Antilla 1972). We consider this fact to be a theoretical support to our hypothesis on the failure of /\( \ddash /\) to strengthen.

There is one major problem with the hypothesis that considerations of homophony and ambiguity limit the scope of the continuant strengthening rule from extending to /\( \ddash /\). The hypothesis does not explain why it is /\( \ddash /\) and not /\( r /\) that does not strengthen. Homophony could equally well be avoided if the continuant strengthening rule
applied to /d/ but was blocked from extending to /r/. A second hypothesis which seems to adequately explain why /d/ does not strengthen is based on phonetic facts. Unlike other continuants no stop is produced at the same point of articulation with /d/. /b/ and /j/ and /h/ and /g/ are bilabial, palatal and velar segments respectively. On the other hand, although /r/ and /l/ and /d/ are all specified as [+ant] and [+cor] /l/ is an inter-dental sound whereas /r/ and /l/ are alveolar sounds. Thus, in a strictly phonetic sense the change of /d/ to /d/ would not only be a change in the manner but also in the point of articulation. The same cannot be said of the other continuants in the language because the change of /b, r, j, y/ to /b, d, j, g/ respectively is only a change in the manner and not in the point of articulation. We propose that it is this peculiarity of /d/ that blocks the scope of the continuant strengthening rule from applying to the segment.

It is true that there are languages including Kikuyu (see Mutahi 1977) where /d/ becomes /d/ after a nasal. This observation does not, however, necessarily invalidate our hypothesis because different languages handle phonetic facts quite differently in their phonologies. For example, some languages including Kitharaka and Kikuyu do not palatalize /k/ when it is followed by /i/. 
The sequence /ki/ is therefore pronounced [ki]. It does not make sense, however, to argue that because such languages exist some other languages cannot be expected to palatalize /k/ before /i/ (as evidenced by Luganda). At any rate, the phonology of a language is the language's idiosyncratic arrangement and handling of sounds for the purpose of efficient communication.

4.3 DISSIMILATION OF /K/

Kitharaka has a rule that changes /k/ into [ʃ] when it is followed by a voiceless consonant. The rule combines two phonological processes, namely voicing and spirantization. It may be formulated as:

\[
(34) \quad C [+\text{back}] \rightarrow [\text{+cont}] /\text{#tV [\text{-voice}]}\].
\]

The rule is illustrated by the following examples:

\[
(35) \quad /kepurul/ \rightarrow [\text{yepurul}] \quad \text{'name of a tree'}
\]

\[
/keakwa/ \rightarrow [\text{yakwa}] \quad \text{'mine (obj. of cl.7)'}
\]

\[
/katerya/ \rightarrow [\text{yaterya}] \quad \text{'woman's name'}
\]

\[
/kakuro/ \rightarrow [\text{jakuro}] \quad \text{'puppy/small dog'}
\]

\[
/kotera/ \rightarrow [\text{otera}] \quad \text{'to set a trap'}
\]

\[
/koceda/ \rightarrow [\text{oceda}] \quad \text{'to play'}
\]
The examples in (35) are chosen in such a way as to show that any voiceless obstruent in the language causes voicing and sprintization of /k/. Voiceless nasals (see 4.1) have a similar influence on the segment as illustrated below:

\[(36) \quad /\text{ke} \text{nt} \text{tro}/ \rightarrow [\gamma \text{y} \text{nt} \text{tro}] \text{dented} \quad \text{(ob. of cl. 7)} \]

\[/\text{kankw} \text{t}/ \rightarrow [\gamma \text{nkw} \text{t}] \text{ 'let me give you'}

\[/\text{konco} \text{\beta} \text{a}/ \rightarrow [\gamma \text{onco} \text{\beta} \text{a}] \text{ 'to look at me'}

/t/ is the only other voiceless consonant that occurs in an environment similar to the one in which /k/ is voiced and sprintized. The morpheme {to} may be prefixed to stems beginning with a voiceless consonant. Unlike /k/, however, /t/ does not undergo any change. In other words, although both /t/ and /k/ are both voiceless stops and occur in a similar environment, the scope of the rule that changes /k/ is blocked from extending to /t/. The implication of this observation is that either the motivation for the rule is non-phonetic and that /t/ does not meet the structural description of the rule, or that the rule belongs to the category of p-rules but that non-phonetic factors block it from extending to /t/. There is no evidence that the rule is motivated by non-phonetic factors. If we advocate the second alternative - that the rule belongs to
the category of p-rules, we could explain why it does not apply to /t/ by hypothesizing that the rule is blocked by semantic considerations. If the morpheme \{to\} were to be realized as \[ro\] (whereby /t/ changes to [r]), the morpheme would merge with the class 11 marker \{ro\} which is realized as [ro]. One might question why /t/ does not change to [\textbackslash r] since doing so does not go against any semantic considerations. It could be argued, however, that the change /k/ \rightarrow [\textbackslash r] involves only two processes namely sprintization and voicing. On the other hand, the change /t/ \rightarrow [\textbackslash r] involves not only these two processes but also 'fronting.'

Probably the language disallows three-way changes. Should such a suggestion turn out to be true we would have succeeded in explaining why /t/ does not change to [\textbackslash r].

The /k/ dissimilation rule is a form of what is commonly known as Dahl's Law; (see Meinhof and van Warmelo 1932, Bunnett 1967). The Law occurs in different forms in several Bantu languages. In Kikuyu and Kiembu, like in Kitharaka, the law occurs in the form of a /k/ dissimilation rule (see Mutahi 1977, Mberia 1979). In some languages Dahl's Law affects all voiceless stops.
The change of /k/ to [ɾ] results in phonetic merger between /k/ and /ɾ/. The latter is realized as [ɾ] except when it is preceded by a nasal in which case it surfaces as [g]. Diagrammatically the merger between the two segments may be illustrated as shown below:

\[
\text{UR} /k/ \quad /ɾ/ \\
\text{PR} \quad [ɾ] \quad [ɾ] \quad [g]
\]

It was suggested in (4.2) that considerations of ambiguity which results from homophony caused by phonetic merger may be responsible for blocking the continuant strengthening rule from extending to /ɾ/. That reasoning is not applicable to the merger between /k/ and /ɾ/. Whereas it is true that the merger between the two segments causes homophony the latter does not result in any ambiguity. /k/ is realized as [ɾ] in the prefix-position, an environment in which /ɾ/ does not occur. Because of this environmental context the underlying source of [ɾ] is always obvious to the native speakers of the language. In no way, therefore, is the merger a hinderance to non-ambiguous communication.
4.4 IDENTICAL CONSONANT DELETION

When two identical prefixes follow each other in a word, the consonant of the second prefix is deleted. This is a process of dissimilation whereby the consonant of the first prefix (also called pre-prefix, see Nida 1946) acts as the conditioning influence. Unlike the case of voicing and sprintization of /k/ where differentiation of the two voiceless consonants is effected by changing /k/ to /q/, identical consonant deletion is what may be termed total or complete dissimilation. In other words, deletion of one of two identical segments is the maximum differentiation between the segments.

The only prefixes affected by the identical consonant deletion rule are /ke/, /ro/, and /to/. They are markers for classes 7, 11, and 14 respectively. Only these three morphemes may occur in a reduplicated form. In the other cases of double prefixes the function of the pre-prefix is to reclassify the noun in which it occurs and is therefore different from the prefix which marks the original class of the noun. Reduplication of /ke/, /ro/, and /to/ and the operation of the identical consonant deletion rule are illustrated by the following examples:
All the above examples are adjectives.

This is not an accidental selection of the examples. Reduplication of prefixes occurs only in adjectives. The identical consonant deletion rule does not, therefore, apply in other grammatical categories. In addition to adjectives only nouns are capable of having double prefixes but in this case the two prefixes are not identical and the rule does not operate.

The motivation for the identical consonant deletion rule is not clear. It has been suggested by Antilla (1972:74) that dissimilation is desired because it results in neural ease. He claims (by implication) that human neural system does not favour repeating instruction (as is necessary for producing identical or similar sounds). According to his claim dissimilation eliminates such repetition. Whereas Antilla might be right, we consider it unlikely that his hypothesis explains the motivation for the identical consonant deletion rule. There are
other forms in the language which do not undergo any dissimilation although they satisfy the 'neural ease condition.' Words such as:

(39) /koririkana/ —— [koririkana] 'to remember'
/korerekana/ —— [korerekana] 'to curse'
/korremera/ —— [kororremera] 'to fall further deep'
/orarora/ —— [orarora] 'palm leaf'

have reduplicated /ri, re, ro, ra/ respectively but unlike the examples in (38) the consonant of the second syllable of each of the four words (in 39) is not deleted.

A more plausible explanation for the motivation for identical consonant deletion rule is the one based on semantic considerations. In each of the examples given in (38) the double prefixes mark the same class. One of them is therefore functionally redundant from a semantic point of view. For instance, /ro/ marks class 11. A form with a reduplication, that is /roro/, is still marked for class 11 and does not carry any form of 'extra' information. Elimination of one /ro/ would therefore not interfere with the meaning of the words containing the reduplicated prefixes. We propose that it is this semantic redundancy that motivates the deletion of the consonant of the second prefix. Deletion of the consonant is actually an elimination of the second morpheme as a whole because the vowel left behind after the deletion of the consonant is reinterpreted as part of the preceding prefix which is accordingly changed from CV to CV.

The semantic redundancy hypothesis explains
why the identical consonant deletion rule does not apply to the forms exemplified in (39). In all the examples given in (39) it is syllables and not morphemes that are reduplicated and the question of semantic redundancy does not arise. Hence, the structural description of the identical consonant deletion rule is not met.

Since the identical consonant deletion rule includes semantic information, it is a MP-rule. It may be formulated as:

\[(40) \quad C \rightarrow \emptyset / \quad \text{[semantic redundancy]} \]

Loss of redundant morphemes is one way in which languages implement Humboldt's Universal (or the principle of one-to-one relationship between form and meaning). The significance of the one-to-one relationship between form and meaning has been discussed by Langacker (1977). He points out that:

Transparency is based on the notion that the ideal or optimal linguistic code, other things being equal, will be one in which every surface unit (typically a morpheme) will have associated with it a clear, salient and reasonably consistent meaning or function, and every semantic element in a sentence
will be associated with a distinct and recognizable surface form... Languages should show a tendency to eliminate morphemes with no obvious meaning or syntactic function by incorporating them in other morphemes through boundary loss, by assigning them new meaning or by omitting them entirely.  

4.5 /t/ DELETION

The /t/ of the negative marker /ti/ is deleted in negative plural imperatives. The following examples illustrate the deletion:

(41) /botikarɔmbɛ/ → [βwikarɔmbɛ] 'do not beg!'  
    /botikajɛ/ → [βwikajɛ]  'do not come!'  
    /botikarɛɛɛ/ → [βwikarɛɛɛ]  'do not refuse!'  
    /botikainɛɛɛ/ → [βwikainɛɛɛ]  'do not sing!'  

The words in (41) are also realized at the phonetic level in forms identical to the underlying representation. In other words, the examples in (41) may surface as:

(41') [βotikarɔmbɛ]  
    [βotikajɛ]  
    [βotikarɛɛɛ]  
    [βotikainɛɛɛ]

The presence of the forms exemplified in (41') is an evidence that the /t/ deletion rule does not
necessarily apply every time its structural description is met. Put in a different language, the /t/ deletion rule is not obligatory, it is optional. It may be pointed out, however, that the forms in which /t/ has been deleted seem to be more frequent in the speech of Atharaka than the forms in which the rule has not applied. It might be the case that the rule is on the way to becoming obligatory.

As the examples in (41) show, /t/ is deleted in an intervocalic position. This aspect of the deletion might lead one into thinking that the rule is phonetically motivated. Generally, intervocalic consonant deletion is a process of weakening whereby considerations of articulatory simplification come into play. In other words, such deletions are usually phonetically motivated. They are therefore expressed in p-rules. To produce the sequence [oti], for instance, the tongue moves from a vowel-position to a consonant-position and back again to a vowel-position. Elimination of /t/ from the sequence means that the tongue will not move to a consonant-position and it is therefore simplification of articulation. If /t/ deletion in Kitharaka is governed by a rule of this nature the formulation of the rule would be as follows:
As was noted above, however, /t/ is deleted only in specific morphological context. The process has therefore to be expressed in a rule that incorporates morphological information. A rule that includes morphological information belongs to the category of MP-rules. Thus /t/ deletion in Kitharaka is to be expressed in an MP-rule. We need to revise rule (42) such that its environment does not give the wrong impression that the rule is phonetically motivated. The correct formulation for the rule is given below:

(42') \[ \begin{array}{c}
\text{C} \\
\text{[+ant]}
\text{[+cor]}
\text{[-voice]}
\end{array} \rightarrow 0 / [\text{[+syl] }] \rightarrow [\text{[+syl] }]. \]

**FOOTNOTES**

1. We shall occasionally refer to 'manner of articulation' and 'point of articulation' simply as 'manner' and 'point' respectively.
2. The nasal devoicing rule and the continuant strengthening rule also apply in these forms.

3. The definition of 'neutral position' adopted for the purposes of this study is the one proposed by Chomsky and Halle (1968:300). They write: ...in the neutral position, ... the velum is raised, and the air flow through the nose is cut off. The body of the tongue, which in quiet breathing lies in a relaxed state at the floor of the mouth, is raised in the neutral position to about the level that it occupies in the articulation of the English vowel e in the word 'bed'; but the blade of the tongue remains in about the same position as in quiet breathing.

4. We shall use 'C' and 'V' as abbreviations for \[cons\] and \[syll\] respectively.

5. 'UR' and 'PR' are abbreviations for 'underlying representation' and 'phonetic representation' respectively.

6. The occurrence of each of the segments becomes restricted to certain clearly defined environment such that the distribution of the two segments can be expressed in the form of a rule.

7. The term has been suggested by Ferguson in his Paper entitled "Phonological Processes" found in Greenberg (1978).

8. /k/ is not immediately followed by the voiceless segment. There is always a vowel (or two vowels) between the two.

9. The /k/ dissimilation rule is intrinsically ordered after the nasal devoicing rule.

10. 'Fronting' refers to the phenomenon of a segment shifting towards the front part of the vocal tract. The change of a velar segment to a palatal segment, for example, is a case of 'fronting' 

11. There is no prefix in Kitharaka which has /ụ/. 

12. The vowel of the pre-prefix is lengthened.


14. A glide formation rule changed /o/ into [w] after /t/ has been deleted. The two rules are intrinsically ordered.
15. The consonant-position of the tongue is the general configuration of the tongue during the articulation of consonants. Likewise, the vowel-position is the general configuration of the tongue during the articulation of vowels.
Some verbs and 'deverbative' nouns seem to have stem alternations. The objective of this chapter is to examine whether there are stem alternations at all in the language. It is suggested that the verbs and the deverbative nouns have only one stem form and that the impression of stem alternation can be accounted for in terms of prefix replacement.

There are a few verbs in Kitharaka that seem to have two stem variants. On the one hand, the stem appears with a stem-initial consonant and on the other, without the consonant - that is, the stem begins with a vowel. The following examples illustrate the alternations.

<table>
<thead>
<tr>
<th>Infinitive</th>
<th>1st person sg.</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>kwanda</td>
<td>mbande</td>
<td>'plant'</td>
</tr>
<tr>
<td>ku:Ya</td>
<td>mbuye</td>
<td>'say'</td>
</tr>
<tr>
<td>kwenda</td>
<td>mbende</td>
<td>'love/like'</td>
</tr>
<tr>
<td>kwinga</td>
<td>mbinge</td>
<td>'close'</td>
</tr>
<tr>
<td>kwona</td>
<td>mbone</td>
<td>'see'</td>
</tr>
<tr>
<td>kwina</td>
<td>mbine</td>
<td>'sing'</td>
</tr>
</tbody>
</table>

One way in which we could try to account for the stem alternation is to argue that the two variants are a surface phenomenon brought about by a
consonant deletion rule that deletes the stem-initial consonant in column A. In other words, the stems have an initial consonant underlyingly and that the stem forms in column A are derived by a synchronic consonant deletion rule. As seen in column B all the stems begin with a [b]. Since Kitharaka does not have an underlying /b/ the [b] in column B is derived from a /β/ by a continuant strengthening rule. A claim is therefore being made that /β/ has been deleted stem-initially in column A by a /β/ deletion rule. There are however counter-examples - and therefore counter-evidence - against this claim. If there was such a rule it would have deleted /β/ in (44).

(44) /koɓunga/ — [koɓunga] 'to shut'
/kọɓo:ra/ — [kọɓo:ra] 'to beat repeatedly'
/kọɓo:ta/ — [kọɓo:ta] 'to become thirsty'
/kọɓəɗya/ — [kọɓəɗya] 'to burn'
/kọɓa:/ — [kọɓa:] 'to become satisfied'

The presence of the above examples is an indication that there is no synchronic /β/ deletion rule in the language. The examples in (43) and (44) do not differ in such a way as to argue that there is a synchronic MP-rule which deletes /β/ in (43A) but that its condition is not met in (44). In other words, (43) does not differ from (44) either morphologically or in semantic classification. We
are to conclude, therefore, that the stems in (43A) are underlying; that is, they are not a product of a synchronic rule.

We have suggested that since Kitharaka does not have an underlying /b/ the stems in (43B) have a /β/ in the initial position and that the segment strengthens to a [b] through a continuant strengthening rule. According to this suggestion the underlying representation of (43B) is as follows:

(45)  1st Person Sg. Subjunctive  Gloss

/ŋβandy/  'that I plant'
/ŋβuxi/  ' " " say'
/ŋβinde/  ' " " love/like'
/ŋβinge/  ' " " close'
/ŋβin̪e/  ' " " see'
/ŋβins/  ' " " sing'

But how does one support the claim that the forms in (45) are underlying? And if there is no supporting evidence, how are they to be maintained as underlying? We try to answer these questions below.

The forms in (45) can not be supported by any argument based on the facts or data in the language. They can, however, be argued against from two points of view - theoretical requirements and empirical evidence. It is a requirement of Natural Generative
Phonology that a segment can not be maintained as underlying unless it surfaces at least in some environment. In other words, a segment that has no phonetic realization identical to it can not be justified as underlying. This requirement on segments applies equally well on morphemes. The underlying representation of morphemes must surface at least in some words. The stems in (45), that is:

\[(45') \quad /\beta/\text{and/}
\]/
\[/\beta\text{us/}
\]/
\[/\beta\text{nd/}
\]/
\[/\beta\text{ng/}
\]/
\[/\beta\text{n/}
\]/
\[/\beta\text{in/}
\]
do not surface anywhere. Put differently, the stems in all the examples given in (43) do not surface with a /\beta/. The stem forms suggested in (45) (and which have a /\beta/ initially) are, therefore, ruled out a priori on theoretical grounds. Thus (45) is not an underlying representation in Kitharaka.

The second argument against positing the stems in (45) as underlying is an emperical one. We suggested they are underlying so as to account for the presence of [b] in (43B), in that it was suggested that [b] is derived from /\beta/ by a continuant strengthening rule. There is, however, evidence to show that [b] in the 1st person singular
subjunctive (exemplified in (43B) is actually not derived from /β/). The following subjunctives derived from borrowed words support our assertion:

(46) Borrowed Words³  
1st person sg. Gloss  
subjunctive Gloss

(i) ingia 'enter' mbingeryet 'that I score' (Sw.)
(ii) amka 'wake' mbamoket 'that I become enlightened' (Sw.)
(iii) andika 'write' mbandiket 'that I write' (Sw.)
(iv) arrange mbareŋjeræ 'that I arrange' (Eng.)
(v) invite mbainiβaiti 'that I invite them' (Eng.)

The examples in (i) and (iii) have become almost wholly nativized and are widely used. Examples (ii) is heard only in restricted context. Examples (iv) and (v) are to be found only in the speech of Atharaka who know English and who in a conversation between themselves may occasionally use an English word but change its syllabic and sound structure so as to resemble native words. That these examples are to be found in Kitharaka, is to us, an evidence that [b] in the verbs that seem to have stem alternations is neither part of the underlying representation of the stems nor is it derived from /β/. We are of the opinion that
it is part of the prefix. The development of this situation is explained below:

Comparative evidence from the central Kenya Bantu languages indicate that there is a historical rule that has deleted bilabial voiced fricatives in the stem initial position (see Mutahi 1977). In its synchronic stage (all historical rules were initially synchronic) the rule deleted /β/ in some stems when these stems were not prefixed with a nasal consonant. When the prefix was a nasal, /β/ hardened to [b] through a continuant strengthening rule (which is still operative in the language) and was therefore not deleted. The /β/ deletion rule caused stem alternations but the alternations were merely phonetic and there was only one underlying representation for the stems. Underlyingly the stems had an initial /β/. At some point in the history of Kitharaka the /β/ deletion rule ceased to be synchronic (as shown by examples given in (44) and the stems in which /β/ had been deleted were realized as underlying. The deletion of /β/ in the stem initial position became a historical phenomenon. The rule governing the deletion also became a historical one. There were now two underlying representations for stems. Thus:
### Stems after a Nasal Prefix

<table>
<thead>
<tr>
<th>Stem</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>/βand/</td>
<td>'plant'</td>
</tr>
<tr>
<td>/βay/</td>
<td>'say'</td>
</tr>
<tr>
<td>/βind/</td>
<td>'love/ like'</td>
</tr>
<tr>
<td>/βing/</td>
<td>'close'</td>
</tr>
<tr>
<td>/βon/</td>
<td>'see'</td>
</tr>
<tr>
<td>/βin/</td>
<td>'sing'</td>
</tr>
</tbody>
</table>

### Stems in Other Environment

<table>
<thead>
<tr>
<th>Stem</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>/and/</td>
<td>'plant'</td>
</tr>
<tr>
<td>/uə/</td>
<td>'say'</td>
</tr>
<tr>
<td>/ɛnd/</td>
<td>'love/ like'</td>
</tr>
<tr>
<td>/iŋ/</td>
<td>'close'</td>
</tr>
<tr>
<td>/ɔn/</td>
<td>'see'</td>
</tr>
<tr>
<td>/in/</td>
<td>'sing'</td>
</tr>
</tbody>
</table>

Of the two stem alternations the /β/- initial alternates were restricted to the first person singular subjunctives and classes 9/10 deverbative nouns. It is only in these lexical categories that a nasal is prefixed to stems. Because of their widespread distribution in the lexicon the vowel-initial alternates were generalized as the only underlying stem representation. The stem-initial /β/ which was realized as [b] in the sequence /nβ(→[mb]) was reinterpreted as part of the prefix. A new redundancy rule was added to the grammar of Kitharaka. This rule is of the nature: markers for the 1st person sg. and classes 9/10 is [mb] in verbs and deverbative nouns whose stems begin with a vowel. It is through this rule, in our opinion, that [mb] came to be prefixed to the borrowed words. In other words, [mb] was extended to the borrowed words by analogy. That [mb] appears in these words is, to us, a proof that the above
redundancy rule is part of the native speaker's competence.

We conclude that there are no stem alternations in Kitharaka and that in all the examples given in (43) the stems begin with a vowel in both (43A) and (43B). The [b] appearing in (43B) is part of the prefix and not the stem. We further propose that since [b] could no longer be linked to a /β/ by a synchronic rule the prefix sequence /nβ/ was replaced by the prenasalized voiced stop /mβ/. If this proposal is correct, the redundancy rule that assigns the markers to the 1st person singular subjunctives and classes 9/10 deverbative nouns is: /mβ/ is prefixed to verbs and deverbative nouns whose stems begin with a vowel; /n/ is prefixed elsewhere.

FOOTNOTES

1. 'Deverbative' means 'derived from a verb'. The term has been proposed by Polome (1967:77).

2. The infinitive marker is /ko/.

3. In this column words appear in their orthographic transcription.

4. The word [kwinqergy] refers to making a score in a soccer game. Owing to the popularity of the game in Tharaka schools the word has become widespread. The word [kwandika] has become widespread mainly because of the spread of letter writing in Tharaka. It came into the language with the introduction of formal education.
5. The word [kwamoka] refers to the realization, awareness, or enlightenment that one gets after a nasty experience. It is for instance used in the context: [nde korringa wamokә]' I am going to beat you so badly that you will become wiser'.

6. The stem-initial /β/ deletion rule had applied only to some of the morphemes which met its structural description before it ceased to operate. The fact that the rule applied to these morphemes and not others can be explained in terms of what has been called the 'lexical diffusion hypothesis'. Wang (1969) has summed the hypothesis as follows:

"Phonological change may be implemented in a manner that is phonetically abrupt but lexically gradual. As a change diffuses across the lexicon, it may not reach all the morphemes to which it is applicable. If there is another change competing for part of the lexicon, residue may result". (See also Hsin-I Hsieh (1974) and, Cheng and Wang (1975)).
6.0 CONCLUSION

In this chapter we will give a summary of the study. Remarks will be made on specific areas that require further investigation. The chapter will end with a brief discussion of the practical significance of the study.

6.1 SUMMARY OF THE FINDINGS

It has been shown that Kitharaka has nineteen underlying consonants (including two glides) and that only four of these consonants are voiceless. It was argued that it is probable that considerations of pattern symmetry overruled those of 'markedness' in determining the consonant inventory. This proposal accounts for the presence of /c/ in the language and the absence of the less marked /tʃ/.

An investigation of the consonant processes has revealed that Kitharaka has at least five phonological processes involving consonants. These processes are: homorganic nasal assimilation, continuant strengthening, /k/ dissimilation (a form of Dahl's Law), identical consonant deletion, and, /t/ deletion. We have shown that in some cases phonological processes result in phonetic merger between different underlying segments.

It has been suggested that stem reanalysis or restructuring has taken place in some verbs and derivational nouns formed from such verbs. It has
further been argued that stem reanalysis resulted in prefix replacement and that the new prefix has been extended to the borrowed words by analogy.

The results of Chapter Two and Chapter Four may be represented diagrammatically as shown in (47) (see the next page). The diagram is to be interpreted as follows:

**UR** - Underlying Representation  
**PR** - Phonetic Representation  
**TD** - /t/ Deletion Rule  
**CD** - Identical Consonant Deletion Rule  
**KD** - /k/ Dissimilation Rule (Dahl's Law)  
**CS** - Continuant Strengthening Rule  
**NA** - Homorganic Nasal Assimilation Rule  
**ND** - Nasal Devoicing Rule

A visual representation of phonology like the one presented in figure (47) is justifiable on at least three grounds. First, diagrammatic representation of information is clear and probably easier to comprehend than information given in prose form. This is the principle that underlies the use of maps and graphs in geography, diagrams in biology, and architectural designs in construction science, to mention a few examples. Secondly, visual representation of information affords the reader less
(47) DIAGRAMMATIC REPRESENTATION OF THE UNDERLYING CONSONANTS, THEIR PHONETIC REALIZATION, AND THE PROCESSES LINKING THE TWO LEVELS.
time to be spent on going through the information. Thirdly, visual representation of phonology can serve as a useful tool for comparative study in phonology in that systematic representation of underlying and surface segments and the rules that interrelate the two in different languages would make comparison easier.

6.2 SOME REMARKS

The analysis given in Chapter Five under the heading 'Stem Reanalysis and Prefix Replacement' is meant to be a tentative one. The phenomenon discussed is a complex one not only because of its diachronic nature but also because it is more of an areal aspect among central Kenya Bantu languages than an isolated case in Kitharaka. A more thorough study than time permits us to carry out in this study is necessary for a better understanding of the subject. For more fruitful results such a study will have to look at the history of each of the central Kenya Bantu languages - that is, internal reconstruction - as well as a comparative analysis among these languages. It is only after such a study that a comprehensive picture of the phenomenon will emerge. We believe that the subject is more general than can be revealed in the use of only Kitharaka data. We hope that such a study will shed more light on the languages of central Kenya
in particular and Bantu phonology in general.

Owing to the short time within which the study had to be carried out, not much field research has been done with an exception of a few consultations with other speakers of Kitharaka. It is likely that an intensive field research would have revealed more information especially on the nature of phonological processes. A cross-sectional investigation among the speakers of Kitharaka might reveal, for example, a correlation between phonological processes and the age or social status of the speaker. Such information would in turn help us to spell out which rules are disappearing from the language and which ones are emerging. We hope that a field research of this nature will be conducted for a better understanding of phonological processes in Kitharaka.

6.3 PRACTICAL SIGNIFICANCE OF THE STUDY

In the introductory section it was shown that Kitharaka is not a dialect of Kimeru and that the two are distinct from each other. The implication of this view is that there is no linguistic justification for using Kimeru books in Tharaka primary schools. There is therefore a need to devise an orthography for Kitharaka to be used as a basis for writing the language. This
study could serve as an important starting point in the process of devising such an orthography. It is in this respect that we hope that the study will be of some practical significance and a more direct application to the needs of society. Such an orthography and the subsequent writing of reading materials will not only be useful for children in the lower classes of primary education but will also go a long way into making adult education a success in Tharaka.
BIBLIOGRAPHY


Hooper, J. (1975): "The Archi-Segment in Natural Generative Phonology". In


